

REPORT



CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR DEFENSE (CBRND) FUNCTIONAL NEEDS ANALYSIS/ FUNCTIONAL SOLUTIONS ANALYSIS

FINAL REPORT

December 2005

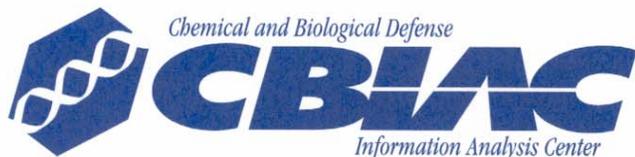
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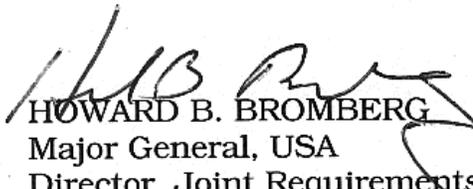
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Subject: Chemical, Biological, Radiological, and Nuclear Defense (CBRND)
Functional Needs Analysis (FNA)/Functional Solutions Analysis (FSA)

1. The Joint Requirements Office (JRO) for Chemical, Biological, Radiological and Nuclear (CBRN) Defense approves the CBRND Functional Needs Analysis (FNA)/Functional Solutions Analysis (FSA) dated October 2005. This Joint analysis has been staffed through all U.S. Armed Services, Combatant Commands, Joint Staff, Functional Capabilities Boards and Defense Intelligence Agency (DIA).
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and Nuclear Defense

Enclosures

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CHAPTER 1. INTRODUCTION

Executive Summary

This document presents the results of the Functional Needs Analysis/Functional Solutions Analysis (FNA/FSA) for the functional area of chemical, biological, radiological, and nuclear defense (CBRND). The FNA/FSA are structured in accordance with the Chairman of the Joint Chief of Staff Instruction (CJCSI) 3170.01D, *Joint Capabilities Integration and Development System (JCIDS)*, and its companion manual, CJCSM 3170.01A, *Operation of the Joint Capabilities Integration and Development System*.

The JCIDS analysis process is composed of a structured, four-step methodology that defines functional tasks, capabilities to perform the tasks, capability gaps, and potential non-materiel and materiel solutions. Based on national defense policy and centered on a common joint warfighting construct, the analyses initiate the formal development of integrated joint capabilities, to include the identification and justification of requirements necessary to initiate development and acquisition. The requirements are derived from an analysis of existing joint force operations and include doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) capabilities and deficiencies.

The FNA and FSA analyze and build upon the tasks identified in the previously published Functional Area Analysis (FAA). (The Protection Functional Control Board approved the CBRND FAA on 6 January 2005.) The FNA identifies and assesses the capabilities of the joint force to perform the FAA tasks to designated standards while operating under various (physical, military, and civil) conditions. The resulting capability gaps will be prioritized via the Joint Priority List (JPL) process. The gaps identified within this FNA are addressed in the FSA. First, non-materiel (or DOTLPPF) solutions to these capability gaps are considered. Then, for those capability gaps that are not fully addressed by non-materiel solutions, potential materiel solutions are considered and presented as Ideas for Materiel Approaches (IMAs).

The FNA/FSA retains the structure of the FAA, and for the purpose of clarity, carries over some information from the FAA. In particular, the FNA/FSA restates for each task the following information:

- task title
- task definition
- derivation
- conditions

The task categorization structure of the FAA is reflected in the FNA and FSA in that tasks are categorized by level of war and “S” area. The levels of war, as found in the *Universal Joint Task List (UJTL)* are designated as follows:

- Strategic National (SN)
- Strategic Theater (ST)
- Operational (OP)
- Tactical (TA)

The four “S” areas reflect the operational elements found in the *Protection Joint Functional Concept*:

- Sense
- Shape
- Shield
- Sustain

For each task, the following are highlighted within the FNA:

- Current capabilities and deficiencies
- Projected Near-/Mid-Term (FY2006–FY2011) capabilities and deficiencies
- Projected Far-Term (FY2012–FY2020) capabilities and deficiencies

Similarly, within the FSA, the following assessments are made:

- DOTLPF solution assessment
- IMA assessment

The capability assessment of each area considered by operational “S” area and level of war is shown in the following table. The overall assessment for the area of CBRN defense is “yellow” in the current, near/mid, and far term.

Operational “S” Area by Level of War	Capability		
	Current	Near/Mid	Far
Strategic National Sense	●	●	●
Strategic Theater Sense	●	●	●
Operational Sense	●	●	●
Tactical Sense	●	●	●
Strategic National Shape	●	●	●
Strategic Theater Shape	●	●	●
Operational Shape	●	●	●
Tactical Shape	●	●	●
Strategic National Shield	●	●	●
Strategic Theater Shield	●	●	●
Operational Shield	●	●	●

Operational “S” Area by Level of War	Capability		
	Current	Near/Mid	Far
Tactical Shield	●	●	●
Strategic National Sustain	●	●	●
Strategic Theater Sustain	●	●	●
Operational Sustain	●	●	●
Tactical Sustain	●	●	●
OVERALL	●	●	●

The CBRND FNA/FSA is split into 17 separate chapters (or volumes), as follows:

CBRND FNA/FSA Chapters

Chapter Number	Title
1	Introduction
2	Strategic National Sense Tasks
3	Strategic Theater Sense Tasks
4	Operational Sense Tasks
5	Tactical Sense Tasks
6	Strategic National Shape Tasks
7	Strategic Theater Shape Tasks
8	Operational Shape Tasks
9	Tactical Shape Tasks
10	Strategic National Shield Tasks
11	Strategic Theater Shield Tasks
12	Operational Shield Tasks
13	Tactical Shield Tasks
14	Strategic National Sustain Tasks
15	Strategic Theater Sustain Tasks
16	Operational Sustain Tasks
17	Tactical Sustain Tasks

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List of Acronyms

AAS	Advanced Anticonvulsant System
ABCA	American, British, Canadian, and Australian Armies Program
ACADA	Automated Chemical Agent Detector Alarm
AChE	acetylcholinesterase
ACPLA	agent-containing particle(s) per liter of air
ACSA	Acquisition Cross-Service Agreement
A/C SPO	aircraft system program office
ACTD	Advanced Concept Technology Demonstration
AE	aeromedical evacuation
AERP	Aircrew Eye/Respiratory Protection
AF/ILEXR	Air Force Civil Engineer Readiness Program Branch
AFB	Air Force Base
AFCESA	Air Force Civil Engineer Support Agency
AFMIC	Armed Forces Medical Intelligence Center
AFRL	Air Force Research Laboratory
AMEDD	Army Medical Department
AJP	Allied Joint Publication
AMA	Analysis of Materiel Approaches
AO	area of operations
AOR	area of responsibility
AT/FP	antiterrorism/force protection
ATP-45	Allied Technical Protocol 45
BAWS	Biological Agent Warning Sensor
BDO	Battle Dress Overgarment
BIDS	Biological Integrated Detection System
BSK	Biological Sampling Kit
BTWC	Biological and Toxin Weapons Convention
BVO	Black Vinyl Overboot
BW	biological warfare
BWA	biological warfare agent
C2	Command and Control
C4ISR	Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance
CAM	chemical agent monitor
CAP	crisis action planning
CAPDS	Chemical Agent Point Detector System
CARC	chemical agent-resistant coating
CASCOM	Combined Arms Support Command
CB	chemical and biological
CBA	capabilities-based assessment
CBMS	Chemical Biological Mass Spectrometer
CBPS	Chemically and Biologically Protected Shelter
CBRD	chemical, biological, and radiological defense
CBRN	chemical, biological, radiological, and nuclear

CBRND	chemical, biological, radiological, and nuclear defense
CBRNE	chemical, biological, radiological, nuclear, and high-yield explosives
CCA	contamination control area
CDC	Centers for Disease Control
CDI	Cooperative Defense Initiative
CFFC	Commander Fleet Forces Command
CFU	colony-forming unit
CJCS	Chairman of the Joint Chiefs of Staff
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CJCSM	Chairman of the Joint Chiefs of Staff Manual
CM	consequence management
CMWD	countermeasures washdown system
COA	course of action
COCOM	combatant command
COG	center of gravity
COLPRO	collective protection
COMINT	communication intelligence
CONOPs	Concept of Operations
CONUS	continental United States
COP	Common Operating Picture
COTS	commercial off-the-shelf
CRP	Contaminated Remains Pouch
CP-DEPMEDS	Chemically Protected Deployable Medical System
CPE	collective protection equipment
CPFC	Chemical Protective Footwear Cover
CPG	Chemical Protective Glove
CPHS	Chemical Protective Helmet System
CPOG	Chemical Protective Over-Garment
CPS	collective protection shelter, or collective protection system
CPU	Chemical Protective Undergarment
CRTI	(Canadian) CBRN Research and Technology Initiative
CW	chemical warfare
CWA	chemical warfare agent
CWC	Chemical Weapons Convention
DCI	Director of Central Intelligence
DCR	DOTMLPF Change Recommendation
DFU	Dry Filter Unit
DIA	Defense Intelligence Agency
DISA	Defense Information Systems Agency
DITSCAP	DoD Information Technology Security Certification and Accreditation Process
DMSS	Defense Medical Surveillance System
DNA	deoxyribose nucleic acid
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation

DOTLPP	doctrine, organization, training, leadership and education, personnel, and facilities
DOTMLPP	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
DTRA	Defense Threat Reduction Agency
DTRIAC	Defense Threat Reduction Information Analysis Center
DU	depleted uranium
ECP	expedient collective protection
EDS	electrostatic decontamination system
EMP	electromagnetic pulse
EMS	emergency medical services
EOD	explosive ordnance disposal
EPW	enemy prisoner of war
ESF	Emergency Support Function
ESRCBH	Environmental Sheltering with Reduced CB Hazard
FAA	Functional Area Analysis
FAO	Food and Agriculture Organization (of the United Nations)
FDA	Food and Drug Administration
FM	frequency modulation
FM	Field Manual
FMFM	Fleet Marine Forces Manual
FNA	Functional Needs Analysis
FOC	fully operationally capable
FOUO	for official use only
FP	force protection
FSA	Functional Solutions Analysis
FTIR	Fourier transform infrared
GB	sarin
GCCS	Global Command and Control System
GCCS-J	Joint Global Command and Control System
GC/MS	gas chromatography/mass spectrometer (or spectrometry)
GD	soman
GEIS	Global Emerging Infections Surveillance and Response System
GF	cyclosarin
GIG	Global Information Grid
GIS	geographical information system
GM	Geiger-Mueller
GOTS	government off-the-shelf
GPS	Global Positioning System
GVO	Green Vinyl Overboot
HD	sulfur mustard
HHA	handheld assay
HLS	homeland security
HQ	Headquarters
HRP	Human Remains Pouch
HTA	high-threat area

HTH	high-test hypochlorite
HUMINT	human intelligence
IA	Implementing Arrangement
IADDS	Information Assurance Defense in Depth Standards
IAEA	International Atomic Energy Agency
IAW	in accordance with
IBADS	Interim Biological Agent Detection System
IC	intelligence community
ICAM	Improved Chemical Agent Monitor
ICD	Initial Capabilities Document
IDLH	immediately dangerous to life or health
IDN	Integrated Detection Network
IMA	Ideas for Materiel Approaches
IMINT	imagery intelligence
IMS	ionization/ion mobility spectrometry
IND	investigational new drug
IOC	initial operational capability
IPDS	Improved Chemical Agent Point Detection System
IPE	individual protective equipment
IPT	Integrated Process Team
IR	infrared
IT	information technology
ITF	International Task Force
ITWA	Initial Threat Warning Assessment
JBAIDS	Joint Biological Agent Identification and Diagnostic System
JBPDS	Joint Biological Point Detection System
JBSDS	Joint Biological Standoff Detection System
JCAD	Joint Chemical Agent Detector
JCBAWM	Joint Chemical Biological Agent Water Monitor
JCESM	Joint Service Chemical Environment Survival Mask
JCIDS	Joint Capabilities Integration and Development System
JCSD	Joint Chemical Surface Detector
JDOMS	Joint Director of Military Support
JECP	Joint Expeditionary Collective Protection
JEM	Joint Effects Model
JFC	Joint Force Commander, or Joint Functional Concept
JFCOM	Joint Forces Command
JFIRE	Joint Firefighter's Integrated Response Ensemble
JFOC	Joint Future Operational Capability
JFSC	Joint Forces Staff College
JIC	Joint Integrating Concept, or Joint Intelligence Center
JISE	joint intelligence support element
JLOTS	Joint Logistics over the Shore
JMAO	Joint Mortuary Affairs Office
JMCBDS	Joint Modular Chemical and Biological Detection System
JMET	Joint Mission Essential Task

JMETL	Joint Mission Essential Task List
JMSEL	Joint Master Scenario Events List
JNBCRS	Joint NBC Reconnaissance System
JNTC	Joint National Training Center
JOA	Joint Operations Area
JOC	Joint Operating Concept
JOEF	Joint Operational Effects Federation
JP	Joint Publication
JPACE	Joint Protective Aircrew Ensemble
JPDS	Joint Portable Decontamination System
JPID	Joint Platform Interior Decontamination
JPL	Joint Priority List
JPME	Joint Professional Military Education
JPM-IS	Joint Program Manager for Information Systems
JROC	Joint Requirements Oversight Council
JRO-CBRND	Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense
JSAM	Joint Service Aircrew Mask
JSGPM	Joint Service General Purpose Mask
JSIG	Joint Service Integration Group
JSLIST	Joint Service Lightweight Integrated Suit Technology
JSLNBCRS	Joint Services Lightweight NBC Reconnaissance System
JSLSCAD	Joint Service Lightweight Standoff Chemical Agent Detector
JSMG	Joint Service Materiel Group
JSPDS	Joint Service Personnel/Skin Decontamination System
JSSSED	Joint Service Sensitive Equipment Decontamination
JSTDS (LS, SS)	Joint Service Transportable Decontamination System (Large Scale, Small Scale)
JTCOPS	Joint Transportable Collective Protection System
JTF	Joint Task Force
JTMEP	Joint Medical Evacuation Program
JTTPs	Joint Tactics, Techniques, and Procedures
JULLS	Joint Universal Lessons Learned System
JWARN	Joint Warning and Reporting Network
JWC	Joint Warfighting Center
LC/MS	liquid chromatography/mass spectrometer (or spectrometry)
LIDAR	light detection and ranging
LIF	laser-induced fluorescence
M&S	modeling and simulation
MA	Mortuary Affairs
MAA	Mission Area Analysis
MADCP	Mortuary Affairs Decontamination Collection Point
MALDI-TOF	Matrix-Assisted Laser Desorption Ionization–Time of Flight
MANSCEN	Maneuver Support Center
MAT	Medical Analysis Tool
MCCDC	Marine Corps Combat Development Command

MeV	megaelectron-volt
MFR	Multi-Function Radiation
MGPTS	Medium General Purpose Tent System
MIS	Medical Information System
MMC	materiel management center
MNA	Mission Need Analysis
MOPP	Mission-Oriented Protective Posture
MORS	Military Operations Research Society
MORSS	Military Operations Research Society Symposium
MOU/A	memorandum of understanding/agreement
MOUT	Military Operations in Urban Terrain
MS	mass spectrometer (or spectrometry)
MSDS	Material Safety Data Sheet
MULO	Multi-purpose Overboot
MWA	military working animal
MWD	military working dog
MWE	military working equine
NARAC	National Atmospheric Release Advisory Center
NATO	North Atlantic Treaty Organization
NBC	nuclear, biological, and chemical
NBCRS	NBC Reconnaissance System
NBCRV	NBC Reconnaissance Vehicle
NCES	Net-Centric Enterprise Services
NEO	noncombatant evacuation operations
NFPA	National Fire Protection Association
NGO	nongovernmental organization
NIOSH	National Institute for Occupational Safety and Health
NIST	National Intelligence Support Team
NMCA	National Military Command Authority
NMCC	National Military Command Center
NMJIC	National Military Joint Intelligence Center
NORAD	North American Aerospace Defense Command
NR-KPP	Net Ready Key Performance Parameter
NSS	National Security Strategy
NSTM	Naval Ships Technical Manual
O/C	observer/controller
OCONUS	outside the Continental United States
OP	Operational
OPCW	Organisation for the Prohibition of Chemical Weapons
OPLAN	Operations Plan
OPME	Officer Professional Military Education
OPNAV	Office of the Chief of Naval Operations
OPTEMPO	operations tempo
ORD	Operational Requirements Document
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration

PACOM	Pacific Command
PAPR	powered air-purifying respirator
PARP	poly(ADP-ribose) polymerase
PB	pyridostigmine bromide
PCR	polymerase chain reaction
PD	passive defense
PE	personal effects
PFU	plaque-forming unit
PID	photoionization detector
PIR	priority intelligence requirement
PIRS	photoacoustic infrared spectroscopy
PIU	patient isolation unit
POD	port of debarkation
POE	port of embarkation
POL	petroleum, oil, and lubricants
POM	program objective memorandum
POW	prisoner of war
QDR	Quadrennial Defense Review
QSTAG	Quadripartite Standardization Agreement
R2	rest and recuperation
RADIAC	radiation detection, identification, and computation
RAPID	Ruggedized Advanced Pathogen Identification Device
R&D	research and development
RDD	Radiological Dispersal Device
RD&E	research, development and engineering
RDECOM	Research Development and Engineering Command
RDTE&A	research, development, test, evaluation and acquisition
RESTOP	Restoration Operations
ROMO	range of military operations
ROTA	release other than attack
ROWPU	Reverse Osmosis Water Purification Unit
RSOI	reception, staging, onward movement, and integration
RT-PCR	real-time polymerase chain reaction
SAM	Surveillance and Measurement
SARS	Severe Acute Respiratory Syndrome
SAW	surface acoustic wave
SCBA	self-contained breathing apparatus
SDS	Sorbent Decontamination System
SENS	Sense
SERS	surface-enhanced Raman spectroscopy
SHA	Shape
SHLD	Shield
SITREP	situation report
SJFHQ	standing joint force headquarters
SJTF	Standing Joint Task Force
SME	subject matter expert

SN	Strategic National
SOCOM	Special Operations Command
SOF	special operations force
SOP	standard operating procedure
SPOD	Seaport of Debarkation
SPOE	Seaport of Embarkation
ST	Strategic Theater
STANAG	Standardization Agreement
STB	super tropical bleach
SUST	Sustain
TA	Tactical
TBP	to be published
TDA	table of distribution and allowances
TEMPER	Tent, Expandable, Modular, Personnel
TEP	Theater Engagement Plan
TEU	Technical Escort Unit
TIB	toxic industrial biological
TIC	toxic industrial chemical
TIM	toxic industrial material
TIR	toxic industrial radiological
TMIP	Theater Medical Information Program
TOE	table of organization and equipment
TPFDD	time-phased force and deployment data
TPFDL	Time-Phased Force and Deployment List
TRADOC	Training and Doctrine Command
TTPs	tactics, techniques, and procedures
UAV	unmanned aerial vehicle
UHF	ultrahigh frequency
UJTL	Universal Joint Task List
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USAF	United States Air Force
USAMRMC	United States Army Medical Research and Materiel Command
USCENTCOM	United States Central Command
USCG	U.S. Coast Guard
USEUCOM	United States European Command
USFK	U.S. Forces, Korea
USMC	United States Marine Corps
USN	U.S. Navy
USNORTHCOM	United States Northern Command
USPACOM	United States Pacific Command
USSOCOM	United States Special Operations Command
USSOUTHCOM	United States Southern Command
USSTRATCOM	United States Strategic Command
USTRANSCOM	United States Transportation Command
UV	ultraviolet
VHF	very high frequency

VOC	volatile organic chemicals
WHO	World Health Organization
WMD	weapons of mass destruction
WRM	war reserve materiel

1.0 Introduction

1.1 Background

The Joint Requirements Oversight Council (JROC) established the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND) as a Chairman's Controlled Activity, reporting to the Chairman of the Joint Chiefs of Staff (CJCS) through the Director J-8 (*JROC Memorandum 163-02*, 9 September 2002). The JRO-CBRND assumed the duties of the Joint Service Integration Group (JSIG) in coordinating and integrating requirements for all Department of Defense (DoD) CBRND programs and acts as the CJCS focal point for all CBRND issues in passive defense (PD), force protection (FP), consequence management (CM), and homeland security (HLS). During fiscal year 2002, JSIG initiated analysis efforts to identify CBRND deficiencies, in the form of Mission Area Analysis (MAA) and Mission Need Analysis (MNA), for the functional areas of Contamination Avoidance, Protection, Restoration, and Battle Management. The JRO-CBRND, guided by the policies and procedures established in *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01B, Requirements Generation System*, has continued to oversee the Chemical and Biological Defense Information Analysis Center and other contracted organizations in the conduct of these efforts, which were completed at the end of calendar year 2003.

The recently approved *CJCSI 3170.01D, Joint Capabilities Integration and Development System (JCIDS)*, dated 12 March 2004, reflects a complete rewrite of the procedures and guidance that support the requirements generation process and provides the foundation for the transition to a capabilities-based process founded on joint concepts and integrated architectures, rather than just a threat-based process. The FNA/FSA is not used to specifically support the planning, programming and budgeting for the Chemical and Biological Defense Program but is used to support the JCIDS process. The JCIDS companion manual, *Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3170.01A, Operation of the Joint Capabilities Integration and Development System*, dated 12 March 2004, sets forth guidelines and procedures for operation of the JCIDS to include the conduct of JCIDS analysis.

The JCIDS analysis process is composed of a structured, four-step methodology that defines capability needs, capability gaps, and approaches to provide those capabilities within a specified functional or operational area. Based on national defense policy and centered on a common joint warfighting construct, the analyses initiate the formal development of integrated joint capabilities, to include the identification and justification of requirements necessary to initiate development and acquisition. The requirements are derived from an analysis of existing joint force operation and doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) capabilities and deficiencies as prescribed in CJCSI 3170.01D and CJCSI 3180.01, *JROC Programmatic Processes for Joint Experimentation and Joint Resource Change Recommendations*, 31 October 2002. As with the JCIDS analysis guidelines, the guidelines of the previous CJCSI 3170.01B led to results based on the consideration of the full range of DOTMLPF solutions; therefore, these results remain relevant to the JCIDS analysis process.

For CBRND, the JCIDS analysis process may be enhanced by engaging the Materiel Developer and the Joint Developmental and Operational Test & Evaluation communities in the Functional

Solution Analysis (FSA) when the Ideas for Material Approaches (IMAs) and DOTMLPF Change Recommendations (DCRs) are identified. Especially with new technologies, involvement as early as possible is necessary to plan for long-lead test capabilities, methodologies development, and validation.

1.2 Analysis Objective

The objective of this analysis is to provide a capabilities-based assessment (CBA) that defines capability gaps, capability needs, and approaches to provide those capabilities within a specified functional or operational area. Efforts are made to suggest solutions that may be addressed through DCRs and Initial Capability Documents (ICDs) respectively. This thorough CBRND JCIDS Analysis is conducted in the form of a Functional Area Analysis (FAA), Functional Needs Analysis (FNA), and Functional Solution Analysis (FSA). This particular report documents the results of the FNA and FSA in the area of CBRND. The effort leverages, to the extent possible, the results of previous MAAs and MNAs. Information gathered during the conduct of CBRND analysis efforts initiated under *CJCSI 3170.01B* has been updated, to include Joint Staff–approved terminology and exploited to the greatest extent possible.

1.3 Threat Characterization

This section provides an overview of the threat associated with each of the four “S” areas: Sense, Shape, Shield, and Sustain. For each area, an attempt is made to isolate the key components of the threats that complicate task performance in the area. For example, the first section addresses CBRN hazards from the perspective of Sense. It answers the question “What characteristics of CBRN hazards make them difficult to sense?” Similar questions are asked for the other “S” areas. However, prior to specific “S” area discussions, an overview of CBRN agents and the means to disseminate them is provided.

1.3.1 Overview of Chemical and Biological Agents (CB) Agents, Radiological and Nuclear (RN) Hazards, and Dissemination

1.3.1.1 Chemical Agents

Chemical agents are substances intended for use in military operations to kill, seriously injure, or incapacitate people because of their physiological effects.¹ Under temperate conditions, most chemical agents are liquids, and liquid dissemination would likely be the simplest method of delivery. Both persistent agents, such as sulfur mustard (HD) and VX, and nonpersistent agents, such as sarin (GB) or Lewisite (L), can be delivered in liquid form. Chemical agents may also be disseminated as vapors, aerosols, or dusty agents. Vapors, aerosols, and dusty agents behave similarly during dissemination. Unlike liquid agents, they are significantly affected by the wind and terrain contours during dissemination.

¹ U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM). *The Medical NBC Handbook, USACHPPM Tech Guide 244*, Appendix A: Glossary of Terms and Acronyms. May 2000.

1.3.1.2 Biological Agents

Biological agents are microorganisms or toxins derived from microorganisms that cause disease in humans, plants, or animals or cause material deterioration.² Pathogens are likely to be disseminated as aerosols, whereas toxins can be disseminated as either aerosols or large liquid drops.³ Like chemical agents, biological agents disseminated as an aerosol are spread by the wind and diffusion. High winds may increase the casualty threat for agents that are highly virulent and decay slowly. Conversely, high winds may reduce the casualty threat for less virulent agents with higher decay rates. Moderate wind speeds of 7.5–19 mph (12–30 kmph) are generally considered ideal for most biological agent dissemination.⁴

1.3.1.3 Radiological and Nuclear Hazards.

Radiological and nuclear materials contain unstable atoms that emit alpha, beta, gamma, and/or neutron radiation. Radiation-emitting atoms, termed radioisotopes or radionuclides, may be naturally occurring or artificially produced in nuclear reactors or cyclotrons. Dissemination behavior typically mimics that of aerosols.⁵ For example, after a nuclear air burst, vaporized reaction products, unreacted material, and weapon residues condense into a fine suspension of particles 0.01–20 μm in diameter.⁶ Quickly drawn up into the stratosphere, particularly if the explosive yield exceeds 10 kilotons, the radioactive particles are dispersed by atmospheric winds. They may remain airborne for weeks, months, and even years before eventually settling to the earth's surface as fallout. Radiological dispersal devices (RDD) disseminate radioactive materials through active (explosive) and passive (nonexplosive) means. Active dissemination of radioactive materials is more efficient than passive means, though the area of effects would likely be smaller than that of a large-scale biological attack. This expectation is largely due to the greater particle density and larger particle size expected from a radiological accident or unsophisticated RDD in comparison to highly milled biological particles expected from a sophisticated biological dispersal device.

² USACHPPM. *The Medical NBC Handbook, USACHPPM Tech Guide 244*, Appendix A: Glossary of Terms and Acronyms. May 2000.

³ Headquarters, Department of the Army, Department of the Air Force, United States Marine Corps. *FM 3-6/FMFM 7-11-H/AFM 1-5-7: Field Behavior of NBC Agents (Including Smoke and Incendiaries)*, Chapter 3: Biological Agents and Nuclear Detonations. Washington, DC. November 1986.

⁴ Headquarters, Department of the Army. *FM 3-3/FMFM 11-17: Chemical and Biological Contamination Avoidance*, Chapter 4: Biological Agents. Washington, DC. November 1992.

⁵ Commander, Naval Sea Systems Command. *Naval Ships' Technical Manual (NSTM) Chapter 070, Nuclear Defense at Sea and Radiological Recovery of Ships after Nuclear Weapons Explosions*. Revision 2. July 1998. pp. 70–111.

⁶ Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Section 320. February 1996.

1.3.2 Sense

Joint sense capabilities are challenged by technical issues related to chemical agent/toxic industrial chemical (TIC), biological agent, and radiological/nuclear hazard detection.

1.3.2.1 Chemical Agent/Toxic Industrial Chemical Detection⁷

(For Official Use Only [FOUO]) The chemical similarity of chemical agents and TICs⁸ to detection interferents complicates chemical agent detection. Chemical agents that have low volatilities or are able to be disseminated as aerosols also undermine detection. Furthermore, the physiological impact of some chemical agents at low doses challenges detector sensitivity. Finally, the sheer number of TICs and their similarity in chemical structure to detection interferents makes comprehensive TIC detection infeasible.

Consider ionization/ion mobility spectrometry (IMS) technology, employed by many point chemical warfare agent detector/alarms. A spectrum with a series of peaks can be generated comparing the intensity of a charge versus the travel time. Since ions of chemical agents, TICs, and other vapors have characteristic travel (mobility) times, the presence and relative amount of agent or TIC can be determined.

Nevertheless, the presence of a nontoxic chemical vapor with a similar characteristic mobility time to a toxic chemical vapor of interest may result in a false alarm since the detector may be unable to distinguish between the two chemicals. Some detectors may false alarm in the presence of aromatic vapors, cleaning compounds, smoke, fumes, and some wood preservatives.⁹ Furthermore, since IMS requires a vapor or gas sample for analysis, detectors based on this technology may be unable to detect liquid chemical agents/TICs with low volatilities. Though they may be able to detect aerosolized agents or TICs, their reaction chambers may become contaminated, thus prolonging clearing times.

Though point detectors are typically unable to detect liquid chemical agents unless a sufficient amount of the deposited agent has volatilized and entered the point detector, liquid detection of standard chemical agents is available. Though no automated liquid detection technology exists, chemical agent detector papers can be used to manually detect liquid droplets ($\geq 100 \mu\text{m}$ in diameter) of standard chemical agents within 30 seconds.¹⁰ However, some detection papers react to some common battlefield interferents, including cleaning solvents (ammonia), DS2,

⁷ Refer to the JRO *Operational Impact Assessment of Non-Traditional Agents* report, July 2003, (S/NF) for information on nontraditional agent detection.

⁸ TICs are chemicals having a LC_{50} value of less than $100,000 \text{ mg}\cdot\text{min}/\text{m}^3$ (approximately the same as that of ammonia) in the vapor or aerosol phase in any mammalian species and produced in quantities exceeding 30 tons at one production facility. *USACHPPM Report 47-EM-6154-03: Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40*. November 2003. p. VII-7. (FOUO)

⁹ National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. p. F-8

¹⁰ National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. pp. F-38, -41.

“break free” (a weapons cleaner and lubricant), and some petroleum products, ostensibly because of the similarity of their chemical structures to those of the aforementioned chemical agents.

(FOUO) Numerous chemical agent detectors are not sensitive enough to detect low-dose chemical agent hazards leading to ocular and nasal effects. For example, the M90 and Chemical Agent Monitor (CAM) are not sensitive enough to provide warning of low dose hazards leading to ocular effects.¹¹

(FOUO) According to International Task Force (ITF)-40, more than 1000 industrial chemicals potentially pose significant hazards if released in a military situation.¹² Consequently, the sheer number of TICs of concern makes comprehensive TIC detection infeasible. Though some detectors recognize a limited number of TICs (e.g., chlorine, hydrogen bromide, hydrogen chloride, hydrogen cyanide, hydrogen fluoride, hydrogen sulfide, and phosgene in the case of the Joint Chemical Agent Detector [JCAD])¹³, many detect traditional chemical agents only. Like chemical agents, many TICs have characteristic IMS mobility times similar to those of interferences, challenging IMS-based detection.

1.3.2.2 Biological Detection

Biological agents' potency, microscopic complexity, and similarity in molecular structure to nonpathogenic (nontoxic) biological matter directly complicate biological agent detection. The pathology (e.g., incubation period, communicability, and period of response to treatment) of numerous agents also affects the importance and time-criticality of detection.

Relative to chemical agents, most biological agents have remarkably low effective doses. Figure 1-1 shows the approximate ranges of effective doses for pathogens, toxins, and chemical warfare agents.¹⁴ At the extreme, some pathogens are as much as 14 billion times more potent than chemical agents. The effective doses of toxins are typically greater than those of pathogenic agents but less than those of chemical warfare agents.

¹¹ Joint Service Integration Group. “Operational Requirements Document for a Joint Chemical Agent Detector (JCAD) (JTD J2-COO&III) MS III Final.” Ft. Leonard Wood, Mo. April 2002. (FOUO)

¹² *USACHPPM Report 47-EM-6154-03: Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40*. November 2003. p. ES-iii. (FOUO)

¹³ Joint Service Integration Group. “Operational Requirements Document for a Joint Chemical Agent Detector (JCAD) (JTD J2-COO&III) MS III Final.” Ft. Leonard Wood, Mo. April 2002.

¹⁴ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. p. 1.

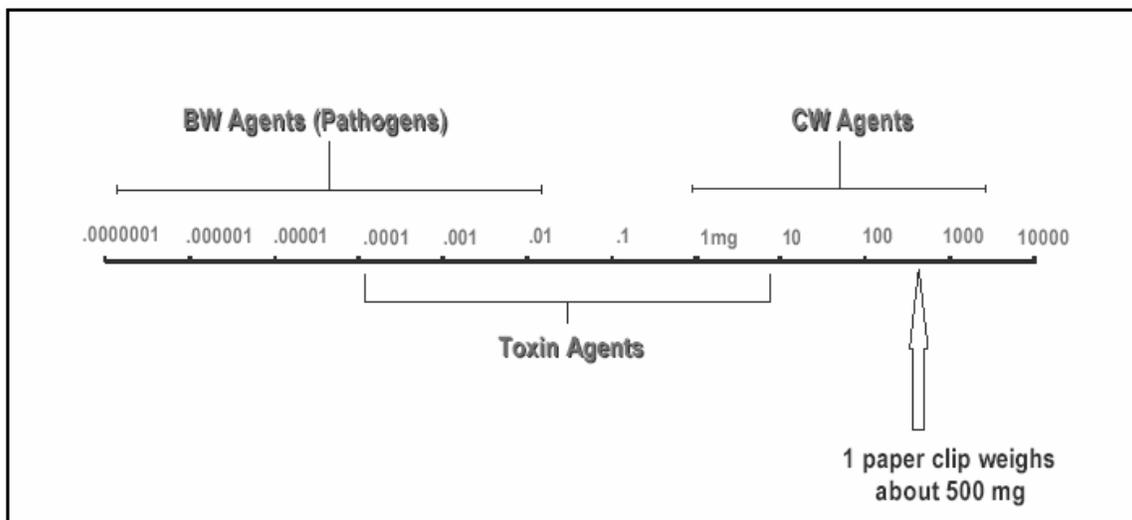


Figure 1-1. Comparative Effective Doses (mg) of Biological Warfare, Toxins, and Chemical Warfare Agents¹⁵

For this reason, biological agent detection systems need to exhibit an extremely high sensitivity to biological agents (i.e., capability to detect very small amounts of biological agents). Unfortunately, no detection system can recognize all potential agents of concern because identification is generally limited to a preselected set of agents, which cannot be expanded without additional equipment and/or programming. For example, the M31A2 Joint Biological Point Detection System (JBPDS) includes immunoassay tests in which each immunoassay recognizes one particular biological agent. The agent may remain an undetected hazard under specific conditions.¹⁶ Line source releases from standoff distances are a prime example of attacks that can generate aerosol concentrations below threshold sensitivity levels.¹⁷ Furthermore, biological detection may be inhibited or defeated by modification of normally detectable agents to render them undetectable or by interference through environmental pollution.

Biological agents are considerably more complex than chemical agents. For this reason, detection and identification technology incorporated into chemical agent detection systems is not easily transferred to biological agent detection systems. While IMS can be used to detect and identify chemical agents, the technology in its current form is unable to detect or identify biological agents.¹⁸

Since biological agents are similar in size to nonbiological particulates and in size and composition to nonpathogenic (nontoxic) atmospheric particulates, background aerosol clutter

¹⁵ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. p. 1.

¹⁶ Danzig, Richard. "Catastrophic Bioterrorism – What is to be Done?" Center for Technology and National Security Policy. Washington, DC. August 2003. pp. 10–11.

¹⁷ Kilpatrick, William T., Mark W. Fagan, and Paul Murdock. "Deployment Analysis of Biological Point Detectors Deployed on Fixed-site Military Installations." Simulation Technologies, Inc. November 2001. p. 14.

¹⁸ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*, 2001. pp. 13–4, 17–19.

complicates biological detection. First, nonbiological particulates, whether naturally occurring (e.g., dust, dirt, and sand) or manmade (engine exhaust, smoke, and industrial effluents) can interfere with the trigger, which is a particle counter and traditionally the first level of biological detection. The trigger monitors the total atmospheric particulate concentration against background levels without discriminating between biological and nonbiological particulates. It activates the remaining components of the detection system if it detects an increase in the ambient particulate concentration. After hydrating and concentrating the particulates, the resulting sample is passed to a generic detection component that analyzes the particulates to determine whether they are biological in origin.¹⁹ If the sample exhibits characteristics of biological particles, it is passed to the identifier. The identifier can identify the type of biological agent if the agent is in a preselected set.

It is true that biological attacks typically generate particle concentrations greater than the background levels. This tendency is illustrated in Figure 1-2, which compares particle concentrations generated by three biological weapon attacks (from backpack, submunition, and line source) to background levels. However, the figure also shows that background dust particles generated from nearby tank movement results in greater particulate concentrations than those caused by biological warfare (BW) attacks. Therefore, nonbiological particulates can cause false positives in trigger-based activating systems, consequently expending analysis consumables.

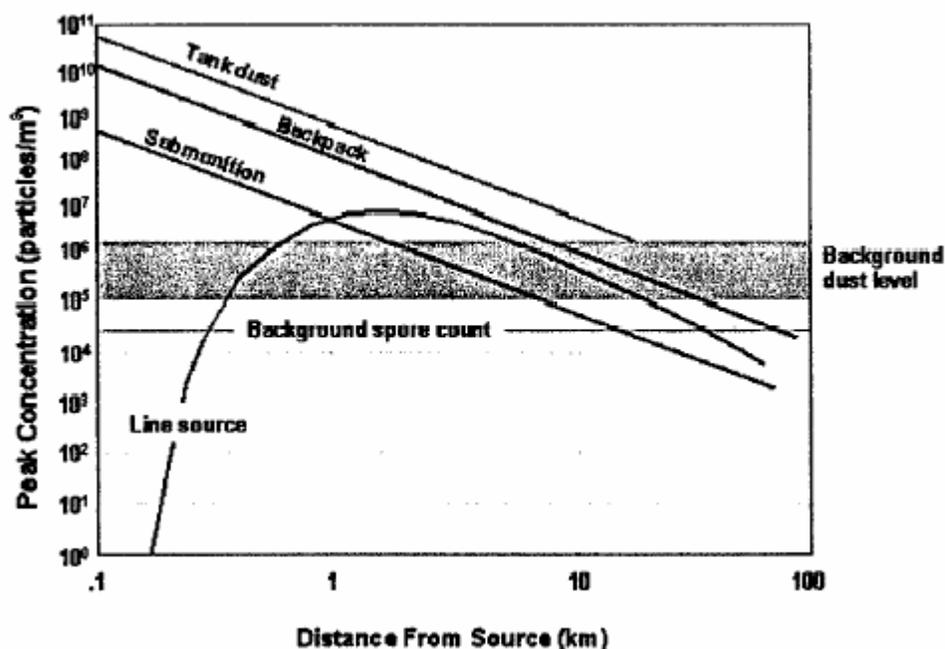


Figure 1-2. Biological Weapon Attack Aerosol Concentrations Superimposed on Natural Bioaerosol Background at Ft. Sill, Oklahoma²⁰

¹⁹ After determining aerosol particles to be biological, some detectors can classify the suspect aerosol by broad category (e.g., spore, bacterium, toxin/macromolecule, or virus).

²⁰ Kilpatrick, William T., Mark W. Fagan, and Paul Murdock. "Deployment Analysis of Biological Point Detectors Deployed on Fixed-site Military Installations." Simulation Technologies, Inc. November 2001. p. 13.

For this reason, many newer detection systems use cueing technology, which includes a second detector in addition to a trigger, to discriminate in real time between biological and nonbiological particulates. The second detector is frequently based on fluorescence. For example, the JBPDS includes a detector that analyzes the fluorescence of material illuminated by an ultraviolet (UV) laser. A detection of biological material combined with a rise in particle count activates the collector and initiates the identification process.²¹

Second, biological nonpathogenic (nontoxic) particles, such as naturally occurring pollen, molds, fungi, and bacteria (many of them uncataloged), are ubiquitous in the environment and can interfere with detection of biological agents. The presence of an aerosolized biological weapon is generally small in comparison with that of naturally occurring biological nonpathogenic particles. In addition, the concentration of the biological background can fluctuate significantly according to the season, weather, time of day, and presence of human variables. Figure 1-3 shows the fluctuations in airborne bacterial concentration during a 24-hour period at an unspecified location.

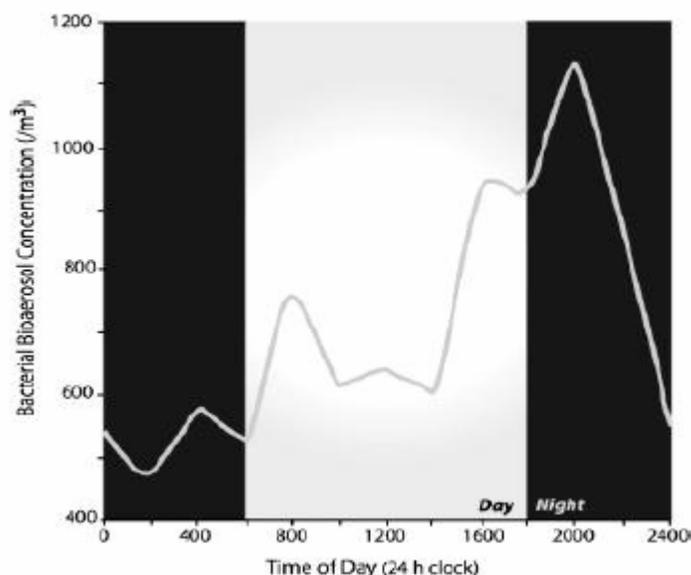


Figure 1-3. Airborne Bacterial Concentration Fluctuation in a Single Day²²

Thus, the variability in the biological background level can cause biological detectors, both with or without cueing technology, to activate their identifiers and expend analysis consumables because only the identifier can distinguish between preselected biological agents and nonpathogenic agents.

²¹ Note that the JBPDS's cueing technology, termed the Biological Agent Warning Sensor (BAWS), is unable to distinguish between viable and nonviable agent-containing particles because the signatures of live agents are the same as their nonviable counterparts. Kilpatrick, William T., Mark W. Fagan, and Paul Murdock. "Deployment Analysis of Biological Point Detectors Deployed on Fixed-site Military Installations." Simulation Technologies, Inc. November 2001. p. 8.

²² National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. p. 14

The potentially fast transit time of bioaerosol clouds causes additional problems for biological detection if detect-to-warn (also termed “detect-to-protect”) is the intended purpose. Recent Air Force Research Laboratory (AFRL) studies show that the warning (response) time of biological point detectors against covert or clandestine attacks must be less than the typical 10–15 minutes required to complete the immunoassay tests in order to successfully detect-to-warn those in proximity to the detector.²³ If a detector takes 10–15 minutes to sense an attack, the majority of unprotected personnel in the proximity of the detector will be exposed and many may receive casualty-causing doses. At the time of the detector alarm, personnel farthest downwind (and ostensibly within earshot of the detector) may be able to take protective measures and hence reduce their exposure. However, the reduction in exposed personnel is predicted to be less than 5%. Biological detectors need to alarm within minutes following initial exposure to the threshold agent concentration for personnel in the vicinity to be able to effectively protect themselves.

There are some cases in which detect-to-warn of a biological attack may be possible. For example, an urban aerosol anthrax attack is most likely to occur at dusk, when weather patterns are most favorable to keeping the particles close to the ground and thus likely to be inhaled.²⁴ If detection can be achieved within 6–10 hours after the release, people can be warned to stay away, consequently reducing exposure. Unfortunately, present anthrax detectors are usually sampled manually every 12 or 24 hours, and confirmation of findings takes between one and two days. Under this timeline, the detect-to-warn capability is essentially nonexistent.

Given the operational time of response and the pathology of anthrax, the detect-to-treat²⁵ capability (i.e., confirm presence of agent so that exposed may be treated before symptom manifestation) is also deficient. Since it is estimated that 5% of infected personnel will manifest substantial flu-like symptoms within 48 hours of the attack and a blood culture will confirm anthrax infection within 3 or 4 hours, the utility of detectors will be marginal. In these situations, medical surveillance can detect an anthrax attack as quickly as current (technically and operationally restricted) biological detection capabilities.

The pathology of smallpox, in contrast to that of anthrax, provides for a wider window of reward for detect-to-treat because a smallpox vaccination administered within approximately 96 hours after an attack is likely to protect an exposed individual. Immunization after this point is much less likely to be effective. Though there is no test that determines whether someone is infected with smallpox before he begins to manifest symptoms some 7–12 days after infection,²⁶ biological detection technology exists that can detect the aerosol release of the smallpox virus within 24–36 hours. If a smallpox attack has been confirmed, exposed individuals can be prevented from developing the disease through prompt vaccination. Consequently, in light of

²³ Kilpatrick, William T., Mark W. Fagan, and Paul Murdock. “Deployment Analysis of Biological Point Detectors Deployed on Fixed-site Military Installations.” Simulation Technologies, Inc. November 2001. pp. 10, 15.

²⁴ Danzig, Richard. “Catastrophic Bioterrorism—What is to be Done?” Center for Technology and National Security Policy. Washington, DC. August 2003. pp. 10–16.

²⁵ Detect-to-treat is also called “detect-to-verify.”

²⁶ At 10–12 days, newly infected individuals will themselves become infectious and may remain ambulatory for as much as 48 hours during this infectious period, resulting in additional infections.

pathologies of these two diseases and current detection and treatment capabilities, timely detection of a smallpox aerosol attack is more important and feasible than that of an anthrax aerosol attack.

Standoff biological detection systems are designed to detect and identify biological agents at a distance away from the aerosol/plume or from the detector system, before the agents reach the location of the system.²⁷ Active standoff technology typically uses the concept of detecting and measuring atmospheric properties by laser remote sensing or LIDAR, an acronym for “light detection and ranging.” In LIDAR, a short laser pulse is transmitted through the atmosphere, and then a portion of the radiation is reflected back to the system from a distant target or from atmospheric particles (e.g., molecules, aerosols, clouds, or dust). These systems must be line-of-sight to the suspect biological agent event. Infrared (IR)-based LIDAR systems are able to detect small aerosol particles characteristic of biological attacks (<20 μm in diameter) out to ranges of 30–50 km, since the atmosphere is relatively transparent to electromagnetic radiation of this wavelength. IR LIDAR systems may not be able to discriminate between biological and nonbiological particles, and interferences, such as water vapor and fog, may inhibit their performance.²⁸

Unlike IR LIDAR systems, UV LIDAR systems generally can discriminate between biological and nonbiological particles.²⁹ UV LIDAR systems illuminate biological aerosols with a strong UV laser pulse that causes biological agents to fluoresce. The red-shifted fluorescence caused by UV absorbance is detected by the systems and allows for distinguishing between biological and nonbiological aerosols. However, false positives may be caused in some systems by engine exhaust and pollens. Furthermore, the range of a typical UV LIDAR system may be limited to several kilometers³⁰ due to the relative opacity of air to UV light and the high UV background during daylight hours. UV LIDAR systems are generally more effective during low-light or nighttime operations because of the lower UV background level.

Passive standoff detection technology relies on the background electromagnetic radiation present in the environment for the detection of biological agents.³¹ Passive standoff detection systems typically analyze the mid-IR (3–5 μm) or far-IR (8–12 μm) region of the spectrum for agent signatures. Though current IR passive standoff detection systems can detect bioaerosols immediately following their dissemination, bioaerosols quickly lose their signature and become invisible to the systems.

²⁷ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*, 2001. p. 33.

²⁸ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*, 2001. p. 15.

²⁹ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*, 2001. p. 33.

³⁰ Johnson-Winegar, Anna. “Joint Service Chemical and Biological Defense Program FY02-03 Overview.” Department of Defense. Arlington, Va. 2003. p. 18.

³¹ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*, 2001. p. 35.

1.3.2.3 Radiological Detection

The short range of some types of radiation (particularly alpha) complicates radiological point detection capabilities. Furthermore, radionuclide identification is difficult since the energy levels of radiation emitted from a source must be quantified and analyzed for the identification to be reliable. Without such analysis, the source can be classified only according to the type of radiation it emits. Finally, in light of the properties of radiation, standoff radiological capabilities do not currently exist.

The range of alpha radiation makes its detection difficult. Whereas beta radiation can travel 7–26 ft (200–800 cm) in air from its source,³² and gamma and neutron radiation, though energy dependent, generally travel farther in air than beta radiation, alpha radiation travels only 2–3 inches (5–7 cm) in air.³³ Consequently, alpha detectors, such as thin-window Geiger-Muller detectors, typically must be placed within an inch of the alpha-emitting source. Most alpha-emitting sources (e.g., uranium-235 and -238, americium-241, and plutonium-238 and -239) also emit gamma radiation,³⁴ though the energy level of the gamma radiation may be low enough to make it undetectable. Detection of shielded alpha emitters is particularly difficult. Alpha emitters plutonium-238, uranium-235, and thorium-232, ostensibly at an amount of 10 curies, each placed in a 2.5 cm-thick lead container, are not detected through their gamma radiation by a sodium-iodide (NaI) or plastic scintillator placed 1 m from the container.³⁵ In contrast, cobalt-60, iodide-131, cesium-137, iridium-192, phosphorus-32, strontium-90, and americium-241, under identical test conditions, are detected.

Even if a particular type of radiation can be detected, radionuclide identification of the source is difficult because the equipment needs to be able to measure the energy level of the emitted alpha, beta, or neutron particle or gamma photon since the energy of the radiation is characteristic of the radionuclide.³⁶ For example, strontium-90/yttrium-90 emits beta radiation with a maximum energy of 2.28 MeV. Gamma spectroscopy systems provide a viewable energy spectrum of emitted radiation unique to a gamma-emitting radionuclide. Modern liquid scintillation units provide an energy spectrum of beta radiation unique to a beta-emitting radionuclide.

³² Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Table 2-11 and FM 4-02.7, Table A-8. February 1996.

³³ Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Section 215. February 1996.

³⁴ Roessler, Charles. "Answer to Question #386 Submitted to 'Ask the Experts.'" Health Physics Society. <http://www.hps.org/publicinformation/ate/q386.html>

³⁵ Alvarez, J. L. *Defining, Explaining, and Detecting Dirty Bombs*. Auxier & Associates, Inc. Knoxville, Tenn. pp. 8–9.

³⁶ Allard, David. "Answer to Question #2522 Submitted to 'Ask the Experts.'" Health Physics Society. <http://www.hps.org/publicinformation/ate/q2522.html>

Finally, in light of the properties of radioactive materials and radiation, no standoff radiological detection capability currently exists. Though exploratory research in standoff detection is being performed, current radiological detection equipment must be exposed to radiation to detect it.

1.3.3 Shape

Joint Shape capabilities are challenged by data overload, bandwidth, electromagnetic pulse (EMP), jamming, and hostile cyberactivities.³⁷ Disruptions in data movement and surety can adversely impact the ability of the force to quickly and effectively identify, respond, and mitigate CBRN/TIM events.³⁸

1.3.3.1 Data Overload

Information essential to effective CBRND requires a diverse set of data inputs, often in near-real time, from a multitude of sources. These include data elements from information sources such as medical and veterinary surveillance, patrol observations, situation reports (SITREPs), Allied Technical Protocol 45 (ATP-45) reports, CBRN survey and sampling teams, sensors, meteorology, geographical information system (GIS), geographical systems, and others. Data overload is a challenge that can impede or prevent the functioning of Shape to effectively manage CBRND. The effectiveness of CBRND Shape requires the continuing collection, correlation, analysis, and dissemination of information to ensure current situational awareness and understanding. The potential volume of information flowing to and through CBRND Shape may exceed the ability of CBRND systems and portals to accept and/or process the data.

1.3.3.2 Bandwidth

The increasing application of automated systems to collect, process, and assess information is accompanied by escalating requirements for enlarged bandwidth needed for efficient computing and communications, including data exchange, down to tactical maneuver units. CBRND³⁹ is one among many users within the force. Operations, support services, medical, logistics, and others possess requirements for the available bandwidth. Many of these requirements are critical, while others, although not critical in and of themselves, are essential to mission accomplishment. For example, targeting and routing data for Joint Task Force (JTF) aircraft as well as fire mission data are critical to mission accomplishment. Logistics movement requests for resupply fuel and foodstuffs, although not immediately impacting operations, do support sustained operations and mission accomplishment. Bandwidth requirements supporting the collection and movement of CBRND data is potentially significant and likely to conflict with other requirements. As stated previously, the volume of information likely to flow to and through CBRND Shape is plausibly substantial. Volume flow increase during and following a CBRN/TIM event is conceivable,

³⁷ Experimentation/exercises have not focused on how staffs at the operational and strategic levels are able to perform shape functions.

³⁸ Shape relies on Sense to provide accurate and timely data that can be analyzed and promulgated—without this data, shared awareness and shared understanding are not possible.

³⁹ Until JEM and JOEF are fielded, modeling of CBRN/TIM effects and the impact of these effects on operations will not be adequate.

thereby creating demand for additional bandwidth. Concurrently, other selected users will require added bandwidth for their data. Medical is but one of these users. Heightened information flow associated with the treatment and movement of casualties is a probable demand for available bandwidth. Available and accessible bandwidth may, therefore, act as an impediment to effective CBRND Shape.

1.3.3.3 Electromagnetic Pulse

EMP is often discussed as the result of nuclear explosions. Although this effect exists, it is not the sole potential source for EMP. EMP generation devices and certain large nonnuclear explosions can create an EMP affecting electronic devices and systems in an area. Unshielded electronics can be disrupted or cease to function, data erased or corrupted, and information transfer reduced or prevented. The effectiveness of CBRND Shape depends on continuous and accurate information flow to identify and respond to a CBRN/TIM event. The application of EMP by an adversary in an area, concurrently with or preceding a CBRN/TIM attack, may adversely impact detection and response by the joint force. Ongoing research into EMP within the international community by both the military and civilian sectors, as well as the increasing availability of cross-technologies, indicates hostile application of EMP is a possibility.

1.3.3.4 Jamming

Signal jamming is a common tactic of modern warfare. The adversary seeks to impede, disrupt, and preclude the information flow between and among elements of the force. Unsophisticated equipment possessing the capability to acquire the frequency can jam a signal. Modifiable advanced technologies are readily available on the open commercial market. A moderately sophisticated adversary can impact the ability of the force to move information and data, thereby affecting operations. CBRND Shape is a major user of information generated, collected, and transferred via wireless technologies (e.g., frequency modulation [FM], ultrahigh frequency [UHF], very high frequency [VHF], etc.). Jamming of wireless networked sensors to CBRN/TIM reconnaissance reports, as well as others, is a potential information gap that an adversary may exploit. The resulting information gap might delay CBRN/TIM detection and response.

1.3.3.5 Hostile Cyberactivities

A significant future challenge will be overt adversarial use of computer network attack. Hostile cyberactivities are not limited to the actions and activities of an adversary. Cyberattacks may also be initiated and maintained by nationals of friendly nations—including U.S. citizens—opposed to U.S. policies and activities. Third parties may also be engaged by an adversary to conduct hostile cyberactivities against the force. Information systems technologies and knowledge are widespread and easily available in the global marketplace. Operating systems are limited to a few and, with selected exceptions, are well known and understood, as are database systems. Misinformation, data corruption or destruction, software alteration, portal blocking, and more are all potential issues affecting the reliability and effectiveness of CBRND Shape. For example, if adversaries gained remote access to a dispersed CBRN/TIM Integrated Detection Network (IDN), they could create false reports of CBRN/TIM detections until the actual reports are ignored or suppress reporting of CBRN/TIM detections by the system. Or an unsophisticated

adversary could hire a third party to perform cyberattacks on the information systems of the joint force. An adversary could employ a random generation worm to overload the information portal, crashing the portal and suppressing information flow, and seize the opportunity to employ a CBRN/TIM agent. Friendly and U.S. nationals may also conduct cyberattacks against joint forces. The reasons may range from curiosity to opposition to U.S. policies and activities. An example of these types of attacks was the attempt by U.S. citizens opposed to U.S. operations in Iraq to disrupt U.S. government and military information operations.

1.3.3.6 Other Issues

There are challenges to shaping the battlefield that are beyond protecting computer networks from attack. Additional issues that challenge or disrupt joint Shape capabilities include the following:

- weather/meteorological and oceanographic
- intelligence (e.g., geospatial intelligence)
- ground effects (urban)
- system interoperability
- C2 early warning
- logistics information availability and accuracy
- operator data/information overload
- cognitive challenges

1.3.4 Shield

Joint Shield capabilities are challenged by technical issues related to individual respiratory protection against toxic industrial chemicals, individual protection against penetrating radiation, and prophylaxes for blister and nerve agent exposure.

1.3.4.1 Individual Respiratory Protection against Toxic Industrial Chemicals

(FOUO) In light of the more than 1000 industrial chemicals deemed significant hazards by the International Task Force 40 (ITF-40)⁴⁰, complete individual protection against all hazardous industrial chemicals is infeasible,⁴¹ yet respiratory protection against the high-risk toxic industrial chemicals seems fitting. Nevertheless, military respiratory protection may be deficient in protecting against numerous, high-risk TICs, ostensibly because of difficulties in designing gas canisters that effectively bind these TICs. Assigned extreme risks ratings by ITF-40 because

⁴⁰ USACHPPM Report 47-EM-6154-03: *Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40*. November 2003. (FOUO)

⁴¹ Note: Military nuclear, biological, and chemical respirators and protective suits were generally designed for protection against traditional chemical warfare agents, not TICs. Furthermore, in approximately 17% of the 1756 industrial chemicals evaluated by the task force, chemical flammability was either the sole critical hazard or one of the critical hazards. Most individual and collective protective equipment is not designed to protect against high temperatures and/or pressures.

of their lethality, flammability, instability, and probability of use, these chemicals are poorly adsorbed by common gas canisters. Accordingly, exposure to any of these chemicals may result in immediate penetration of a protective mask that uses one of these common gas canisters. Chemical asphyxiants, upon human internalization, cause hypoxia by either preventing uptake of oxygen in the blood (e.g., carbon monoxide) or inhibiting normal oxygen transfer either from the blood to tissues or within a cell.⁴² In addition, fuming nitric acid, like other highly reactive materials, can degrade protective equipment.⁴³

(FOUO) Furthermore, some hazardous industrial chemicals are simple asphyxiants, meaning that, though they may not have a direct physiological impact on the body, they displace oxygen in the air and thus cause an oxygen-deficient environment.⁴⁴ Therefore, an individual may need an atmosphere-supplying respirator if a significant release of these chemicals has occurred. An air-purifying respirator will be inadequate since it provides oxygen at the surrounding atmospheric level.

1.3.4.2 Individual Protection against Penetrating Radiation

Effectively protecting (shielding) against penetrating ionizing radiation (e.g., neutron and high-energy gamma radiation) is difficult, particularly within the context of individual protection. Whereas light clothing, gloves, or even a sheet of paper can protect against alpha radiation,⁴⁵ and less than one-half inch of aluminum, plastic, or glass provides adequate shielding against beta radiation,⁴⁶ thick and dense materials are frequently required to sufficiently protect against neutron and high-energy gamma radiation.

In regards to gamma radiation, shielding effectiveness is a function of the thickness and density of shielding material. For example, a 2.8-inch (7.2 cm)-thick barrier of water, a 1.3-inch (3.3 cm)-thick concrete barrier, a 0.4-inch (1.0 cm)-thick iron barrier, or a 0.15-inch (0.38 cm)-thick lead barrier is required to reduce the incident gamma radiation dose rate by 50% for 500

⁴² Sutherland, Pamela J. "Spotlight on Asphyxiants." U.S. Department of Energy's Chemical Safety Program. http://tis.eh.doe.gov/web/chem_safety/Docs/asphyx.pdf

⁴³ *USACHPPM Report 47-EM-6154-03: Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40*. November 2003. p. VI-11. (FOUO)

⁴⁴ Occupational Safety and Health Administration defines an oxygen-deficient atmosphere as one with <19.5% O₂ by volume. The oxygen content is approximately 21% by volume at sea level.

⁴⁵ Headquarters, Department of the Army. *FM 4-02.7: Health Service Support in a Nuclear, Biological, and Chemical Environment*, Table A-8. Washington, DC. October 2002. Headquarters, Department of the Army, the Navy, and the Air Force, and Commandant, Marine Corps. *FM 4.02-283/NTRP 4-02.21/AFMAN 44-16(I)/MCRP 4-11.1B: Treatment of Nuclear and Radiological Casualties*, Section 2-5. Washington, DC. December 2001.

⁴⁶ Headquarters, Department of the Army, the Navy, and the Air Force, and Commandant, Marine Corps. *FM 4.02-283/NTRP 4-02.21/AFMAN 44-16(I)/MCRP 4-11.1B: Treatment of Nuclear and Radiological Casualties*, Section 2-5. Washington, DC. December 2001. Frame, Paul. "Answer to Question #44 Submitted to 'Ask the Experts.'" Health Physics Society. <http://hps.org/publicinformation/ate/q44.html>. Chabot, George. "Answer to Question #1094 Submitted to 'Ask the Experts.'" Health Physics Society. <http://hps.org/publicinformation/ate/q1094.html>

keV photons.⁴⁷ Since individual protective equipment (IPE) does not include thick and dense shielding, it does not provide sufficient protection from external high-energy gamma radiation.

In regards to neutron radiation, shielding effectiveness is a function of thickness and composition of the shielding material. Though materials with a high hydrogen content (e.g., water, paraffin, and damp earth),⁴⁸ efficiently absorb neutrons traveling through them, gamma radiation may be subsequently emitted as a result of slow neutron capture in hydrogen nuclei.⁴⁹ Therefore, other materials that have considerable affinities for capturing slow neutrons but do not produce significant secondary gamma radiation in the process may be used. One example of such a material is boron-10, which, upon neutron capture, produces nonpenetrating alpha particles rather than penetrating gamma radiation. Since IPE does not include neutron-shielding materials at appropriate thicknesses, it provides negligible protection against neutron radiation.

1.3.4.3 Medical Prophylaxes

The biochemical complexity of the effects of sulfur mustard on cellular tissue and the effects of secondary cellular processes (e.g., aging) caused by nerve agent intoxication, particularly soman, complicates medical prophylaxes for exposure to these chemical warfare agents.

1.3.4.3.1 Sulfur Mustard Vesication

The biochemical complexity of HD vesication has made developing effective medical countermeasures difficult. In 1996, the first coherent model of the basic pathological processes that occur in cells and tissues exposed to HD was constructed.⁵⁰

Not only can HD have many direct effects, such as alkylation of proteins and membrane components as well as inflammatory cells; in addition, it can target deoxyribose nucleic acid (DNA) with subsequent activation of poly(ADP-ribose) polymerase (PARP). PARP activation can then initiate a series of metabolic changes culminating in protease activation. The penultimate event is the epidermal-dermal separation that occurs in the lamina lucida of the basement membrane zone. As a result of major inflammatory response and changes in the tissue hydrodynamics, fluid fills the cavity formed by the epidermal-dermal separation and forms a blister.

⁴⁷ Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Part I, Section 715. February 1996.

⁴⁸ Headquarters, Department of the Army. *FM 4-02.7: Health Service Support in a Nuclear, Biological, and Chemical Environment*, Table A-8. Washington, DC. October 2002. *FM 4.02-283/NTRP 4-02.21/AFMAN 44-16(I)/MCRP 4-11.1B: Treatment of Nuclear and Radiological Casualties*, Section 2-5. Washington, DC. December 2001.

⁴⁹ Chabot, George. "Answer to Question #1094 Submitted to 'Ask the Experts.'" Health Physics Society. <http://hps.org/publicinformation/ate/q1094.html>

⁵⁰ Smith, William J., Michael C. Babin, Robyn C. Kiser, et al. "Development of Medical Countermeasures to Sulfur Mustard Vesication." U.S. Army Medical Research Institute of Chemical Defense and Battelle Memorial Institute. p. 2.

Now that the biochemical mechanisms of HD vesication have been elucidated, research is focusing on finding prophylactic or therapeutic compounds to inhibit one of six biochemical events: DNA alkylation, DNA strand breaks, PARP activation, disruption of calcium proteolytic activation, and inflammation.

1.3.4.3.2 Nerve Agent Aging

Though medical treatment, including such drugs as atropine, oximes (2-PAM), and diazepam can be administered upon the onset of symptoms of acetylcholinesterase (AChE) inhibition, soman exposure presents an additional therapeutic challenge⁵¹ because soman rapidly undergoes a second reaction, termed “aging,” which makes inhibited AChE resistant to spontaneous or oxime-mediated reactivation. Aging occurs during intoxication by other nerve agents, but aging by soman is notably rapid. The aging half-time for soman is a couple of minutes, likely an inadequate amount of time for even highly trained personnel to administer medical treatment.⁵² Contrast the aging half-time for soman with that of sarin (several hours), tabun (more than 10 hours), and VX (two days). Pyridostigmine bromide (PB) is approved as a pretreatment for personnel at high risk for soman exposure as it temporarily masks the active site of a fraction of AChE molecules and thus protects the enzyme from irreversible reactions with soman molecules.⁵³ Nevertheless, a single PB dose does not offer prolonged protection. In guinea pigs, the maximum protective benefit of PB pretreatment against soman occurs 60 minutes after administration (protective ratio of 12.5).⁵⁴ Following this time, the protection afforded by the PB pretreatment begins to decrease, and at 4 hours, the protective ratio is 3.2. Because of this and other deficiencies of PB pretreatment, some research has focused on identifying proteins that can act as biological scavengers of organophosphorus compounds and that remain stable in circulation for long periods of time.⁵⁵ The biological scavenger needs to be able to prophylactically inactivate the internalized nerve agent before the agent reacts with the target AChE. In light of the aging time of soman, it must occur within several minutes of soman exposure.

⁵¹ Lenz, David E. “Bioscavengers as a Pretreatment for Nerve Agent Exposure.” US Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, MD. p. 1

⁵² Golomb, Beatrice A. A Review of Scientific Literature as It Pertains to Gulf War Illnesses: Volume 2, Pyridostigmine Bromide, Chapter 3. National Defense Research Institute.

http://www.gulflink.osd.mil/library/randrep/pb_paper/mr1018.2.chap3.html

⁵³ Lenz, David E. “Bioscavengers as a Pretreatment for Nerve Agent Exposure.” US Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, MD. p. 1

⁵⁴ Golomb, Beatrice A. A Review of Scientific Literature as It Pertains to Gulf War Illnesses: Volume 2, Pyridostigmine Bromide, Chapter 3. National Defense Research Institute.

http://www.gulflink.osd.mil/library/randrep/pb_paper/mr1018.2.chap3.html

⁵⁵ Lenz, David E. “Bioscavengers as a Pretreatment for Nerve Agent Exposure.” US Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, MD. p. 1

1.3.5 Sustain

Joint Sustain capabilities are complicated by significant chemical, biological, radiological, and nuclear (CBRN) persistency, the potential for secondary contamination (cross-contamination), and nerve agent and toxin physiological effects.

1.3.5.1 Agent Persistency

In addition to affecting Sense and Shield capabilities, the persistency of a CBRN agent significantly influences the necessity for sustaining operations, particularly decontamination. More specifically, the persistence⁵⁶ of chemical agents, viability of biological agents, and half-lives of radiological agents (and their daughter products) affect the ability of a military force to quickly restore operational capabilities following a CBRN incident.

1.3.5.1.1 Chemical Agent Persistence

Contamination by nonpersistent chemical agents, such as hydrogen cyanide (which typically persists for minutes), does not typically require substantial decontamination efforts, though, due to the fast rate of action of most chemical agents, rapid medical diagnostics and therapeutics action may be needed to restore exposed personnel. Contamination by persistent chemical agents, such as VX (which can persist for weeks in low-temperature environments), may necessitate extensive decontamination if the agent is a significant threat in its current state and location. Personnel exposed to persistent agents may, like those exposed to nonpersistent agents, require rapid medical diagnostics and therapeutics.

In addition to a chemical agent's vapor pressure⁵⁷ (related to the rate in which the agent evaporates), meteorological conditions, such as atmospheric temperature, wind speed, precipitation, and air stability, as well as surface parameters, such as surface temperature, vegetation, and contact surface, affect the agent's outdoor persistence. A chemical agent with a low vapor pressure on a sorbent, porous, nonreactive surface (e.g., sand) in a cold (temperature slightly above agent's freezing point), stable, windless, environment without precipitation or vegetation persists for the greatest amount of time. In contrast, a chemical agent with a high vapor pressure on a nonsorbent, nonporous surface (e.g., chemical-resistant surface) in a hot, unstable, high-wind environment with heavy precipitation and vegetation persists for the least amount of time.⁵⁸ A nonpersistent agent may remain a hazard in a confined space where the evaporated agent accumulates. Therefore, decontamination may be required in a poorly ventilated, confined space, even though it may not be required outdoors.

⁵⁶ Persistence is rarely defined quantitatively, though one reference defines it as the time required for a 1500-fold agent density decrease. Sage, G. W., and P. H. Howard. "Environmental Fate Assessments of Chemical Agents HD and VX." Syracuse Research Corporation. Syracuse, N.Y. June 1989. p. 5.

⁵⁷ A chemical's volatility is related to its vapor pressure. Hence, a chemical with a high vapor pressure is typically highly volatile.

⁵⁸ Headquarters, Department of the Army, Department of the Air Force, United States Marine Corps. *FM 3-6/FMFM 7-11-H/AFM 1-5-7: Field Behavior of NBC Agents (Including Smoke and Incendiaries)*, Chapter 1: Chemical Agents. Washington, D.C. November 1986.

1.3.5.1.2 Biological Agent Viability

Whereas persistence is used to describe the longevity of the hazard posed by a chemical agent, viability is typically used to describe the longevity of the biological hazard because only biological agents viable for infection are generally hazardous. For those biological agents that remain viable for long periods of time, thorough equipment and fixed-site decontamination may be necessary since passive decontamination (weathering) may be impractical. Consider that under ideal conditions, non-spore-forming microorganisms can remain viable for up to 100 days,⁵⁹ and *Bacillus anthracis* (anthrax) spores can survive for decades.⁶⁰ Yet anthrax spores exposed to the direct rays of the sun will not stay viable for more than a few hours if deposited on a hard flat surface.⁶¹ Table 1-1 includes information on the persistence (and other properties) of pathogens and toxins of military importance.

A biological agent's viability is affected by its concentration, exposure to UV radiation and pollutants, environmental temperature, humidity, and the contacting surface material. Biological agents disseminated at low to moderate temperatures (ideally slightly above the freezing temperature of water) in unpolluted, humid environments with little or no UV radiation exposure remain viable for the greatest amount of time. Conversely, biological agents disseminated in polluted, dry environments at extreme temperatures and high UV radiation exposure remain viable for the least amount of time.⁶²

⁵⁹ Parker, Andrew, Jorma Kirsi, William H. Rose, et al. "Counter Proliferation-Biological Decontamination." Andrulis Research Corporation. February 1998. p. 104.

⁶⁰ Office of the Surgeon General. *Textbook of Medical Medicine, Part I Warfare, Weaponry, and the Casualty, Medical Aspects of Chemical and Biological Warfare*. 1997. p. 469.

⁶¹ Parker, Andrew, Jorma Kirsi, William H. Rose, et al. "Counter Proliferation-Biological Decontamination." Andrulis Research Corporation. February 1998. p. 106.

⁶² Headquarters, Department of the Army, Department of the Air Force, United States Marine Corps. *FM 3-6/FMFM 7-11-H/AFM 1-5-7: Field Behavior of NBC Agents (Including Smoke and Incendiaries)*, Chapter 3: Biological Agents and Nuclear Detonations. Washington, D.C. November 1986.

Table 1-1. Pathogens and Toxins of Military Importance and Selected Properties

Disease (Etiologic Agent)	Persistence of Etiologic Agent ⁶³	Likely Methods of Dissemination ⁶⁴	Transmissibility Man to Man ⁶⁵
Bacteria and Rickettsia			
Anthrax (<i>Bacillus anthracis</i>)	Spores are highly stable	Aerosol	No
Brucellosis (<i>Brucellae abortus, melitensis, suis, and canis</i>)	High in wet soil and food	Aerosol, food supply	Via contact with lesions
Glanders (<i>Burkholderia mallei</i>) and melioidosis (<i>Burkholderia pseudomallei</i>)	Stable in soil and water (<i>B. pseudomallei</i>)	Aerosol	Negligible
Plague (<i>Yersinia pestis</i>)	Up to one year in soil; 270 days in live tissue	Aerosol, infected vectors	High
Q Fever (<i>Coxiella burnetii</i>)	Months on wood and sand	Aerosol, food supply	No
Tularemia (<i>Francisella tularensis</i>)	Months in moist soil or other media	Aerosol	No
Viruses			
Smallpox (variola major)	Stable	Aerosol	High
Viral equine encephalitis (e.g., Western, Eastern, and Venezuelan equine encephalitis)	Relatively unstable	Aerosol, infected vectors	Low
Viral hemorrhagic fevers (e.g., Marburg, Ebola)	Relatively unstable—depends on agent	Aerosol	Moderate
Toxins			
Botulism (<i>Clostridium botulinum</i>)	Weeks in nonmoving water and food	Food/water supply, aerosol	No
Ricin (<i>Ricinus communis</i>)	Stable	Aerosol	No
Staphylococcal enterotoxin B (<i>Staphylococcus aureus</i>)	Stable, resistant to freezing	Aerosol, food/water supply	No
T-2 Mycotoxins	Stable	Aerosol, food/water supply	No

1.3.5.1.3 Radiological and Nuclear Hazard Half-life

Radiological and nuclear contaminants decay at rates proportional to their half-lives, defined as the amount of time required for half of the species' nuclei to undergo radioactive decay. However, many radioisotopes successively decay into other radioactive elements before becoming stable. Though iodine-135 has a half-life of only 6.7 hours, one of its daughter products, cesium-135, has a half-life of 2.3 million years. Following a nuclear explosion, strontium-90 and cesium-137, two reaction by-products with half-lives of approximately 30 years, cause significant long-term fallout hazards because the radioisotopes can be ingested

⁶³ USACHPPM. *The Medical NBC Handbook, USACHPPM Tech Guide 244*, Table 4-F. May 2000. U.S. Army Medical Research Institute of Infectious Diseases. *Medical Management of Biological Casualties Handbook*. 4th ed. February 2001. (For glanders and melioidosis, plague, Q fever, tularemia, viral hemorrhagic fevers, botulinum toxin, and staphylococcal enterotoxin B [resistant to freezing].)

⁶⁴ USACHPPM. *The Medical NBC Handbook, USACHPPM Tech Guide 244*, Table 4-F. May 2000.

⁶⁵ USACHPPM. *The Medical NBC Handbook, USACHPPM Tech Guide 244*, Table 4-F. May 2000. *Medical Management of Biological Casualties Handbook*. 4th ed. February 2001. (For viral hemorrhagic fevers.)

through foods which have incorporated them.⁶⁶ Since these and many other radioisotopes (and their daughter products) have long half-lives, radiological decontamination of equipment and fixed sites may be necessary to restore operations.

Table 1-2. Radioactive Materials of Military Significance and Selected Properties⁶⁷

Radioactive Material*	Radiation Type	Half-Life ⁶⁸
<i>Americium-241</i>	Alpha (gamma in daughter products)	458 years
<i>Cesium-137</i>	Beta/gamma	30.2 years
<i>Cobalt-60</i>	Beta/gamma	5.26 years
Depleted uranium	Limited alpha/beta/gamma (no threat)	4.51×10^9 years
<i>Iodine-131, -132, -134, -135</i>	Beta/some gamma	8.06 days, 2.29 hours, 53 months, 6.7 hours
<i>Phosphorus-32</i>	Beta	14.3 days
<i>Plutonium-239, -238</i>	Alpha	2.44×10^4 years, 86.4 years
<i>Radium-226</i>	Alpha (beta/gamma in daughter products)	1622 years
<i>Strontium-90</i>	Beta	29 years
<i>Tritium-3</i>	Beta (no threat)	12.6 years
<i>Uranium-238, -235, -239</i>	Alpha/beta/gamma	4.51×10^9 years, 7.13×10^8 years, 23.5 months

* Italicized materials are reactants or products of nuclear fission or fusion reactions.

1.3.5.2 Secondary Contamination (Cross-Contamination)

The potential for secondary contamination or cross-contamination (i.e., additional contamination following initial deposition through dissemination), complicates sustaining activities, particularly decontamination. Chemical agents can interact with the surface material, inhibiting decontamination, and risking personnel or other material to exposure. Biological and radiological particles deposited on a surface can become airborne again.⁶⁹ These phenomena disrupt efforts to recover essential functions that are free from the effects of CBRN hazards and to return operational capabilities to preincident levels.

1.3.5.2.1 Chemical Agent Adsorption/Absorption

Adsorption and absorption of chemical agents deposited on the surfaces of certain materials (e.g., soil, sand, brick, stone, cement, wood, paints, plastics, rubber, canvas, leather, cotton, and

⁶⁶ Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Section 320. February 1996.

⁶⁷ Military Medical Operations Office, Armed Forces Radiobiology Research Institute. *Medical Management of Radiological Casualties*. December 1999; Headquarters, Department of the Army, and Commandant, US Marine Corps. *FM 3-5/MCWP 3-37.3: NBC Decontamination*. Washington, DC. 28 July 2000.

⁶⁸ Friedlander, G, Kennedy, J.W., Macias, E.S., et. al. *Nuclear and Radiochemistry*. John Wiley & Sons. 3rd Ed. July 1981.

⁶⁹ Garland, J.A., Watterson, J., Jayasekera, P.N., et. Al. "The Hazard From Reaerosolised Biological Warfare Agents." European Research Office of the U.S. Army. London, England. August 1999. p. 5

woolens) can significantly inhibit decontamination.⁷⁰ Adsorption, the physical adherence of a molecule to a surface, proceeds rapidly as the agent distributes across the surface and seeps into cracks and crevices. Absorption, the transfer of a diffused molecule into a material's interior, proceeds more slowly. Adsorbed agent is resistant to physical removal, but can be removed by organic solvents or chemical decontaminants. Absorbed agent is even more resistant to removal by physical or chemical means, and the use of nonaqueous decontaminants can actually cause chemical agents to penetrate even deeper into the material because of solubility effects.⁷¹

Temporary nuclear, biological, and chemical (NBC)-resistant covers over vulnerable equipments offer protective measures to avoid agent deposition as well as adsorption/desorption on any type of material surfaces.

If only surface contamination is removed, typically through weathering or active decontamination, the remaining sorbed agent (both adsorbed and absorbed) will desorb for days, months, and even years, depending on the agent, material, surface temperature, and boundary layer flow rate. It is possible for a surface to remain a cross-contamination concern as a result of desorption even though it appears free of surface contamination. Assessments based solely on measured vapor evolution rates may not adequately predict the direct contact hazard present at the desorbing surface. For example, a more severe degree of injury can be caused by direct contact with mustard-contaminated surfaces without detectable liquid on them than can be explained simply by vapor evolution. For this reason, detection of agent vapor alone is insufficient in determining whether a surface is a potential direct contact hazard.

1.3.5.2.2 Biological and Radiological Hazard Reaerosolization/Resuspension

Reaerosolization and resuspension⁷² of biological agents and radiological particles can extend the contamination area, resulting in additional casualties and greater decontamination efforts. Typically caused by the wind and human activities, reaerosolization and resuspension can occur long after the initial agent dissemination, and under ideal conditions the resultant airborne concentration can be of the same order as that of the original dissemination. Approximately two to three months following the Chernobyl accident, radioactive particle resuspension replaced dissemination from the breached reactor as the dominant contributor to airborne radioisotope concentrations.⁷³ In this incident, resuspension of the radioactive particles resulted in a long-term

⁷⁰ Carlon, Hugh R. "Contact Hazard: An Overview." U.S. Army Armament Munitions Chemical Command. Aberdeen Proving Ground, Md. January 1990. pp. 7–15.

⁷¹ Trapp, Ralf. *The Detoxification and Natural Degradation of Chemical Warfare Agents*. Stockholm International Peace Research Institute. London. 1985. p. 73.

⁷² Ostensibly, "reaerosolization" and "resuspension" are synonymous. "Reaerosolization" is frequently associated with biological agent particles, whereas "resuspension" usually refers to radiological and inert particles. Garland, J. A., J. Watterson, P. N. Jayasekera, et al. "The Hazard from Reaerosolised Biological Warfare Agents." European Research Office of the U.S. Army. London. August 1999. p. 5.

⁷³ Garland, J. A., J. Watterson, P. N. Jayasekera, et al. "The Hazard from Reaerosolised Biological Warfare Agents." European Research Office of the U.S. Army. London. August 1999. p. 12.

secondary hazard. Resuspended contaminants were detected across Europe and much of the Northern hemisphere over several years after the accident.⁷⁴

Numerous factors, including wind speed, time since deposition, particle size, surface properties (such as roughness and moisture content), and mechanical disturbance, affect the likelihood and extent of particle reaerosolization. Biological and radiological agent particles of small particle sizes, deposited on rough, moist surfaces for a long period since deposition, and exposed to low wind speeds and little mechanical disturbance are unlikely to be significantly reaerosolized. Conversely, biological and radiological agent particles of large particle sizes, deposited on smooth, dry surfaces for a short period since deposition, and exposed to high wind speeds and extensive mechanical disturbance are likely to be significantly reaerosolized.

1.3.5.3 Medical Treatment

Seizure activity induced by nerve agent exposure, dissimilarities in mechanism of action between toxin classes, and the fast rate of action of some toxins complicates medical treatment.

1.3.5.3.1 Medical Treatment for Nerve Agent-Induced Seizures

Significant AChE inhibition through exposure to organophosphorus compounds does not cause just acute, life-threatening consequences. Individuals who survive significant exposure will likely experience electrical seizure activity.⁷⁵ Traditional medical treatment will not afford sufficient protection against seizure activity, which is the most critical factor in development of brain damage following nerve agent exposure.⁷⁶ Anticonvulsants such as diazepam can arrest chemical agent-induced seizures when administered shortly after seizure onset; however, their effectiveness wanes after approximately 20 minutes, allowing seizures to recur.⁷⁷ Unless seizure activity is permanently arrested, neuropathology and long-term behavioral effects may result. The risk of nerve agent-induced brain damage is so significant that, besides head trauma, nerve agent exposure is considered the main neurological threat on the modern battlefield. For this reason, a considerable amount of research is being devoted to developing neuroprotective adjunct drugs capable of preventing development of delayed neuronal cell death when administered one or more hours after the onset of seizures.

⁷⁴ Garland, J.A., Watterson, J., Jayasekera, P.N., et. Al. "The Hazard from Reaerosolised Biological Warfare Agents." European Research Office of the U.S. Army. London, England. August 1999. p. 5

⁷⁵ Newmark, Jonathan, Ballough, Gerald P.H., and Margaret G. Filbert. "Neuroprotection for Nerve Agent-Induced Brain Damage." U.S. Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, MD. p. 2

⁷⁶ Ballough, Gerald P.H and Margaret G. Filbert. "Protection Against Chemical Agent-Induced, Seizure-Related Neuronal Cell Death." La Salle University and U.S. Army Medical Research Institute of Chemical Defense. p. 1

⁷⁷ Newmark, Jonathan, Ballough, Gerald P.H., and Margaret G. Filbert. "Neuroprotection for Nerve Agent-Induced Brain Damage." U.S. Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, MD. p. 2

1.3.5.3.2 Medical Treatment for Toxin Exposure

Effective medical treatment for toxin exposure is complicated by the different mechanisms of action between toxin classes and the fast rate of action of some toxins.

Unlike chemical agents, toxins are categorized under many classes, and they differ widely in their mechanism of action.⁷⁸ For example, saxitoxin, a neurotoxin produced by marine dinoflagellate, blocks nerve conduction directly and causes death by paralyzing muscles of respiration. Microcystin, produced by blue-green algae, binds specifically to an important enzyme of liver cells and only damages the liver. Ricin, derived from the bean of the castor plant, blocks protein synthesis in many cells of the body.

Furthermore, though not as fast-acting as nerve agents, some toxins incapacitate quickly enough to offer little time for therapy. After inhalation of a lethal dose of saxitoxin, death can occur within minutes. Unprotected soldiers who inhaled a lethal dose would likely die quickly unless artificial ventilation were administered immediately. Others cause few or no clinical symptoms of intoxication for many hours, yet they initiate irreversible biochemical processes within minutes or several hours, which lead to severe debilitation or death several days later. Though symptoms and death may not occur for hours, a lethal dose of microcystin will result in irreversible damage to the liver within 15–60 minutes after exposure. Moreover, though inhaled ricin may not present signs of intoxication for 12–24 hours, the toxin causes irreversible biochemical reactions within 60–90 minutes of exposure.

For these and other reasons, development of effective medical treatments for toxin exposure is difficult. In light of dissimilarities in mechanisms of action between toxins, current treatments, with few exceptions, are not effective against more than one toxin. Medical treatment must be fast-acting because of the short delay before irreversible damage occurs following internalization of some toxins. Finally, since many toxins, including neurotoxins, affect fundamental biochemical mechanisms within the body, drugs that block or reverse these effects are often debilitating or toxic themselves. One notable exception is rifampin, an antituberculosis drug, which safely stops lethal intoxication by microcystin if given to laboratory animals therapeutically within 15–30 minutes of exposure.

1.4 Methodology

This section provides an overview of the methodology used in conducting the FNA and FSA. It outlines the context, assumptions, data collection, and specific steps used in the analysis. As much as possible, the analysis tracks the steps presented in the guiding instruction and manual (CJCSI 3170.01D and CJCSM 3170.01A).

⁷⁸ Franz, David R. *Defense Against Toxin Weapons*. U.S. Army Medical Research Institute of Infectious Diseases. Ft. Detrick, Md. 1997.

1.4.1 Context

Passive CBRND has four operational elements, which serve as key capability categories: Sense, Shape, Shield, and Sustain. Figure 1-4 displays the interrelationship between these four “S” elements.

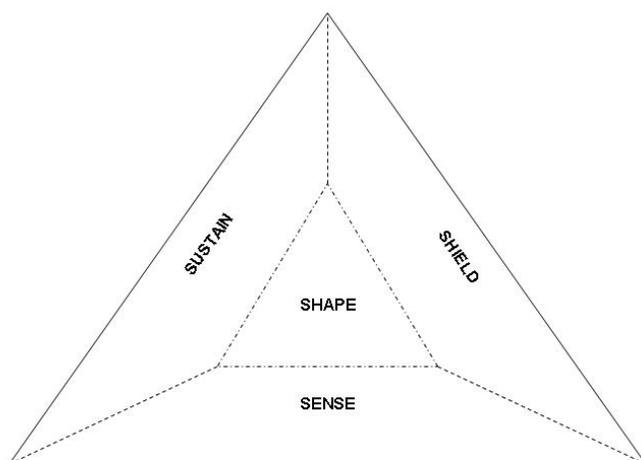


Figure 1-4. CBRND Operational Elements

The JRO *Baseline Capability Assessment* describes the four operational elements as follows:

- **Sense**—The capability to continually provide the information about the CBRN/TIM situation at a time and place by detecting, identifying, and quantifying CBRN/TIM hazards in air, water, on land, on personnel, equipment, or facilities. This capability includes detecting, identifying, and quantifying those CBRN/TIM hazards in all physical states (solid, liquid, gas).
- **Shape**—The ability to characterize the CBRN hazard to the force commander—develop a clear understanding of the current and predicted CBRN situation; collect, query, and assimilate info from sensors, intelligence, medical, etc., in near-real time to inform personnel, provide actual and potential impacts of CBRN hazards; envision critical Sense, Shield, and Sustain end states (preparation for operations); and visualize the sequence of events that moves the force from its current state to those end states.
- **Shield**—The capability to shield the force from harm caused by CBRN/TIM hazards by preventing or reducing individual and collective exposures, applying prophylaxes to prevent or mitigate negative physiological effects, and protecting critical equipment.
- **Sustain**—The ability to conduct decontamination and medical actions that enable the quick restoration of combat power, maintain/recover essential functions that are free from the effects of CBRN/TIM hazards, and facilitate the return to preincident operational capability as soon as possible.

These elements are defined to be comprehensive while being mutually exclusive. The comprehensiveness of these elements is designed to ensure that any CBRND task performed by the joint force, Service unit, staff, or organization could fit underneath one of these elements.

The mutual exclusivity of these elements is designed to ensure that any CBRND task performed by any joint organization or Service unit (i.e., Navy, Marine Corps, Army, Air Force, or Coast Guard) or combat support agency will fit in only one place in the element structure. The tasks outlined in this FNA and FSA are organized under these elements.

Another architecture under which the FNA and FSA tasks are aligned is derived from the *Universal Joint Task List (UJTL)*. This architecture encompasses the levels of war:

- Strategic (National and Theater)
- Operational
- Tactical

The *UJTL* defines these levels as follows:

The **strategic level of war** is divided into two sublevels: strategic national (SN), which encompasses DoD, Service, and interagency tasks, and strategic theater (ST), which encompasses combatant command tasks. Establishing these sublevels provides clarity and focus for task development and execution. At this level, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives, define limits, and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans.

At the **operational (OP) level of war**, campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic, administrative, and CBRND support of tactical forces and provide the means by which tactical successes are exploited and sustained to achieve strategic objectives.

At the **tactical (TA) level of war**, battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives.

Using the CBRND Operational Elements and the *UJTL* levels of war, the tasks within this FNA and FSA are presented in the coming chapters as shown in Figure 1-5. In other words, for each cell of Figure 1-5, an associated list of tasks was developed. For example, a specific task list was developed for the area of Strategic Theater/Shape. Separate and distinct lists are generated for the other cells.

S-Element \ Level of War	Sense	Shape	Shield	Sustain
Strategic National		↓		
Strategic Theater		<div style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;"> <i>Specific tasks to be performed</i> </div>		
Operational				
Tactical				

Figure 1-5. CBRND FNA and FSA Architectures

1.4.2 Assumptions

Assumptions for this analysis include the following:

- FAA-developed tasks, conditions, and standards will remain relevant over the time frame of the analysis (near, mid-, and far term).
- Threat-related technologies or applications area represented through the Initial Threat Warning Assessment (ITWA) for CBRND (dated 14 July 2004) provided by the Defense Intelligence Agency (DIA) in conjunction with this effort.
- Current and planned materiel/equipment development programs will produce materiel/equipment that performs in accordance with development requirements as stated in the operational requirements documents and capability development documents.

1.4.3 Data Collection

Data collected during four previous study efforts, including the Contamination Avoidance, Protection, Battle Management, and Restoration MAAs and MNAs, was leveraged for the FNA and FSA. Additional information was requested, as needed, to complete the FNA and FSA. A complete listing of contacts follows, organized by MAA and MNA topic area.

Contamination Avoidance

- Maneuver Support Center (MANSCEN), Ft. Leonard Wood, MO
- U.S. Army Chemical School, Ft. Leonard Wood, MO
- Research Development and Engineering Command (RDECOM), Edgewood, MD
- Air Force Civil Engineer Support Agency (AFCESA), Tyndall Air Force Base (AFB), FL
- Air Combat Command, United States Air Force (USAF), Langley AFB, VA
- Nuclear, Biological, and Chemical Requirements, U.S. Army Training and Doctrine Command (TRADOC), Ft. Monroe, VA

- Commander Fleet Forces Command (CFFC), Norfolk, VA
- U.S. Army Office of the Surgeon General, Alexandria, VA
- NBC Requirements, Marine Corps Combat Development Command (MCCDC), Quantico, VA
- Headquarters (HQ), U.S. Coast Guard, Washington, DC
- HQ, USAF, Air Force Civil Engineer Readiness Program Branch (AF/ILEXR), Washington, DC
- Office of the Chief of Naval Operations (OPNAV) N70, U.S. Navy, Washington, DC
- JSMG CAM Review, Fredericksburg, VA
- Medical Requirements Subpanel, JSIG (All Service Medical Representatives)
- NBC Contamination Avoidance Material and Technology Working Group, RDECOM, Edgewood Arsenal, MD
- Medical Chemical and Biological Defense Research Program, USAMRMC, Ft. Detrick, MD
- 2002 Chemical and Biological National Security Program Summer Meeting, Crystal City, VA
- U.S. SOCOM, McDill AFB, Tampa, FL
- Stand-off Detection Conference, Williamsburg, VA
- Series of Strategy-to-Task working group meetings
- Rapid Detection Technologies for Food and Water Supply Safety and Security Conference, Washington, DC (2004)
- Biological-Chemical Detection Symposium, Washington DC (2004)
- Second TIC/TIM Symposium, Richmond VA (2004)

Protection

- MORS Urban Analysis Workshop, Johns Hopkins Applied Physics Laboratory
- MANSCEN, Ft. Leonard Wood, MO
- U.S. Army Chemical School, Ft. Leonard Wood, MO
- RDECOM, Edgewood, MD
- RDECOM, Natick, MA
- AFCESA, Tyndall AFB, FL
- Air Combat Command, USAF, Langley AFB, VA
- NBC Requirements, U.S. Army TRADOC, Ft. Monroe, VA
- CFFC, Norfolk, VA
- Naval Surface Warfare Center, Panama City, FL
- HQ AFRL, Tyndall AFB, FL
- U.S. Army Office of the Surgeon General, Alexandria, VA
- NBC Requirements, MCCDC, Quantico, VA
- OPNAV N70, U.S. Navy, Washington, DC
- HQ, U.S. Coast Guard, Washington, DC
- HQ, USAF, AF/ILEXR, Washington, DC
- JSMG CAM Review, Fredericksburg, VA
- Protection Symposium Wargame, Tyndall AFB (All Service Representatives, Combat Development, and Materiel Development)
- Medical Requirements Subpanel, JSIG (All Service Medical Representative)

- NBC Protection—Individual Protection Material and Technology Working Group; RDECOM, Edgewood Arsenal, MD
- NBC Protection—Collective Protection (COLPRO) Material and Technology Working Group; RDECOM, Edgewood Arsenal, MD
- DoD Canine Program Management Office
- Medical Chemical and Biological Defense Research Program; USAMRMC, Ft. Detrick, MD
- 2002 Chemical and Biological National Security Program Summer Meeting, Crystal City, VA
- SOCOM, McDill AFB, Tampa, FL
- 2002 Special Operations Forces (SOF) Chemical and Biological Conference, Tampa, FL
- DoD Canine Program Management Office, Air Force Security Forces Center, Lackland AFB, TX
- DoD Military Working Dog Veterinary Services Facility, Lackland AFB, TX
- U.S. Army Veterinary Corps, Ft. Sam Houston, TX
- Army Medical Department Center and School

Battle Management

- 2002 and 2003 Chemical and Biological National Security Program Summer Meetings, Crystal City, VA
- National Defense University Counter Proliferation Symposium
- Defense Threat Reduction Agency (DTRA) Test and Diagnostics Symposium, George Mason University, Fairfax, VA
- Network Centric Warfare Conference, Tyson Corners, VA
- Medical Requirements Subpanel, JSIG
- 2002 and 2003 SOF CB Conference, Tampa, FL
- Series of Battle Information Management Front End Analysis Integrated Process Team (IPT) meetings (2003)
- Battle Management Conference, Williamsburg, VA
- NBC Requirements, MCCDC, U.S. Marine Corps (USMC), Quantico, VA
- Chemical-Biological Defense Industrial Base Symposium, Pittsburgh, PA
- World Wide Chemical Conferences (2002 and 2003), Ft. Leonard Wood, MO
- The Warfighter/Users Vignette Working Group for CBRN Battlespace Information Management MAA, Crystal City, VA
- 2002 DoD Interoperability Conference, Mesa, AZ
- HQ, Joint Forces Command (JFCOM)
- HQ, AFRL, Tyndall AFB, FL
- RDECOM, Edgewood, MD
- HQ, AFCESA, Tyndall AFB, FL
- HQ, Air Combat Command (USAF), Langley AFB, VA
- U.S. Army TRADOC, Ft. Monroe, VA
- OPNAV N70, U.S. Navy, Washington, DC
- CFFC, Norfolk, VA
- U.S. Army Office of the Surgeon General, Alexandria, VA
- Medical Chemical and Biological Defense Research Program, USAMRMC, Ft. Detrick, MD

- CBRNE IPTs, Orlando, FL, and Las Vegas, NV
- Interservice/Industry Training, Simulation and Education Conference, Orlando, FL
- Shape Integrated Concept Team, Alexandria, VA
- Joint Effects Model (JEM) and Joint Operational Effects Federation (JOEF) Operational Requirements Document Meetings
- Network Enterprise Conference, Tyson's Corner, VA
- MANSCEN, Ft. Leonard Wood, MO
- Chemical School, Ft. Leonard Wood, MO
- Joint National Training Capability Conference, Alexandria, VA
- Enterprise Integration Conference, Tyson's Corner, VA
- MORSS Future Warrior Conference 71st Military Operations Research Society Symposium (MORSS), Quantico USMC Base, VA
- 2002 DoD Interoperability Conference, Mesa, AZ

Restoration

- Restoration Operations Program, DTRA
- Mortuary Affairs Center, U.S. Army Quartermaster Center and School, Ft. Lee, VA
- RDECOM, Edgewood, MD
- 84th Chemical Battalion at the U.S. Army Chemical School, Ft. Leonard Wood, MO
- Decontamination instructors with the Navy, Air Force, and Marine Corps Service Detachment, Ft. Leonard Wood, MO
- AFCESA, Tyndall AFB, FL
- Air Mobility Command
- Chemical Biological Incident Response Force, Indian Head, MD
- Naval Surface Forces, Atlantic
- Naval Facilities Engineering Command
- Office of Emergency Preparedness
- American Nuclear, Biological, and Chemical Delegation to the American, British, Canadian, and Australian Armies' Program
- DoD Military Working Dog Veterinary Services Facility, Lackland AFB, TX
- Army Medical Department Center and School
- Joint Readiness Clinical Advisory Board
- Defense Threat Reduction Agency
- Defense Advanced Research Projects Agency
- Walter Reed Army Institute of Research
- U.S. Army Medical Research Institute of Infectious Disease
- U.S. Army Medical Research Institute of Chemical Defense
- Armed Forces Radiobiology Research Institute
- Joint Program Executive Office
- Joint Vaccine Acquisition Program
- USAMRMC
- Department of Energy
- Decontamination ICT, Arlington, VA

- DoD Canine Program Management Office, Air Force Security Forces Center, Lackland AFB, TX
- DoD Military Working Dog Veterinary Services Facility, Lackland AFB, TX
- US Army Veterinary Corps, Ft. Sam Houston, TX

Additionally, Battelle recently visited combatant commands as part of ongoing assistance efforts. Part of the assistance effort, whether for training, exercise, or planning assistance, includes an analysis of command CBRND requirements. Pertinent data have been incorporated into the FAA. Combatant commands visited include the following:

- U.S. Central Command (USCENTCOM)
- U.S. Northern Command (USNORTHCOM)
- U.S. Southern Command (USSOUTHCOM)
- U.S. Strategic Command (USSTRATCOM)
- U.S. Pacific Command (USPACOM)
- Joint Forces Command/Joint Warfighting Center (JFCOM/JWC)
- U.S. Special Operations Command (USSOCOM)
- U.S. Transportation Command (USTRANSCOM)
- North American Aerospace Defense Command (NORAD)
- U.S. European Command (USEUCOM)

1.4.4 FAA Results

The FNA process builds upon the results of the FAA process. The primary purpose of the FAA was to identify CBRND tasks that the force must be able to perform to succeed in assigned missions. The tasks derived from the *UJTL* represent clearly defined and measurable activities accomplished by individuals, staffs, and organizations. The tasks are observable and measurable, and described using a single verb.

The task lists developed during the FAA included the following elements: task title, definition, derivation, measures, and conditions. Each of these elements provides the basis for the FNA and FSA process. For that reason, each of the elements identified during the FAA process (with the exception of the measures which will be discussed more at length in a subsequent section) are included in the FNA and FSA and are part of the task analysis of Chapters 2–17.

1.4.5 FNA

The FNA assesses the ability of the current (i.e., FY2005), near/mid-term (i.e., FY2006–FY2011) and far-term (i.e., FY2012–FY2020) joint capabilities to accomplish the tasks that the FAA identified under the full range of operating conditions and to the designated standards. Using the tasks identified in the FAA as primary input, the FNA produces as output a list of capability gaps or shortcomings that require solutions. It may also identify redundancies in capabilities that reflect inefficiencies.

The FNA describes the capability gap, overlap, or problem in operational and/or broad effects–based terms. Future adversarial threat capabilities and scientific and technological developments are considered.

The FNA analysis includes the following four-step process, which will be described in more detail in subsequent sections:

1. Translate FAA measures into standards.
2. Determine how conditions will affect task performance.
3. Determine task linkages.
4. Determine and characterize current and projected capabilities to perform the task to designated standard and assess deficiencies in identified capabilities.

1.4.5.1 Standard Development

The FNA process requires the development of standards. Standards are created when measures that have been developed as part of the task development process during the FAA are quantified. The measures developed for the CBRND FAA tasks focus on a key element of the task that, when achieved, contribute to the overall accomplishment of the activity at hand (task attainment). Most standards are quantifiable and determine how well the task is performed. Since the measures have been converted into standards for the FNA, the measures from the FAA are not repeated in this document.

During the FAA, measures were broken down into two parts: first, the criterion that describes the unit of capacity by which to gauge acceptable levels of performance and, second, a performance statement describing the element of the task to be gauged. A complete FAA measure combines these two elements—criterion and performance statement. Examples of complete measures are shown in Table 1-3.

Table 1-3. Example Measures

Criterion	Performance Statement
Hours	Between radiation surveys
Months	From request for OPLAN until transmitted
Yes/No	TIMs threat analysis conducted?

When a specific value is assigned to a criterion, it becomes a quantified criterion (e.g., 5 days, 15 instances, 80%). A standard is created when the quantified criterion is attached to a performance statement as displayed in Figure 1-6.

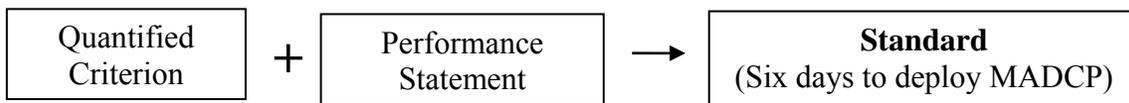


Figure 1-6. Quantified Criterion Relationship

There are problems associated with translating measures into standards, specifically the process of assigning a specific value to a criterion. Research determined that standards do not exist in

many cases. For example, one of the standards associated with the decontamination tasks relates to how well the contamination was removed. No documentation currently identifies an acceptable level of contamination other than to state that the contamination should not be detectable. The problem associated with this type of documentation is that the acceptable level depends on the capability of detectors that do not currently detect to a level of “zero.” Selecting a specific value to assign to a criterion in these cases cannot be done with scientific data and evidence that support a specific value. In these instances, a more generic value may have been selected, such as “Remove contamination to a level that meets operational objectives.” These objectives can then be determined on a case-by-case basis, taking into consideration operational requirements and the mission as determined by the commander. In some cases, generic “yes” or “no” values may have been selected as the quantification. In those few cases, where documentation to support a standard was found, the documented standard was used.

1.4.5.2 Task Conditions

Conditions were identified as part of the FAA process. A condition is the state of the environment in which a task is to be performed. As in the *UJTL*, conditions are categorized as follows:

- Physical conditions: land, sea, air, or space
- Military conditions: mission, forces, C4ISR (Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance), movement, firepower, protection, sustainment, threat, or conflict
- Civil conditions: political, cultural, or economic.

The FNA process bears in mind these conditions. Conditions have the potential to significantly affect or degrade the performance of a task to some level. In cases where documentation is available to document the degradation level, the specific limitation is addressed, and the reference provided. For example, documentation states that the CAM/Improved Chemical Agent Monitor (ICAM) requires up to 8 hours to warm up after 30 days of storage; therefore, the condition “minimum time available” is applicable and may degrade the ability of the CAM/ICAM to perform to the designated standard—“chemical hazards are detected in near-real time.” In other cases, where specific documentation of the degradation is not available, the conditions are only listed.

1.4.5.3 Capability and Deficiency Assessments

Capability and deficiency assessments were conducted for each task using the following three-step process:

1. Identify individual capabilities to perform a particular task that are currently available (FY2005) or expected to be available in near/mid-term future (FY2006–FY2011) or far-term future (FY2012–FY2020).
2. Assess each individual capability for its ability to perform the task to the designated standards. Include corresponding descriptions of capabilities and deficiencies in table endnotes.

3. Rate current and projected overall capabilities to perform the task to each designated standard by performing simple arithmetic averages of relevant individual capability scores (i.e., scores of those individual capabilities available or expected to be available in a particular time period).

By analogy, the score indicating the overall capability to perform the task to all designated standards was calculated by performing a simple arithmetic average of the scores indicating the overall capability to perform the task to individual designated standards. By this protocol, the overall capability to perform the task across all designated standards was assessed separately for the current, near/mid-term, and far-term periods.

Most upper-level tasks, in contrast to most tactical tasks, are based on non-materiel elements. For many of these tasks identifying and assessing individual capabilities was not useful or possible. In these cases, only the overall current and projected capabilities were evaluated.

The cells containing the information on an individual or overall capability to perform a task to a designated standard were color-coded using red, amber, and green to indicate the status of the capability. If a capability scored 0–3, 4–7, or 8–10 according to a particular measure’s scale, then the corresponding cell was colored red, amber, or green, respectively. In some cases, calculated scores were not whole numbers. For example, most overall capability scores, whether relative to a particular standard or across all designated standards, were not whole numbers since they were usually averages of multiple individual scores. In these instances, the presented score was the calculated score rounded up or down depending on whether the tenth-place number was 5 or more. Because of number rounding, cells (or stoplights) were ultimately color coded red, amber, or green according to the score as stated in Table 1-4.

Table 1-4. Capability Color Coding

Assigned Color	Score
Green	8–10
Yellow	4–7
Red	0–3

In qualitative terms, green, amber, and red typically indicate the following about a capabilities:

- “Green” typically indicates a full capability to perform the task to the designated standard or standards.
- “Amber” typically indicates a partial capability to perform the task to the designated standard or standards.
- “Red” typically indicates little or no capability to perform the task to the designated standard or standards.

In some analysis chapters, the above color coding definitions were expanded upon to better characterize the status of the examined capabilities. In these cases, detailed definitions are provided at the beginning of the chapter.

1.4.6 FSA

The FSA is a three-part analysis consisting of a DOTMLPF analysis, an assessment of potential Ideas for Materiel Approaches and an Analysis of Materiel Approaches (AMA). This document addresses only the DOTMLPF analysis and IMA assessment. AMAs are being addressed as separate efforts. The FSA is an operationally based assessment of all potential DOTMLPF approaches to solving (or mitigating) one or more of the capability gaps (needs) identified in the FNA. The needs identified in the FNA are inputs to the FSA. The FSA identifies potential solutions, including integrated DOTMLPF changes that leverage existing materiel capabilities; product improvements to existing materiel or facilities; adoption of interagency or foreign materiel solutions; and finally, initiation of new materiel programs. Identified capability needs or redundancies establish the basis for developing materiel approaches in ICD and/or DOTMLPF approaches.

1.4.6.1 DOTMLPF Analysis

The first analysis in the FSA is to determine whether an integrated DOTMLPF approach can fill the capability gaps identified in the FNA. There are three potential solutions to meeting the capability gaps, including (a) the gap can be completely addressed through non-materiel solutions in the areas of DOTMLPF, (b) the gap can be addressed through a partial non-materiel solution in DOTMLPF but also requires a materiel solution, and (c) the gap can be addressed only through a materiel solution. In cases where the gap can be addressed through a materiel solution, it is assumed that DOTMLPF changes will also be necessary to support the materiel change. The changes in DOTMLPF associated with new materiel solutions are not addressed in this analysis.

1.4.6.1.1 DOTMLPF Definitions

Working definitions for DOTMLPF used by the study team during the analysis are as follows:

Doctrine: Joint doctrine encompasses the fundamental principles that guide the employment of U.S. military forces in coordinated action toward a common objective. Though neither policy nor strategy, joint doctrine serves to make U.S. strategy and policy effective in the application of U.S. military power. Joint doctrine is based on extant capabilities. Joint doctrine is authoritative guidance and will be followed except when, in the judgment of the commander, exception circumstances dictate otherwise (CJCSI 5120.02).

Organization: Organization focuses on the missions, staffing, structures, funding, organic resources, organizational values and priorities, products, and services of organizations necessary to successfully perform their mission. It includes the visual representations of these organizations, their characteristics, and the opportunities and challenges to using them to conduct and perform the assigned mission. Each aspect of organization is reviewed and evaluated. The assessment of organization includes reviewing primary and secondary missions, staffing at all levels, management structures and lines of authority, current and projected funding, types and amounts of organic resources (material and non-material such as people, equipment, procedures, supplies, etc.), inherent organization priorities such as warfighting or lifesaving, and the products and services provided by the organization. The assessment identifies necessary modifications to enable integrated DOTMLPF.

Training: Joint training encompasses military training based on joint doctrine or Joint Tactics, Techniques, and Procedures (JTTPs) to prepare joint forces and/or joint staffs to respond to strategic and operational requirements deemed necessary by combatant commanders to execute their assigned missions. Joint training involves forces of two or more military departments interacting with a combatant commander or subordinate joint force commander, involves joint forces and/or joint staffs, and is conducted using joint doctrine or JTTPs (CJCSM 3500.03A).

Materiel: Materiel includes products that are traditionally associated with the defense acquisition process such as weapons, platforms, communication equipment, medical equipment, transportation, training software, etc. It is assumed that any new materiel solution will need to have changes throughout DOTMLPF to support the new materiel. These changes associated with new materiel were not identified as part of the FSA process.

Leadership: Professional development of the joint commander is the product of a learning continuum that comprises training, experience, education, and self-improvement. The role of Professional Military Education and Joint Professional Military Education is to provide the education needed to complement training, experience, and self-improvement to produce the most professionally competent individual possible.

Personnel: Personnel category seeks to ensure qualified personnel are available to support a capability. It includes identification of physiological and/or psychological prerequisites (e.g., 20/20 vision, not color blind, not claustrophobic, lifting and carrying weight requirements, etc.) and the knowledge, skills, abilities, and competencies necessary to perform a position, job, or task. It also includes the determination of the applicable specialties and quantities necessary of the primary users, maintenance personnel, and support functions for the integrated DOTMLPF. This effort may require changes to existing specialties or the addition of new specialties or subspecialties.

Facilities: Facilities are the infrastructure and include supplies; engineering support; buildings; roads; and the activities necessary to build, maintain, and support operations and/or systems. Current facilities capabilities are identified and reviewed. Additions, changes, and deletions to existing facilities are specified in the assessment.

1.4.6.2 IMA Assessment

The second and final step in the FSA process is the IMA assessment. Only those identified gaps from the DOTMLPF assessment that require a materiel solution are addressed in the IMA process. Research, subject matter experts, and small working groups were used to identify materiel approaches to provide the required capabilities. The collaborative nature of this effort is meant to develop potential solutions in an integrated fashion that reflect the future requirements of joint force commanders. The process leverages subject matter expertise from a variety of sources in identifying possible materiel approaches. The assessment includes existing and future materiel programs that can be modified to meet the capability need. The integrated DOTMLPF implications of any proposed materiel solution are considered throughout the process.

1.5 Task Analysis Structure

Each task in Chapters 2–17 is organized by the following elements:

- Task Title—A brief, summary statement of the task to be performed.
- Definition—Statement that provides meaning, detail, and context to the task so that one can picture the activity being performed. Includes examples of what the task includes and does not include.
- Derivation—List of documentation that defines where the task is derived from in the national strategies, Joint Future Operational Capabilities, Operations Plans (OPLANs), Concept Plans, or *UJTL*. Subtasks may be derived from documented tasks.
- Conditions—List of environmental factors accompanied by a descriptor that impact the performance of the task but are not tasks themselves.
- Individual and Overall Capability and Deficiency Assessment—Table that lists and summarizes current (FY2005) and projected near/mid-term (FY2006–FY2011) and far-term (FY2012–FY2020) individual capabilities (and associated deficiencies) to perform the task to the designated standards. It also rates current and projected overall capabilities to perform the task to the designated standards.
- DOTMLPF Assessment—Table that identifies each deficiency listed in the overall capability and deficiency assessment and provides recommended non-materiel and materiel solutions in accordance with DOTMLPF methodology.
- IMA Assessment—Table that identifies materiel approaches to provide the required capabilities for deficiencies requiring a materiel solution.

1.6 Report Structure

The remainder of the study is structured as follows:

- Chapter 2—Strategic National Sense Task Analysis. Contains the complete analysis of Strategic National Sense CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 3—Strategic Theater Sense Task Analysis. Contains the complete analysis of Strategic Theater Sense CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 4—Operational Sense Task Analysis. Contains the complete analysis of Operational Sense CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 5—Tactical Sense Task Analysis. Contains the complete analysis of Tactical Sense CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 6—Strategic National Shape Task Analysis. Contains the complete analysis of Strategic National Shape CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 7—Strategic Theater Shape Task Analysis. Contains the complete analysis of Shape CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.

- Chapter 8—Operational Shape Task Analysis. Contains the complete analysis of Operational Shape CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 9—Tactical Shape Task Analysis. Contains the complete analysis of Tactical Shape CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 10—Strategic National Shield Task Analysis. Contains the complete analysis of Strategic National Shield CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 11—Strategic Theater Shield Task Analysis. Contains the complete analysis of Strategic Theater Shield CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 12—Operational Shield Task Analysis. Contains the complete analysis of Operational Shield CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 13—Tactical Shield Task Analysis. Contains the complete analysis of Tactical Shield CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 14—Strategic National Sustain Task Analysis. Contains the complete analysis of Strategic National Sustain CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 15—Strategic Theater Sustain Task Analysis. Contains the complete analysis of Strategic Theater Sustain CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 16—Operational Sustain Task Analysis. Contains the complete analysis of Operational Sustain CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.
- Chapter 17—Tactical Sustain Task Analysis. Contains the complete analysis of Tactical Sustain CBRND tasks, including relevant FAA information as well as results of the FNA and FSA.

1.7 References

21 CFR Part 530.30, Extra Label Drug Use in Animals, revised April 1, 2004.

Actions. 30 October 2001.

Alberts, David S., John J. Garstka, Richard E. Hayes, and David A. Signori. *Understanding Information Age Warfare*. Command and Control Research Program Publications. August 2001.

Allard, David. "Answer to Question #2522 Submitted to 'Ask the Experts.'" Health Physics Society. <http://www.hps.org/publicinformation/ate/q2522.html>.

Allied Tactical Publication 45B (ATP-45B), Reporting Nuclear Detonations, Biological and Chemical Attacks, and Predicting and Warning of Associated Hazards and Hazard Areas (Operator's Manual).

Alvarez, J. L. "Defining, Explaining, and Detecting Dirty Bombs." Auxier & Associates, Inc. Knoxville, Tenn.

- An Evolving Joint Perspective: U.S. Joint Warfare and Crisis Resolution in the 21st Century.* January 2003.
- Army War College. *Network-Centric Warfare: Defense Transformation and Network Centric Warfare.* Presentation to NCW Education Workshop. October 2003.
- ATSDR Medical Management Guidelines (MMGs) for Hydrogen Cyanide (HCN), <http://www.atsdr.cdc.gov/MHMI/mmg8.html>.
- Ballough, Gerald P. H., and Margaret G. Fibert. "Protection Against Chemical Agent-Induced, Seizure-Related Neuronal Cell Death." La Salle University and U.S. Army Medical Research Institute of Chemical Defense.
- Berger, Eugene L. "Sensitivities of Selected Chemical Detectors." MITRE Center for Integrated Intelligence Systems. Bedford, Mass. February 2000.
- Birenzve, A. *Inhalation Hazard from Reaerosolization Biological Agents—A Review.* CRDEC-TR-413. DTIC #ADA257164. November 1991.
- Briefings and Discussion. DTRA/GMU Transport and Diffusion Conference. George Mason University. Fairfax, Va. June 2003.
- BUMEDINST 6470.10A. "Initial Management of Irradiated or Radioactively Contaminated Personnel." 7 December 1998.
- BUMEDINST 6470.23. "Medical Management of Non-ionizing Radiation Casualties." 18 August 1999.
- Capstone Requirements Document for Distributed Common Ground/Surface Systems (DCGS).* JROCM 001-03, DAMO-RQ, AF-XORR. 6 January 2003.
- Capstone Requirements Document for the Defense Information Systems Network (DISN).* JROCM 048-96. 15 April 1996.
- Capstone Requirements Document, Global Combat Support System.* JROCM 110-00. 27 June 2003.
- Capstone Requirements Document, Global Information Grid (GIG).* JROCM 134-01. 30 August 2002.
- Capstone Requirements Document, Joint Deployment Systems (JDS).* JROCM 107-03. 8 May 2003.
- Capstone Requirements Document, Theater Air and Missile Defense.* JROCM 056-01. 28 March 2001.
- Capstone Requirements Document, Theater Medical Information Program.* JROCM 021-99. 25 February 1999.
- Carlson, Hugh R. "Contact Hazard: An Overview." U.S. Army Armament Munitions Chemical Command. Aberdeen Proving Ground, Md. January 1990.
- Chabot, George. "Answer to Question #1094 Submitted to 'Ask the Experts.'" Health Physics Society. <http://hps.org/publicinformation/ate/q1094.html>.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3170.01B, Requirements Generation System.* 15 April 2001.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3180.01, Joint Requirements Oversight Council (JROC) Programmatic Processes for Joint Experimentation and Joint Resource Change Recommendations.* 31 October 2002.

- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 6212.01B, Interoperability and Supportability of National Security Systems, and Information Technology Systems*. 8 May 2000.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Manual (CJCSM 3113.01A), Theater Engagement Planning*. 31 May 2000.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Manual (U.S. 3500.04C), Universal Joint Task List (UJTL)*. 01 July 2002.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Manual (CJCSM 3500.04C), Universal Joint Task List (UJTL)*. 01 July 2002.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Manual (CJCSM 3113.01A), Theater Engagement Planning*. 31 May 2000.
- Chairman of the Joint Chiefs of Staff. *Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3170.01B, Operation of the Joint Capabilities Integration and Development System*. 12 March 2004.
- Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. Aberdeen Proving Ground, Md. October 1995.
- Commander, Naval Air Systems Command. *NAVAIR AI-NBCDR-OPM-000, Naval Aviation Nuclear, Biological and Chemical (NBC) Defense Resource Manual*. 15 July 1994.
- Commander, Naval Air Systems Command. *NAVAIR-00-80T-121, Preliminary CBD NATOPS Chemical Biological Defense*. 31 July 2003.
- Commander, Naval Sea Systems Command. *Naval Ships' Technical Manual (NSTM) Chapter 070, Nuclear Defense at Sea and Radiological Recovery of Ships after Nuclear Weapons Explosions*. Revision 2. 30 July 1998.
- Commander, Naval Sea Systems Command. *Naval Ships' Technical Manual Chapter 070, Nuclear Defense at Sea and Radiological Recovery of Ships After Nuclear Weapons Explosion*. 30 July 1998.
- Commander, Naval Sea Systems Command. *Naval Ships' Technical Manual Chapter 077, Personnel Protection Equipment*. 26 March 1998.
- Commander, Naval Sea Systems Command. *Naval Ships' Technical Manual Chapter 470: Shipboard BW/CW Defense and Countermeasures, Rev. 3*. 6 August 1998.
- Commander, U.S. Army Training and Doctrine Command; Commanding General, U.S. Marine Corps Combat Development Command; Navy Warfare Development Command; Headquarters Air Force Doctrine Center; ALSA Center. *FM 3-11.34, MCWP 3.37.5, NTTP 3-11.23, AFTTP (I) 3-2.33: Multi-service Procedures for Nuclear, Biological, and Chemical (NBC) Defense of Theater Fixed Sites, Ports, and Airfields*. August 2000.
- Danzig, Richard. "Catastrophic Bioterrorism—What is to be Done?" Center for Technology and National Security Policy. Washington, D.C. August 2003.
- Defense Intelligence Agency. DIA Report DI-1569-15Q-99, "Worldwide NBC Weapons and Missile Proliferation Threat."
- Defense Intelligence Agency. DIA Report DI-1650-43-00, "Threat Environment Projection: Chemical and Biological Warfare, 2005–2030."
- Defense Intelligence Agency. DIA Report DI-1650-83-02, "Chemical and Biological Warfare Capstone Threat Assessment." February 2002.

- Defense Intelligence Agency. DIA Report DI-1651-1-00, "Military and Terrorist Use of Toxic Industrial Chemicals and Materials."
- Defense Intelligence Agency. DIA Report DI-1816-6-98, "Medical Intelligence Assessment of Deployment Environmental Health Risk."
- Defense Intelligence Agency. DIA Report DI-2410-26-98, "Chemical, Biological, Radiological, and Nuclear Terrorism: A Growing Threat."
- Defense Intelligence Agency. "Initial Threat Warning Assessment (ITWA) Chemical, Biological, Radiological and Nuclear Defense." 14 July 2004.
- Defense Threat Reduction Agency (DTRA). *Initial Review Draft Combatant Commander's Planning Guide for WMD Elimination Operations*. 16 January 2003.
- Department of Defense, Chemical and Biological Defense Program. *Volume 1: Annual Report to Congress*. April 2003.
- Department of Defense. *Training Transformation Implementation Plan*. 10 June 2003.
- Department of Defense. Department of Defense Directive (DoDD 8000.1), Management of Information Resources and Information Technology. 27 February, 2002.
- Department of Defense. Department of Defense Directive (DoDD 8100.1), Global Information Grid (GIG) Overarching Policy. 19 September 2002.
- Department of Defense. Department of Defense Directive (DoDD 8260.1), Data Collection, Development and Management in Support of Strategic Analysis. 6 December 2002.
- Department of Defense. Department of Defense Directive (DoDD 8320.1), DoD Data Administration. 26 September, 1991.
- Department of Defense. Department of Defense Directive (DoDD 8500.1), Information Assurance. 24 October 2002.
- Department of Defense. *Department of Defense Directive (DoDD 8910.1), Management and Control of Information Requirements*. 11 June 1993.
- Department of Defense. *Department of Defense Instruction (DoDI 8500.2), Information Assurance Implementation*. 6 February 2003.
- Department of Defense. *Department of Defense Net-Centric Data Strategy*. Chief Information Officer (CIO). 9 May 2003.
- Department of Defense. *Military Transformation: A Strategic Approach*. Washington, DC: Fall 2003.
- Department of Defense. *Network-Centric Warfare: Creating a Decisive Warfighting Advantage*. Winter 2003.
- Department of Defense. *Protection Joint Functional Concept. Version 1.0*. 31 December 2003.
- Department of Defense. *Sense and Respond Logistics: Co-Evolution of an Adaptive Capability Document Concept*. Office of Force Transformation. 17 November 2003.
- Department of Defense. *Transformation Planning Guidance*. April 2003.
- Department of Homeland Security Working Group on Radiological Dispersal Device (RDD) Preparedness, Medical Preparedness and Response Sub-Group, 01 May 2003.
http://www1.va.gov/emshg/docs/Radiologic_Medical_Countermeasures_051403.pdf.
- Department of the Army, Field Manual 4-02.18, Veterinary Service Tactics, Techniques, and Procedures (Draft). June 2004.

- Department of the Army, Field Manual 4-02.283, Treatment of Nuclear and Radiological Casualties, 20 December 2001.
- Department of the Navy Office of the Chief of Naval Operations and Headquarters, U.S. Marine Corps, *Recovery Operations in a Chemical, Biological, Radiological and Nuclear (CBRN) Environment* NTTP 3-02.1.1/MCWP 3-37.6 (First Draft).
- Department of the Navy, Office of the Chief of Naval Operations. *NWP 3-20.31*, (Rev. A).
- Department of the Navy. *Commander Military Sealift Command Instruction (COMSCINST 3401.2A*, Glossary. 24 March 2000.
- Departments of the Army, the Navy, and the Air Force. *Army Regulation 40-905, Veterinary Health Services*. Washington, D.C. 16 August 1994.
- Departments of the Army, the Navy, and the Air Force. *FM 8-9*.
- Diaz, Jerry. *Combat Analyst: Deploying Analytic Support to the Combatant Commander*. June 2003.
- Director for Operational Plans and Joint Force Development, Joint Staff J-7 Joint Vision and Transformation Division. *Joint Operations Concepts*. Washington, DC: November 2003.
- DODD 3025.14, Protection and Evacuation of U.S. Citizens and Designated Aliens in Danger Areas Abroad, 5 November 1990 (w/changes through C-2, 13 July 1992).
- DODI 2000.12, DoD Antiterrorism/Force Protection Program. 13 April 1999.
- DODI 2000.16, DoD Antiterrorism Standards. 14 June 2001.
- DODI 2000.18, DoD Installation CBRNE Emergency Response Guidelines. 4 December 2002.
- FDA Approved Animal Drug Products, (Green Book)
<http://www.fda.gov/cvm/greenbook/greenbook.html>, updated 29 January 2004.
- FM 3-100 Chemical Operations. May 1996.
- FM 3-101 Chemical Staffs and Units. November 1993.
- FM 3-11 Multi-Service TTP for NBC Defense Operations. March 2003.
- FM 3-11.21 Multi-Service TTP for NBC Aspects of Consequence Management. December 2001.
- FM 3-11.22 WMD Civil Support Team TTP.
- FM 3-11.34 Multi-Service Procedures for NBC Defense of Theater Fix Sites, Ports, and Airfields. September 2000.
- FM 3-14 NBC Vulnerability Analysis. November 1997.
- FM 3-7 NBC Field Handbook. September 1994.
- FM 4-02 Force Health Protection in a Global Environment. February 2003.
- FM 4-02.7 Health Service Protection in a NBC Environment. October 2002.
- FM 8-10.18 Veterinary Service TTP Services. August 1997.
- FM 8-284 Treatment of Biological Warfare Agent Casualties. 17 July 2000.
- FM 8-285 Treatment of Chemical Warfare Agent Casualties and Conventional Military Chemical Injuries. 22 December 1995.
- Handbook for Joint Urban Operations, Joint Staff. 17 May 2000.
- Handbook*. Alexandria, Va. 1998.

- Headquarters, Department of the Air Force. *Network-Centric Warfare: Distributed Mission Operations: The Next Generation in Joint Readiness Training*. 10 July 2003.
- Headquarters, Department of the Army, Department of the Navy, Department of the Air Force. *FM 3-9/NAVFAC P-467/AFR 355-7, Potential Military Chemical/Biological Agents and Compounds*. Washington, D.C. 12 December 1990.
- Headquarters, Department of the Army, the Navy, and the Air Force, and Commandant, Marine Corps. *FM 4.02-283/NTRP 4-02.21/AFMAN 44-16(1)/MCRP 4-11.1B: Treatment of Nuclear and Radiological Casualties*. Washington, D.C. 20 December 2001.
- Headquarters, Department of the Army. *FM 3-3/FMFM 11-17: Chemical and Biological Contamination Avoidance*. Washington, D.C. 16 November 1992.
- Headquarters, Department of the Army. *FM 4-02.7: Health Service Support in a Nuclear, Biological, and Chemical Environment*. Washington, D.C. 1 October 2002.
- Headquarters, Department of the Army. *FM 3-06.11, Combined Arms Operations in Urban Terrain*. 28 February 2002.
- Headquarters, Department of the Army. *FM 3-3, Chemical and Biological Contamination*.
- Headquarters, Department of the Army; Commandant, U.S. Marine Corps. *FM 3-5/MCWP 3-37.3, Change 1, NBC Decontamination Operations*. Washington, D.C. 31 January 2002.
- Headquarters, Department of the Army; Commandant, U.S. Marine Corps. *FM 3-5/MCWP 3-37.3, NBC Decontamination*. Washington, D.C. 28 July 2000.
- Headquarters, Departments of the Army, the Navy, and the Air Force, Commandant of the Marine Corps. *FM 3-11.14, Multi-Service Tactics, Techniques and Procedures for Nuclear, Biological, and Chemical (NBC) Vulnerability Assessment*. October 2002.
- Headquarters, Departments of the Army, the Navy, and the Air Force. *FM 8-9/NAVMED-P-5059/AFJMAN 44-151: NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*, Section 320. February 1996.
- Headquarters, Departments of the Army, the Navy, and the Air Force. *User's Guide for JOPES (Joint Operation Planning and Execution System)*. 1 May 1995.
- http://www.jpeocbd.osd.mil/IS_JEM.htm.
- http://www.jpeocbd.osd.mil/IS_JOEF.htm.
- http://www.jpeocbd.osd.mil/IS_JWARN.htm.
- International Atomic Energy Agency, United Nations, *Code of Conduct on the Safety and Security of Radioactive Sources*. 8 September 2003.
- Institute for Defense Analysis. *An Operational Concept for Biological Defense (Draft)*. 22 July 2003.
- ITF-40.
- Johnson-Winegar, Anna. "Joint Service Chemical and Biological Defense Program FY02-03 Overview." Department of Defense. Arlington, Va. 2003.
- Joint Chiefs of Staff. *Joint Publication (JP) 0-2, Unified Action Armed Forces (UNAAF)*. 10 July 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 1, Joint Warfare of the Armed Forces of the United States*. 14 November 2000.

- Joint Chiefs of Staff. *Joint Publication (JP) 1-02, Department of Defense Dictionary of Military and Associated Terms*. 12 April 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 2-0, Doctrine for Intelligence Support to Joint Operations*. 9 March 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 2-01, Joint Intelligence Support to Military Operations*. 20 November 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 2-02, National Intelligence Support to Joint Operations*. 28 September 1998.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-0, Doctrine for Joint Operations*. 10 September 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-05, Doctrine for Joint Special Operations*. 17 April 1998.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-06, Doctrine for Joint Urban Operations*. 16 September 2002.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-07, Joint Doctrine for Military Operations Other Than War*. 16 June 1995.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-07.2, Joint Tactics, Techniques, and Procedures for Antiterrorism*. 17 March 1998.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-07.3, Joint Tactics, Techniques, and Procedures for Peace Operations*. 12 February 1999.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-08, Interagency Coordination During Joint Operations, Vol. I*. 9 October 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-10, Joint Doctrine for Rear Area Operations*. 28 May 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-11, Joint Doctrine for Operations in Nuclear, Biological, and Chemical (NBC) Environments*. 11 July 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-11, Joint Doctrine for Operations in Nuclear, Biological, and Chemical Environments*. 11 July 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-13.1, Joint Doctrine for Command and Control Warfare (C2W)*. 7 February 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-16, Joint Doctrine for Multinational Operations*. 5 April 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-17, Joint Doctrine and Joint Tactics, Techniques, and Procedures for Air Mobility Operations*. 14 August 2002.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-33, Joint Force Capabilities*. 13 October 1999.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-35, Joint Deployment and Redeployment Operations*. 7 September 1999.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-54, Joint Doctrine for Operations Security*. 24 January 1997.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-55, Doctrine for Reconnaissance, Surveillance, and Target Acquisition Support for Joint Operations (RSTA)*. 14 April 1993.

- Joint Chiefs of Staff. *Joint Publication (JP) 3-57, Joint Doctrine for Civil-Military Operations*. 8 February 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-57.1, Joint Doctrine for Civil Affairs*. 14 April 2003.
- Joint Chiefs of Staff. *Joint Publication (JP) 3-59, Joint Doctrine, Tactics, Techniques, and Procedures for Meteorological and Oceanographic Operations*. 23 March 1999.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-0, Doctrine for Logistic Support of Joint Operations*. 6 April 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-01, Joint Doctrine for the Defense Transportation System*. 19 March 2003.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-01.2, Joint Tactics, Techniques, and Procedures for Sealift Support to Joint Operations*. 9 October 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-01.8, Joint Tactics, Techniques, and Procedures for Joint Reception, Staging, Onward Movement, and Integration*. 13 June 2000.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-02, Doctrine for Health Service Support in Joint Operations*. 30 July 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-06, Joint Tactics, Techniques, and Procedures for Mortuary Affairs in Joint Operations*. 28 August 1996.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-07, Joint Tactics, Techniques, and Procedures for Common User Logistics During Joint Operations*. 11 June 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-08, Joint Doctrine for Logistic Support of Multinational Operations*. 25 September 2002.
- Joint Chiefs of Staff. *Joint Publication (JP) 4-09, Joint Doctrine for Global Distribution*. 14 December 2001.
- Joint Chiefs of Staff. *Joint Publication (JP) 5-0, Doctrine for Planning Joint Operations*. 13 April 1995.
- Joint Chiefs of Staff. *Joint Publication (JP) 5-00.1, Joint Doctrine for Campaign Planning*. 25 January 2002.
- Joint Chiefs of Staff. *Joint Publication (JP) 5-00.2, Joint Task Force Planning Guidance and Procedures*. 13 January 1999.
- Joint Chiefs of Staff. *Joint Publication (JP) 6-0, Doctrine for Command, Control, Communications, and Computer (C4) Systems Support to Joint Operations*. 30 May 1995.
- Joint Chiefs of Staff. *Joint Publication (JP) 6-02, Joint Doctrine for Employment of Operational/Tactical Command, Control, Communications, and Computer Systems*. 1 October 1996.
- Joint Chiefs of Staff/J-8. *Protection Joint Functional Concept, Version 1.0*. 31 December 2003.
- Joint Force Command and Control Concept to Guide Standing Joint Force Headquarters Development by 2005, Joint Staff. 5 March 2003.
- Joint Force Command and Control Concept to Guide Standing Joint Force Headquarters Development by 2005*. DSC. 5 March 2003.
- Joint National Training Capability Briefing to and Dialogue with Industry. 10 July 2003.

- Joint Requirements Office (JRO). *Chemical, Biological, Radiological, and Nuclear (CBRN) Restoration Mission Area Analysis Draft (U)*. January 2003.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Baseline Capabilities Assessment (BCA)*. 11 September 2003.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Battle Management Mission Area Analysis/Mission Needs Analysis and Shape Interim Functional Area and Needs Report*. 10 December 2003.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Chemical, Biological, Radiological, and Nuclear (CBRN) Restoration Mission Area Analysis Draft (U)*. January 2003.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Chemical, Biological, Radiological, and Nuclear (CBRN) Restoration Mission Need Analysis, Draft (U)*. November 2003.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Joint Enabling Concept (JEC) for Chemical, Biological, Radiological, and Nuclear (CBRN) Defense*. Undated.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Joint Operating Concept (JOC) for Chemical, Biological, Radiological, and Nuclear (CBRN) Defense (Draft)*. Washington, D.C. Undated.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *Joint Requirements Office for CBRND Modernization Plan 2004*.
- Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND). *JROCM 180-03, CBRN Capabilities Baseline Assessment Methodology*. 11 September 2003.
- Joint Service Integration Group. "Operational Requirements Document for a Joint Chemical Agent Detector (JCAD) (JTD J2-COO&III) MS III Final." Ft. Leonard Wood, MO. 30 April 2002.
- Joint Services Integration Group (JSIG). *Biological Contamination Avoidance Mission Area Analysis (Final Draft)*. 24 October 2002.
- Joint Services Integration Group (JSIG). *First Draft Biological Contamination Avoidance*.
- Joint Services Integration Group (JSIG). *First Draft Protection Mission Area Analysis (U)*. 3 July 2002. (S/NF)
- Joint Services Integration Group (JSIG). *First Draft Protection Mission Area Analysis (U)*. 3 July 2002.
- Joint Services Integration Group (JSIG). *First Draft Radiological Contamination Avoidance Mission Area Analysis (U)*. 28 March 2002. (S/NF)
- Joint Services Integration Group (JSIG). *Nuclear, Biological, Chemical Contamination Avoidance Integrated Summary (Final Draft)*. 22 January 2003.
- Joint Services Integration Group (JSIG). *Radiological Contamination Avoidance Mission Area Analysis (Final Draft)*. 3 December 2002.
- JP 3-02, Joint Doctrine for Amphibious Operations. 19 September 2001.
- JP 3-02.1, Joint Doctrine for Landing Force Operations. 1 November 1989.

- JP 3-02.2, Joint Doctrine for Amphibious Embarkation. 16 April 1993.
- JP 3-07.5, Joint TTPs for Noncombatant Evacuation Operations. 30 September 1997.
- JP 3-07.6, Joint TTPs for Foreign Humanitarian Assistance. 15 August 2001.
- JP 3-10 Joint Doctrine for Rear Area Operations. 28 May 1996.
- JP 3-10.1 Joint Tactics, Techniques, and Procedures for Base Defense. 23 July 1996.
- JP 3-10.1, Joint TTPs for Base Defense. 23 July 96.
- JP 3-11 Joint Doctrine for Operations in NBC Environments. 11 July 2000.
- JP 3-18, Joint Doctrine for Forcible Entry Operations. 16 July 2001.
- JP 4-01.3, Joint TTPs for Movement Control. 9 April 2002.
- JP 4-01.4, Joint TTPs for Joint Theater Distribution. 22 August 2000.
- JP 4-01.5, Joint TTPs for Transportation Terminal Operations. 9 April 2002.
- JP 4-02.2, Joint TTPS for Patient Movement in Joint Operations. 30 December 1996.
- JRO Capabilities Gap Analysis. April 2003.
- JRO CBRN Joint Future Operational Capabilities. 19 November 2002.
- JROCM 134-1 Capstone Requirement Document: Global Information Grid. 30 August 2002.
- JSIG/JRO Battle Management MAA/MNA. 10 December 2002.
- JSIG/JRO Protection MAA/MNA. July 2002.
- Kilpatrick, William T., Mark W. Fagan, and Paul Murdock. "Deployment Analysis of Biological Point Detectors Deployed on Fixed-site Military Installations." Simulation Technologies, Inc. November 2001.
- Lenz, David E. "Bioscavengers as a Pretreatment for Nerve Agent Exposure." U.S. Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, Md.
- Logistics Management Institute (LMI). *Vision for Management of Army Chemical Defense Equipment Deployment Basic Load Inventories, AR210T1*. November 2002.
- Medical Aspects of NBC Defensive Operations*. Washington, D.C. February 1996.
- Merck Veterinary Manual*, 8th ed. 1998.
- Military Medical Operations Office, Armed Forces Radiobiology Research Institute, Medical Management of Radiological Casualties. December 1999.
- Military Medical Operations Office, Armed Forces Radiobiology Research Institute. *Medical Management of Radiological Casualties*. December 1999.
- Military Operations Research Society (MORS). *71st MORSS Final Program and Book of Abstracts*. CD-ROM. 10–12 June 2003.
- Mission Area Analysis (U)*. 28 February 2002. (S/NF)
- Murdock, Dr. Paul, *CBRN Battle Management Front End Analysis Status, (Draft)*. AFRL/HEST. 11 March 2003.
- Murdock, W. Paul, Jr. *Chemical, Biological, Radiological and Nuclear Battle Management Front End Analysis*. Briefing. AFRL/HEST CBD. November 2003.
- MWD Veterinary Handbook of Chemical and Biologic Warfare, and Operational and Training Toxicities (Draft). July 2003.

- National Institute of Justice. Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders. 2000.
<http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>.
- National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001.
- Network-Centric Warfare: Developing and Leveraging Information Superiority*. 2nd ed. (Rev.). Command and Control Research Program Publication Series. Undated.
- Network-Centric Warfare: Needs, Initiatives, and Opportunities*. CD-ROM. Washington, D.C. 7–8 April 2003.
- Newmark, Jonathan, Gerald P. H. Ballough, and Margaret G. Filbert. “Neuroprotection for Nerve Agent-Induced Brain Damage.” U.S. Army Medical Research Institute of Chemical Defense. Aberdeen Proving Ground, Md.
- North Atlantic Treaty Organization (NATO). *Allied Joint Doctrine for NBC Defense, Allied Joint Publication (AJP) 3.8* (Draft).
- Office of Force Transformation, Department of Defense. *Operational Sense and Respond Logistics Concept Development, Analysis, and Proof of Concept Capability Integration: Sense and Respond Logistics CONOPS, Vers. 2*. 25 August 2003.
- Office of the Assistant Secretary of Defense. *Network-Centric Warfare: Power to the Edge through Net-Centricity: KM and Situational Awareness in the New Paradigm*. September 2003.
- Office of the Secretary of Defense. *Defense Planning Guidance, Fiscal Year 2002–2007*. 6 April 2000.
- Office of the Secretary of Defense. *Strategic Planning Guidance, Fiscal Year 2006–2011*. March 2004.
- Office of the Surgeon General. *Textbook of Medical Medicine, Part I Warfare, Weaponry, and the Casualty, Medical Aspects of Chemical and Biological Warfare*. 1997.
- Operational Requirements Document for a Nuclear, Biological, and Chemical (NBC) Joint Warning and Reporting Network (JWARN) (JTD J1-001-III) MSIII Rev.* 27 July 1999.
- Operational Requirements Document for Joint CBRN Warning and Reporting Network (JWARN)* (Draft, Pending Approval). ACAT III Prepared for Milestone C. 18 March 2004.
- Operational Requirements Document for Joint CBRN Warning and Reporting Network (JWARN)*. 6 April 2004.
- Operational Requirements Document for Joint Effects Model (JEM)* (Draft). ACAT III Prepared for Milestone B. 31 December 2003.
- Operational Requirements Document for Joint Effects Model (JEM)* 12 March 2004.
- Operational Requirements Document for Joint Operational Effects Federation (JOEF)* (Draft). ACAT III Prepared for Milestone B. 25 February 2004.
- Operational Requirements Document for Joint Operational Effects Federation (JOEF)*. 10 May 2004.
- Parker, Andrew, Jorma Kirsi, William H. Rose, et al. “Counter Proliferation Biological Decontamination.” Andrulis Research Corporation. February 1998.

- Quadrennial Defense Review (QDR) 2001: Strategy-Driven Choices for America's Security.* National Defense University (NDU) QDR 2001 Working Group. NDU Press, Washington, D.C.
- Rhode Island Veterinary Medical Association, BIOTERRORISM—Fact Sheets on Diseases. <http://www.rivma.org/bioterrorism.html>.
- Road Map for national Security: Imperative for Change; U.S. Commission on National Security for the 21st Century. 31 January 2001.
- Roessler, Charles. "Answer to Question #386 Submitted to 'Ask the Experts.'" Health Physics Society. <http://www.hps.org/publicinformation/ate/q386.html>.
- Sage, G. W., and P. H. Howard. "Environmental Fate Assessments of Chemical Agents HD and VX." Syracuse Research Corporation, Syracuse N.Y. June 1989.
- Secretary of the Air Force. *Air Force Manual 32-4005, Personnel Protection and Attack.*
- Secretary of the Air Force. *Air Force Manual 32-4017, Civil Engineer Readiness Technician's Manual for Nuclear, Biological, and Chemical Defense.* 1 June 1998.
- Sidell, Frederick R., William C. Patrick III, and Thomas R. Dashiell. *Jane's Chem-Bio Surface Ship Survivability.* January 2000.
- Smith, William J., Michael C. Babin, Robyn. C. Kiser, et al. "Development of Medical Countermeasures to Sulfur Mustard Vesication." U.S. Army Medical Research Institute of Chemical Defense and Battelle Memorial Institute.
- Sutherland, Pamela J. "Spotlight on Asphyxiants." U.S. Department of Energy's Chemical Safety Program. http://tis.eh.doe.gov/web/chem_safety/Docs/asphyx.pdf.
- Technical paper on Q-fever, Center for Food Security and Public Health, Iowa State University College of Veterinary Medicine Ames Iowa USA 50011. <http://www.rivma.org/Q%20fever.doc>.
- Toxic Warfare, Theodore Karasik, RAND (Project AF), 2002.
- Trapp, Ralf. *The Detoxification and Natural Degradation of Chemical Warfare Agents.* Stockholm International Peace Research Institute. London, England. 1985.
- U.S. Army Center for Health Promotion and Preventive Medicine. *The Medical NBC Handbook, USACHPPM Tech Guide 244.* May 2000.
- U.S. Army Medical Research Institute of Infectious Diseases. *Medical Management of Biological Casualties Handbook.* 4th ed. February 2001.
- U.S. Joint Forces Command/J-9. *Joint Operating Concept, Major Combat Operations, Vers. 1.03.* 25 February 2004.
- U.S. Joint Forces Command/J-9. *Joint Operating Concept, Stability Operations, Vers. 0.95.* 19 February 2004.
- U.S. Joint Forces Command/J-9. *Joint Operating Concept, Strategic Deterrence.* February 2004.
- USACHPPM Report 47-EM-6154-03: Industrial Chemical Prioritization and Determination of Critical Hazards of Concern, Technical Annex and Supporting Documents for International Task Force (ITF)-40.* November 2003.
- White House. *The National Security Strategy of the United States of America.* September 2002.
- White House. *The National Strategy for Combating Terrorism.* February 2003.

White House. *National Strategy to Combat Weapons of Mass Destruction*. December 2002.
(Unclassified)

White House. *National Strategy for Homeland Security*. July 2002.

The White House. *National Security Presidential Directive 17. National Strategy to Combat Weapons of Mass Destruction*. 14 September 2002. (Classified).

CHAPTER 2. STRATEGIC NATIONAL SENSE TASKS

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2.16 Task SENSENS 16: Provide global screening for endemic disease and/or hazardous substances in the environment81

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2.0 Strategic National Sense

2.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives, define limits and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans. The strategic national sublevel encompasses U.S. Department of Defense (DoD), service, and interagency tasks. Seventeen strategic national sense tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA) including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)–sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the Strategic National Sense area, restates relevant information from the CBRND FAA, including a description of each of the 17 Strategic National Sense tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. The non-materiel solutions addressed reflect one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. Most of the Strategic National Sense tasks involve required capabilities of major staffs or staff sections within DoD. In those areas where a DoD staff or agency needs to interact within the interagency, the task focuses on DoD capabilities required to facilitate the interaction.

2.0.2 FNA Summary

The table below summarizes the overall current and projected capability to perform the Strategic National Sense tasks identified in the CBRND FAA. The overall capability to conduct Strategic National Level Sense Tasks (SENSEs) in the current time frame is assessed as “yellow.” The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff’s single source of expertise in addressing CBRND issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense all elements of global CBRN/TIM weapons proliferation. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action. While the J2

and national intelligence organizations have the responsibility to gather intelligence on CBRN threat-related issues, they do not have the requisite understanding of CBRN issues to fully address the requirements without assistance from JRO-CBRND. It is projected that improvements due to coordination/doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) enhancements will dramatically improve DoD’s ability to articulate and assess Sense requirements, but the overall status will remain “yellow” due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.0-1. Strategic National Sense Summary FNA Findings

CBRN Strategic National Sense Task Number	CBRN Strategic National Sense Task Title	Capability		
		Current	Near/Mid	Far
SNSENS 1	Sense the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program.	●	●	●
SNSENS 2	Sense the acquisition of components of a CBRN/TIM weapons program.	●	●	●
SNSENS 3	Sense CBRN/TIM weapons program production facility preparation.	●	●	●
SNSENS 4	Sense the production of CBRN/TIM agents and delivery systems.	●	●	●
SNSENS 5	Sense CBRN/TIM weaponization.	●	●	●
SNSENS 6	Sense preparations to test and testing of CBRN/TIM agents/weapons.	●	●	●
SNSENS 7	Sense the storage locations of CBRN/TIM weapons or components.	●	●	●
SNSENS 8	Sense the operational deployment of CBRN/TIM weapons or units.	●	●	●
SNSENS 9	Sense CBRN/TIM offensive and defensive training activities.	●	●	●
SNSENS 10	Sense the presence and identity and monitor the movement and location of CBRN/TIM expertise.	●	●	●
SNSENS 11	Sense the employment of CBRN/TIM weapons.	●	●	●
SNSENS 12	Sense global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials.	●	●	●
SNSENS 13	Monitor treaty signatories and states that are eliminating their WMD for compliance.	NA	NA	NA
SNSENS 14	Monitor international scientific and technology developments for potential CBRN/TIM	●	●	●

	implications.			
SNSSENS 15	Provide Sense Global Family of Engagement Plan policies and guidelines to combatant commanders.	●	●	●
SNSSENS 16	Provide global screening for endemic disease and/or hazardous substances in the environment.	●	●	●
SNSSENS 17	Develop global environmental background data including climatology.	●	●	●
OVERALL		●	●	●

2.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF solutions for the capability gaps identified in the FNA section.

2.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter include basic actions required to better prepare the appropriate staffs. No training or experimentation has taken place to facilitate the formulation of tactics, techniques, and procedures (TTPs) designed to facilitate the ability of intelligence personnel to assess CBRND Sense requirements. It is imperative that these exercises take place and lessons learned be integrated into doctrine, TTPs, and guidance. Other solutions include the development of leader education programs for both CBRND and intelligence staff officers and a detailed analysis of how the intelligence community is organized, trained, and staffed to perform CBRN intelligence analysis and collection activities. In the case of hazards involving non-U.S. allies or countries that restrict information, current doctrine, techniques, and procedures may not be adequate. It is imperative that additional exercises/experimentation take place and lessons learned be integrated into doctrine, TTPs, and guidance.

2.0.3.2 Ideas for Materiel Approaches

There are no materiel requirements.

2.1 Task SENSES 1: Sense the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program

2.1.1 Functional Area Analysis

2.1.1.1 Definition

To obtain information and data from all sources that determine the strategic decision of a nation-state or transnational organization (terrorists, cultists) to initiate a CBRN/toxic industrial material (TIM) weapons program. Areas of interest include activities and situations that could indicate that deliberations are taking place considering the initiation of a CBRN/TIM weapons program. Of particular importance is information relating to the reasoning behind the pursuit of CBRN/TIM weapons; therefore, it is important to collect information indicating the adversaries' objectives for using CBRN/TIM and their concept of use to obtain those objectives. This task includes collecting information on key foreign leadership/decision makers involved in the CBRN/TIM weapons program deliberation process and cultural factors that may influence decisions. Information is also collected on the nature and characteristics of theater and regional areas of interest that would impact on CBRN/TIM programmatic decisions. This task also includes collecting counterintelligence information, ballistic missile information that could be related to the initiation of a CBRN/TIM weapons program, and information on terrorist activities.

2.1.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.1.1.2.1 Supported Task: N/A

2.1.1.2.2 Lateral Task: SNSHA 1

2.1.1.2.3 Supporting Tasks: STSENS 5, STSENS 6

2.1.1.3 Condition

Perform this task under conditions of:

Physical. NA

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.1.2 Functional Needs Analysis**2.1.2.1 Capability and Deficiency Assessment Summary**

Table 2.1-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRND issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this Joint Capabilities Integration and Development System [JCIDS] analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.1-1. SSENS 1: Capability and Deficiency Assessment

Capability: Joint Staff Director for Intelligence, J-2	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability	Y ⁷	Y	G	Y	Y
Far-Term Overall Capability⁸	Y ⁹	Y	G	Y	Y

	FAA Measure	Scale
M1	Warning time/indicators are provided before actual decision to initiate CBRN/TIM weapons program.	G – Yes, Y – Limited, R – No
M2	Transnational organizations considering CBRN/TIM weapons programs are identified.	G – Yes, Y – Limited, R – No
M3	Assessments of overall nation-states or transnational organizations that may be considering CBRN/TIM programs are provided.	G – Yes, Y – Limited, R – No
M4	Countries that have made the decision to initiate CBRN/TIM weapons programs have been detected and identified.	G – Yes, Y – Limited, R – No
M5	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to ensure that activities and situations that could indicate that deliberations considering the initiation of a CBRN/TIM weapons program are taking place are identified prior to a decision to proceed. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to identify transnational organizations that may be considering initiating CBRN/TIM weapons programs. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

⁴ Nothing precludes the providing of assessments of overall nation-states or transnational organizations that may be considering CBRN/TIM programs once they are identified and need to know is certified.

⁵ The J-2 works with various national-level organizations to detect and identify countries that have made the decision to initiate CBRN/TIM weapons programs. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

⁶ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure that the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program is detected.

⁷ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁸ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁹ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.1.3 Functional Solution Analysis

2.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the Ideas for Materiel Approaches (IMA) section.

- 1. Deficiency:** Techniques and procedures to facilitate providing warning time and to provide useful indicators may not be adequate.
Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to facilitate providing warning time and to provide useful indicators. *Training:* JRO-CBRND must test all techniques and procedures by integrating them into their experimentation campaign plan and developing lessons learned and actionable recommendations.
- 2. Deficiency:** Techniques and procedures to facilitate identifying transnational organizations considering CBRN/TIM weapons programs and to provide useful indicators may not be adequate.
Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to facilitate identifying transnational organizations considering CBRN/TIM weapons programs and to provide useful indicators.
- 3. Deficiency:** Techniques and procedures to facilitate identifying countries that have made the decision to initiate CBRN/TIM weapons programs and to provide useful indicators may not be adequate.
Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to facilitate identifying countries that have made the decision to initiate CBRN/TIM weapons programs and to provide useful indicators.
- 4. Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that the decision of a nation-state or transnational organization to initiate a CBRN/TIM weapons program is detected.
Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence

organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.

5. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
6. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. JRO-CBRND must be better integrated into the J-2 and through the J-2 assess the organizational capabilities of DIA, CIA, and DTRA. *Personnel*: JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
7. **Deficiency**: The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
8. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
9. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
10. **Deficiency**: Joint Professional Military Education (JPME) does not adequately cover the fusion of intelligence/CBRN issues.

Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

11. Deficiency: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.

Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership:* CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.1.3.2 IMA Assessment Summary

N/A

2.2 Task SENSES 2: Sense the acquisition of components of a CBRN/TIM weapons program

2.2.1 Functional Area Analysis

2.2.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization is acquiring components essential to a CBRN/TIM weapons program. Areas of interest include activities and situations that could indicate that personnel with special expertise in CBRN/TIM weapons development are being recruited. Other areas could include the acquisition of chemicals that could be used as precursors of chemical agents, biological cultures or organisms, radioisotopes, or radiological ores. Specialized equipment acquisitions or development, even dual-use items that could have nonweapons application, should be identified as applicable. Equipment and clothing required for protection during CBRN/TIM weapons development would be of interest. Development of weapons systems or munitions that could be used to employ CBRN/TIM weapons also should be noted. Information developed by this task may contribute to Task SENSES 1.

2.2.1.2 Derivation

UJTL (SN 9.2.2, SN 2.2.1, SN 8.1.10), JP (2-0, 2-01, 2-02).

2.2.1.2.1 Supported Task: N/A

2.2.1.2.2 Lateral Task: SNSHA 1

2.2.1.2.3 Supporting Task: N/A

2.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.2.2 Functional Needs Analysis

2.2.2.1 Capability and Deficiency Assessment Summary

Table 2.2-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the acquisition of components of a CBRN/TIM weapons program. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the acquisition of components of a CBRN/TIM weapons program, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.2-1. SSENS 2: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	R ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Countries or transnational organizations acquiring CBRN/TIM weapons program components are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on countries or transnational organizations performing research and development or acquiring CBRN/TIM weapons program components is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations acquiring CBRN/TIM weapons program components. Techniques and procedures to facilitate this process and to ensure accuracy are not adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations acquiring CBRN/TIM weapons program components. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations acquiring CBRN/TIM weapons program components are detected.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.2.3 Functional Solution Analysis

2.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the (IMA section).

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations acquiring CBRN/TIM weapons program components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations acquiring CBRN/TIM weapons program components and to provide useful indicators. These indicators must include any and all components that could be used in a CBRN/TIM weapons program, where they can be acquired, what dual uses (legitimate research or industry) the components might be already serving, and signatures that might indicate the components are being acquired or shipped.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations acquiring CBRN/TIM weapons program components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations acquiring CBRN/TIM weapons program components and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational acquiring CBRN/TIM weapons program components is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or

collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities:* Training requirements should be analyzed and special training facilities developed/modified if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
- 5. Deficiency:** JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel:* JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
- 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership:* Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
- 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
- 9. Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.
- 10. Deficiency:** DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.
Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their

institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership*: CBRN DoD detailees to national intelligence organizations must be provided with JPME. *Personnel*: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.2.3.2 IMA Assessment Summary

N/A

2.3 Task SENSES 3: Sense CBRN/TIM weapons program production facility preparation

2.3.1 Functional Area Analysis

2.3.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization is acquiring components for and/or preparing CBRN/TIM weapons program production facility acquisition and preparation. Areas of interest include activities and situations that could indicate that personnel with special expertise in CBRN/TIM weapons production facility preparation are being recruited or that specialized materials are being acquired.

2.3.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.3.1.2.1 Supported Task: N/A

2.3.1.2.2 Lateral Task: SNSHA 1

2.3.1.2.3 Supporting Task: N/A

2.3.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.3.2 Functional Needs Analysis

2.3.2.1 Capability and Deficiency Assessment Summary

Table 2.3-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. However, due to documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense CBRN/TIM weapons program production facility preparation. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing CBRN/TIM weapons program production facility preparation, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.3-1. SENSES 3: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Countries or transnational organizations preparing CBRN/TIM weapons program production facilities are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on countries or transnational organizations preparing CBRN/TIM weapons program production facilities is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational preparing CBRN/TIM weapons program production facilities. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational preparing CBRN/TIM weapons program production facilities. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations preparing CBRN/TIM weapons program production facilities are detected.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.3.3 Functional Solution Analysis

2.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations preparing CBRN/TIM weapons program production facilities may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations preparing CBRN/TIM weapons program production facilities and to provide useful indicators. These indicators must include any and all types of facilities that could be used for production in a CBRN/TIM weapons program, what features they might possess, what dual uses (legitimate research or industry) the facilities might be already serving, and signatures that might indicate specific construction techniques, filter or safety facilities, and construction equipment.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations preparing CBRN/TIM weapons program production facilities may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations preparing CBRN/TIM weapons program production facilities and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization preparing CBRN/TIM weapons program production facilities is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or

collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities:* Training requirements should be analyzed and special training facilities developed/modified if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
- 5. Deficiency:** JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel:* JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
- 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership:* Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solution: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
- 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
- 9. Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
- 10. Deficiency:** DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.

Non-Materiel Solution: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership:* CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation. *Personnel:* CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.3.3.2 IMA Assessment Summary

N/A

2.4 Task SENSES 4: Sense the production of CBRN/TIM agents and delivery systems

2.4.1 Functional Area Analysis

2.4.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization has initiated the production of CBRN/TIM weapons and delivery systems. Areas of interest include types of agents or nuclear weapons and specific delivery system characteristics (ranges, payload, etc.), and production rates. Other areas to consider are numbers of production workers and their skill sets and bios on key personnel.

2.4.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.4.1.2.1 Supported Task: N/A

2.4.2.2.2 Lateral Task: SNSHA 1

2.4.1.2.3 Supporting Task: N/A

2.4.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.4.2 Functional Needs Analysis**2.4.2.1 Capability and Deficiency Assessment Summary**

Table 2.4-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the production of CBRN/TIM agents and delivery systems. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the production of CBRN/TIM agents and delivery systems, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.4-1. SENSES 4: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems are detected.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.4.3 Functional Solution Analysis

2.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems and to provide useful indicators. These indicators must include the means to determine agent types, nuclear weapon types and yields, TIMS being considered, means by which to release TIMS, delivery modes or systems, and production capacities and schedules.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization initiating the production of CBRN/TIM agents and delivery systems is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or

- experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.
4. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
 5. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequately trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
 6. **Deficiency**: The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
 7. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
 8. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
 9. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.
 10. **Deficiency**: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.
Non-Materiel Solutions: *Organization*: Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees

they provide are prepared in every way. *Leadership*: CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.4.3.2 IMA Assessment Summary

N/A

2.5 Task SENSES 5: Sense CBRN/TIM weaponization

2.5.1 Functional Area Analysis

2.5.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization has initiated the integration/mating of agents or nuclear devices to delivery systems, thus making CBRN/TIM weapons systems (CBRN/TIM weaponization). Areas of interest include distances between production areas, weaponization areas, and storage areas and weaponization rate and safety measures.

2.5.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.5.1.2.1 Supported Task: N/A

2.5.1.2.2 Lateral Task: SNSHA 1

2.5.1.2.3 Supporting Task: N/A

2.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.5.2 Functional Needs Analysis

2.5.2.1 Capability and Deficiency Assessment Summary

Table 2.5-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense CBRN/TIM weaponization. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing imminent or actual CBRN/TIM weaponization but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.5-1. SSENS 5: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Countries or transnational organizations initiating CBRN/TIM weaponization are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on countries or transnational organizations initiating CBRN/TIM weaponization is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational organizations initiating CBRN/TIM weaponization. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations initiating CBRN/TIM weaponization. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations initiating CBRN/TIM weaponization are detected.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.5.3 Functional Solution Analysis

2.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations initiating CBRN/TIM weaponization may not be adequate. **Non-Materiel Solutions:** *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations initiating CBRN/TIM weaponization and to provide useful indicators. These indicators must include the means to determine when mating of agents or nuclear devices to delivery systems is taking place; special procedures used in the mating process; production schedules; procedures for bringing together the components; distances between production areas, weaponization areas, and storage areas; weaponization rate; and safety measures.
- 2. Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating CBRN/TIM weaponization may not be adequate. **Non-Materiel Solutions:** *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating CBRN/TIM weaponization and to develop metrics to measure accuracy.
- 3. Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization initiating CBRN/TIM weaponization is detected. **Non-Materiel Solutions:** *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or

- experience. *Facilities:* Training requirements should be analyzed and special training facilities developed/modified if required.
- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
 - 5. Deficiency:** JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel:* JRO-CBRND should have adequately trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
 - 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership:* Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
 - 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
 - 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
 - 9. Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.
 - 10. Deficiency:** DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.
Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees

they provide are prepared in every way. *Leadership*: CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.5.3.2 IMA Assessment Summary

N/A

2.6 Task SENSES 6: Sense preparations to test and testing of CBRN/TIM agents/weapons

2.6.1 Functional Area Analysis

2.6.1.1 Definition

To obtain information and data from all sources that indicate a state or nonstate actor is preparing to test or is conducting tests of CBRN/TIM agents or weapons and delivery systems. Areas of interest include types and characteristics of agents or weapons and delivery systems, test results, and personnel involved in test programs (skills and biographies). Also of interest are the characteristics of the testing grids, agent/weapon transport modes, storage locations of test materials, safety and security precautions employed, and ambient meteorological conditions as well as those during testing.

2.6.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.6.1.2.1 Supported Task: N/A

2.6.1.2.2 Lateral Task: SNSHA 1

2.6.1.2.3 Supporting Task: N/A

2.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.6.2 Functional Needs Analysis

2.6.2.1 Capability and Deficiency Assessment Summary

Table 2.6-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense preparations to test and testing of CBRN/TIM agents/weapons. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing preparations to test and testing of CBRN/TIM agents/weapons but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.6-1. SNSSENS 6: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	States or nonstate actors preparing to test and testing CBRN/TIM agents/weapons and delivery systems are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on states, nonstate actors and technical personnel involved with test program is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational preparing to test and testing CBRN/TIM agents/weapons and delivery systems. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems are detected.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.6.3 Functional Solution Analysis

2.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems and to provide useful indicators. These indicators must include the means to determine agent types, nuclear weapon types and yields being tested, TIMS being tested, means by which to release TIMS in testing, delivery modes or systems being tested, and testing capacities and schedules. Also required is information on characteristics of the testing grids, agent/weapon transport modes, storage locations of test materials, safety and security precautions employed, and ambient meteorological conditions during testing.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations preparing to test and testing CBRN/TIM agents/weapons and delivery systems and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization preparing to test and testing CBRN/TIM agents/weapons and delivery systems is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as

those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
- 5. Deficiency:** JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
- 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
- 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
- 9. Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.

10. Deficiency: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.

Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership:* CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.6.3.2 IMA Assessment Summary

N/A

2.7 Task SENSES 7: Sense the storage locations of CBRN/TIM weapons or components

2.7.1 Functional Area Analysis

2.7.1.1 Definition

To obtain information and data from all sources that determine where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Areas of interest include storage facilities/locations in the vicinity of civilian and military populations, storage capacities, safety precautions, prevailing meteorological conditions at sites, types of weapons or components stored, facility entrances, facility construct (i.e., soft target, hardened bunker, mosque, palace, hospital, etc.), and the geographical relationship of the storage facility to neighboring borders.

2.7.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.7.1.2.1 Supported Task: N/A

2.7.1.2.2 Lateral Task: SNSHA 1

2.7.1.2.3 Supporting Task: STSENS 1

2.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.7.2 Functional Needs Analysis

2.7.2.1 Capability and Deficiency Assessment Summary

Table 2.7-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the storage locations of CBRN/TIM weapons or components. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the storage locations of CBRN/TIM weapons or components but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.7-1. SENSES 7: Capability and Deficiency Assessment

Capability: Joint Staff Director for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Storage locations of CBRN/TIM weapons or components are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on activities indicating storage locations of CBRN/TIM weapons or components is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to determine where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied in determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components.

⁵ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.7.3 Functional Solution Analysis

2.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to provide useful indicators. These indicators must include types of storage facilities, techniques for storage in unlikely locations, storage capacities, safety and security measures, transport and agent release techniques, and storage capacity.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization storing CBRN/TIM agents/weapons and delivery systems is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or

experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.

4. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
5. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
6. **Deficiency**: The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
7. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
8. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
9. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.
10. **Deficiency**: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.
Non-Materiel Solutions: *Organization*: Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership*: CBRN DoD detailees to national

intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.7.3.2 IMA Assessment Summary

N/A

2.8 Task SENSES 8: Sense the operational deployment of CBRN/TIM weapons or units

2.8.1 Functional Area Analysis

2.8.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization is preparing to conduct or is conducting an operational deployment of CBRN/TIM weapons. Includes information on civil and military plans related to deployment, training conducted by military forces and civilians, and the overall CBRN/TIM defensive preparedness of military forces (e.g., vaccine and antidote production and solicitation).

2.8.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.8.1.2.1 Supported Task: N/A

2.8.1.2.2 Lateral Task: SNSHA 1

2.8.1.2.3 Supporting Task: STSENS 2

2.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Transnational organization
 - a. Negligible intelligence database. (C2.4.2)
 - b. Negligible theater intelligence access. (C2.4.2)
2. Nation-states
 - a. Marginal intelligence database. (C2.4.2)
 - b. Difficult theater intelligence access. (C2.4.2)

Common Military Conditions

1. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)

2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.8.2 Functional Needs Analysis

2.8.2.1 Capability and Deficiency Assessment Summary

Table 2.8-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to the operational deployment of CBRN/TIM weapons or units. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the operational deployment of CBRN/TIM weapons or units but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.8-1. SSENS 8: Capability and Deficiency Assessment

Capability: Joint Staff Director for Intelligence, J-2	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y ⁶	Y	G	Y
Far-Term Overall Capability⁷	Y ⁸	Y	G	Y

	FAA Measure	Scale
M1	Deploying CBRN/TIM weapons/units/teams are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence relating to deploying CBRN/TIM weapons/units is accurate.	G – Yes, Y – Limited, R – No
M3	Deployment warning is provided to national authorities.	G – Yes, Y – Limited, R – No
M4	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational organizations deploying CBRN/TIM weapons/units/teams. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ Nothing precludes providing deployment warning to national authorities once the deployment is identified, detected, and confirmed.

⁵ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations deploying CBRN/TIM weapons/units/teams are detected.

⁶ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁷ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁸ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.8.3 Functional Solution Analysis

2.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations deploying CBRN/TIM weapons/units/teams may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations deploying CBRN/TIM weapons/units/teams and to provide useful indicators. These indicators must include the means to determine agent types, nuclear weapon types and yields, TIMS being considered, means by which to release TIMS, delivery modes or systems, and production capacities and schedules.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization deploying CBRN/TIM weapons/units/teams is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or

- experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.
4. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
 5. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequately trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
 6. **Deficiency**: The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
 7. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
 8. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
 9. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.
 10. **Deficiency**: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.
Non-Materiel Solutions: *Organization*: Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees

they provide are prepared in every way. *Leadership*: CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.8.3.2 IMA Assessment Summary

N/A

2.9 Task SENSES 9: Sense CBRN/TIM offensive and defensive training activities

2.9.1 Functional Area Analysis

2.9.1.1 Definition

To obtain information and data from all sources indicating a state or nonstate actor is preparing to conduct or is conducting CBRN/TIM offensive and/or defensive training activities. Areas of interest include types and characteristics of simulants/agents or weapons and delivery systems being used in the training or providing the training stimulus, types and designations of units conducting the training, skills and biographies of trainers and administrators, offensive and defensive techniques employed, and protective materials and equipment used by those training. Also of interest are decontamination or medical procedures used in conjunction with the training.

2.9.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.9.1.2.1 Supported Task: N/A

2.9.1.2.2 Lateral Task: SNSHA 1

2.9.1.2.3 Supporting Task: N/A

2.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.4)
3. Conventional and terrorist threat form. (C.2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.9.2 Functional Needs Analysis**2.9.2.1 Capability and Deficiency Assessment Summary**

Table 2.9-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense CBRN/TIM offensive and defensive training activities. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing CBRN/TIM offensive and defensive training activities but the overall status is projected to remain at "yellow."

Table 2.9-1. SNSSENS 9: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2
Current Overall Capability¹	Y ²	Y ³
Near/Mid-Term Overall Capability	Y ⁴	Y
Far-Term Overall Capability⁵	Y ⁶	Y

	FAA Measure	Scale
M1	States or nonstate actors preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on states, nonstate actors and trainers involved with CBRN/TIM offensive and/or defensive training activities is complete and accurate.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational organizations preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure completeness and accuracy of intelligence on countries or transnational organizations preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities. Techniques and procedures to facilitate this process and to ensure completeness and accuracy may not be adequate.

⁴ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁵ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁶ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.9.3 Functional Solution Analysis

2.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities and to provide useful indicators. For offensive CBRN training, these techniques and indicators must include the means to determine the types of individuals and units conducting training, types and numbers of CBRN weapons systems used for training, durations and timing of training, whether simulants or attenuated or real CBRN weapons are used, sizes and location of training ranges, special equipment used at ranges, and safety security measures. For defensive CBRN training, these techniques and indicators must include the means to determine the types of individuals and units conducting training; the types of CBRN protective equipment, clothing, and collective protection used; types of decontamination, detection, and medical response employed; types of special CBRN defensive units training; types and numbers of CBRN weapons systems used for training; durations and timing of training; whether simulants or attenuated or real CBRN weapons are used; sizes and location of training ranges; special equipment used at ranges; and safety security measures

2. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization preparing to conduct or conducting CBRN/TIM offensive and/or defensive training activities is accurately and completely detected.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective techniques and procedures to ensure complete and accurate intelligence on countries or transnational organizations initiating the production of CBRN/TIM agents and delivery systems and to develop metrics to measure accuracy. *Organization:* The CBRN organization or staffing of the J2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine

inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership*: JRO-CBRND must work with J2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.

3. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
4. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
5. **Deficiency**: The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training*: Develop training that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND. *Leadership*: Develop an education program that will enable the J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of Strategic National CBRND.
6. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
7. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training*: JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
8. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues.

Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

9. **Deficiency:** DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or debriefing for DoD lessons learned.

Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership:* CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

2.9.3.2 IMA Assessment Summary

N/A

2.10 Task SENSES 10: Sense the presence and identity and monitor the movement and location of CBRN/TIM expertise

2.10.1 Functional Area Analysis

2.10.1.1 Definition

To obtain information and data from all sources indicating the presence and identity of state or nonstate actors with significant CBRN/TIM expertise. Once these personnel are located and identified and it is determined that their contributions to CBRN/TIM programs warrant significant scrutiny, they will be monitored and their activities, contacts, and facilities visited reported. Personnel of interest include scientists, researchers, engineers, weapons and employment experts, librarians, logistics personnel, safety and security personnel, communications personnel, and any other personnel determined to be significant contributors to offensive or defensive CBRN/TIM programs.

2.10.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

2.10.1.2.1 Supported Task: N/A

2.10.1.2.2 Lateral Task: SNSHA 1

2.10.1.2.3 Supporting Task: N/A

2.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.4)
3. Conventional and terrorist threat form. (C.2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

2.10.2 Functional Needs Analysis**2.10.2.1 Capability and Deficiency Assessment Summary**

Table 2.10-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the presence and identity and monitor the movement and location of CBRN/TIM expertise. For the purposes of this analysis, current capabilities are listed as "green," and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements. The overall status will remain "green" although there is some inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the presence and identity and monitoring the movement and location of CBRN/TIM expertise. The overall status is projected to remain "green" although there remains some inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.10-1. SENSES 10: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3	M4
Current Overall Capability¹	Y ²	G ³	G ⁴	G ⁵
Near/Mid-Term Overall Capability	Y ⁶	G	G	G
Far-Term Overall Capability⁷	Y ⁸	G	G	G

	FAA Measure	Scale
M1	A screening methodology exists to select those CBRN/TIM experts who need to be targeted.	G – Yes, Y – Limited, R – No
M2	CBRN/TIM experts who meet the screening criteria are detected and identified.	G – Yes, Y – Limited, R – No
M3	Detected/identified CBRN/TIM experts are monitored and significant data collected.	G – Yes, Y – Limited, R – No
M4	Significant data are transmitted to appropriate agencies.	G – Yes, Y – Limited, R – No

¹ The DoD CBRN community has not developed guidelines and procedures that will facilitate the process of sensing the presence of and identifying and monitoring the movement and location of CBRN/TIM expertise.

² Nothing precludes the development of a screening methodology to select those CBRN/TIM experts that need to be targeted. A methodology to select those CBRN/TIM experts that need to be targeted has not been developed.

³ Nothing precludes detecting and identifying CBRN/TIM experts who meet the screening criteria, once it is developed. Basic methods for surveillance methods to detect and identify personnel are well established.

⁴ Nothing precludes monitoring and collecting significant data on CBRN/TIM experts who meet the screening criteria and have been detected and identified. Basic methods for monitoring and collection are well established.

⁵ Nothing precludes transmitting significant data to appropriate agencies as long as what is significant is defined.

⁶ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁷ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁸ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.10.3 Functional Solution Analysis

2.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** A methodology to select those CBRN/TIM experts that need to be targeted has not been developed.
Non-Materiel Solutions: *Doctrine:* Developing a screening methodology to select those CBRN/TIM experts that need to be targeted will be a significant undertaking that will require extensive input from the DoD CBRN community. A wide range of academic, scientific, medical, and industrial engineering disciplines, all with dual-use application, can contribute to offensive CBRN programs or using TIM for offensive/terrorism purposes. Indicators must be developed that can link potential expertise to suspected CBRN programs or terrorist cells. JRO-CBRND must work with the J2 to contribute to screening methodologies to be used by the intelligence community to select those CBRN/TIM experts that need to be targeted.
- 2. Deficiency:** The DoD CBRN community has not developed guidelines and procedures that will facilitate the process of sensing the presence of and identifying and monitoring the movement and location of CBRN/TIM expertise.
Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J2 and/or national intelligence organizations to develop effective guidelines and procedures to facilitate this task.

2.10.3.2 IMA Assessment Summary

N/A

2.11 Task SENSES 11: Sense the employment of CBRN/TIM weapons

2.11.1 Functional Area Analysis

2.11.1.1 Definition

To obtain information and data from all sources that determine when a nation-state or transnational organization is preparing to or is employing CBRN/TIM weapons. Areas of interest include when the weapons will be employed, targets selected, weapons systems involved, agents involved, locations of weapons systems, and forces/personnel involved in the employment. Extracts information from the medical, operational, intelligence, and environmental communities to identify potential biological warfare activities. Includes verification of first use.

2.11.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 2.4.2.1, SN 8.1.10), JP (2-0, 2-02).

2.11.1.2.1 Supported Task: N/A

2.11.1.2.2 Lateral Task: SNSHA 1

2.11.1.2.3 Supporting Task: STSENS 3

2.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN/TIM effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Limited foreign government support. (C3.1.2.3)

2.11.2 Functional Needs Analysis**2.11.2.1 Capability and Deficiency Assessment Summary**

Table 2.11-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to sense when a nation-state or transnational organization is preparing to or is employing CBRN/TIM weapons. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing imminent or actual employment of CBRN weapons but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 2.11-1. SENSES 11: Capability and Deficiency Assessment

Capability: Joint Staff Director for Intelligence, J-2	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability	Y ⁷	Y	Y	Y	Y
Far-Term Overall Capability⁸	Y ⁹	Y	Y	Y	Y

	FAA Measure	Scale
M1	Unambiguous attack warning is provided.	G – Yes, Y – Limited, R – No
M2	CBRN/TIM attacks are detected and identified.	G – Yes, Y – Limited, R – No
M3	Reports of CBRN/TIM attacks are accurate.	G – Yes, Y – Limited, R – No
M4	First use is verified.	G – Yes, Y – Limited, R – No
M5	Accurate attack assessments are provided.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIM as a weapon, or third-party situations where U.S. resources can not be brought to bear.

² The J-2 works with the J-3 and various national-level organizations to provide unambiguous CBRN/TIM attack warning. In the case of determining if a nation-state has conducted a CBRN attack against U.S. forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to attribute the attack and in the case of a biological attack or attacks involving TIM it may be difficult to determine if it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to provide unambiguous warning may not be adequate.

³ The J-2 works with the J-3 and various national-level organizations to detect and identify CBRN/TIM attacks. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to detect or identify the attack and in the case of a biological attack or attacks involving TIM it may be difficult to determine if it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to detect or identify attacks may not be adequate.

⁴ Methods and procedures for accurately reporting CBRN attacks against U.S. forces are mature and effective. Methods and procedures for accurately reporting third-party, terrorist and TIM attacks may not be adequate.

⁵ Methods and procedures for verifying first use of CBRN against U.S. forces are mature and effective. Methods and procedures for verifying first use in third-party, terrorist and TIM attacks may not be adequate.

⁶ Methods and procedures for providing accurate attack assessments when CBRN is used against U.S. forces are mature and effective. Methods and procedures providing accurate attack assessments in third-party, terrorist and TIM attacks may not be adequate.

⁷ Near- and mid-term improvements for all measures will depend upon the emphasis placed upon and efficacy of experimentation which will be designed to close knowledge gaps.

⁸ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁹ Once knowledge gaps are closed, concepts may be refined, and new capabilities will be proposed and refined as a result of experimentation.

2.11.3 Functional Solution Analysis

2.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Techniques and procedures involving sensing of terrorist CBRN attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing the CBRN attacks of terrorists. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of CBRN attacks of terrorists at the strategic national level.
- 2. Deficiency:** Techniques and procedures involving sensing of small biological attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing of small biological attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of small biological attacks at the strategic national level.
- 3. Deficiency:** Techniques and procedures involving sensing of TIM attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing of TIM attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of TIM attacks at the strategic national level.
- 4. Deficiency:** Techniques and procedures involving sensing of third-party attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTP that will address all issues surrounding sensing third party CBRN attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of third party CBRN attacks at the strategic national level.

- 5. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIMs as a weapon, or third-party situations where U.S. resources can not be brought to bear.

Non-Materiel Solutions: *Doctrine:* Integrate all lessons learned and procedures into appropriate joint publications.

2.11.3.2 IMA Assessment Summary

N/A

2.12 Task SNSENS 12: Sense global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials

2.12.1 Functional Area Analysis

2.12.1.1 Definition

To obtain information and data from all sources that determine the location and source of global CBRN/TIM hazards due to employment or release other than attack (ROTA) of CBRN/TIM weapons or materials. Areas of interest include detecting, identifying, and quantifying those CBRN/TIM hazards in all physical states (solid, liquid, gas). Enables the continued monitoring and identification of hazards in support of shaping, shielding, and sustaining.

2.12.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 2.4.2.1), JP (2-0, 2-02, 3-11).

2.12.1.2.1 Supported Task: N/A

2.12.1.2.2 Lateral Task: SNSHA 1

2.12.1.2.3 Supporting Task: STSENS 4

2.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN/TIM effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. TIMs are present. (C3.3.7.5)

2.12.2 Functional Needs Analysis**2.12.2.1 Capability and Deficiency Assessment Summary**

Table 2.12-1 discusses the capabilities that currently exist to perform the task to the designated standard. These are the only capabilities that exist and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorates for Intelligence and Operations are able under most circumstances to effectively sense global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J-2 and J-3 to determine the adequacy of current and projected national-level operational and intelligence capabilities to sense when global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials are present. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and improve Sense requirements, but the overall assessment will remain as "green."

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may continue to improve the ability to sense global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials.

Table 2.12-1 SENSES 12: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
J-2	Y ¹	Y ²	G ³
J-3	G ⁴	G ⁵	G ⁶
Near/Mid			
J-2	G ⁷	G	G
J-3	G	G	G
Far			
J-2	G	G	G
J-3	G	G	G
Current Overall Capability	G	G	G
Near/Mid-Term Overall Capability	G	G	G
Far-Term Overall Capability	G	G	G

	FAA Measure	Scale
M1	Hazards are detected and identified.	G – Yes, Y – Limited, R – No
M2	Reports on hazards are accurate.	G – Yes, Y – Limited, R – No
M3	Hazard warning is provided.	G – Yes, Y – Limited, R – No

¹ The J-2 works with the J-3 and various national-level organizations to detect and identify CBTN/TIM hazards. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. While it may not be possible to attribute CBRN/TIM hazards as attacks, it will be possible to detect and identify hazards. In the event of use not involving U.S. forces or allies it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves non-U.S. allies or countries that restrict information and access may not be adequate.

² Methods and procedures for accurately reporting hazards involving U.S. forces are mature and effective. Methods and procedures for accurately reporting hazards involving non-U.S. allies or countries that restrict information and access may not be adequate.

³ Once a hazard or potential hazard is detected and identified, nothing precludes providing global warning.

⁴ The deputy director for current operations is responsible for the National Military Command Center operations and command and control systems, ongoing current operations, and future plans in support of the combatant commanders. The National Military Command Center will coordinate all information, and in conjunction with the J-2, deconflict and assess the hazard reports and send out taskings worldwide for further required detection, identification, or monitoring missions within the capabilities of operational forces. Interagency coordination will be required for detection and identification outside of military capabilities.

⁵ Nothing precludes accurate reports within the operational capabilities of the combatant commands. The J-3 must coordinate within the interagency for information or requirements outside of military capabilities.

⁶ Once a hazard or potential hazard is detected and identified, nothing precludes providing global warning.

⁷ Processes will be developed to facilitate data collection when it involves non-U.S. allies or countries that restrict information and access.

2.12.3 Functional Solution Analysis

2.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** In the event of global CBRN/TIM hazards not involving U.S. forces or allies, it may be difficult to detect or identify hazards and gain required information.
Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include detecting and identifying hazards when they affect non-U.S. allies or countries that restrict information and access.
- 2. Deficiency:** In the event of global CBRN/TIM hazards involving non-U.S. allies or countries that restrict information and access it may be difficult to gain accurate required information.
Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all accuracy issues surrounding sensing global CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include determining how to accurately gain information on hazards when they affect non-U.S. allies or countries that restrict information and access.
- 3. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing global hazards in third-party situations where U.S. resources cannot be brought to bear.
Non-Materiel Solutions: *Doctrine:* Integrate all information concerning actions to be taken when hazards affect non-U.S. allies or countries that restrict information and access and integrate lessons learned and procedures developed through experimentation into appropriate joint publications.
- 4. Deficiency:** Experimentation and training may not be conducted as frequently and extensively as required in order to identify capability gaps and required enhancements.
Non-Materiel Solutions: *Training:* Conduct experimentation and training as required in order to identify capability gaps and required enhancements.

2.12.3.2 IMA Assessment Summary

N/A

2.13 Task SENSES 13: Monitor compliance of signatories to treaties that touch on CBRN/TIM matters (e.g., Chemical Weapons Convention) and states that are eliminating their WMD CBRN treaty signatories and elimination states for compliance

2.13.1 Functional Area Analysis

2.13.1.1 Definition

To use national means to determine whether CBRN treaty signatories and those states voluntarily or involuntarily participating in CBRN elimination procedures are in compliance.

2.13.1.2 Derivation

UJTL (SN 9.1.3, SN 9.2.3, SN 2.4.1.2, SN 2.4.2.1), JP (2-0, 2-02, 3-11).

2.13.1.2.1 Supported Task: N/A

2.13.1.2.2 Lateral Task: SNSHA 1

2.13.1.2.3 Supporting Task: STSENS 5

2.13.1.3 Condition

Perform this task under conditions of:

Physical

1. CBRN threat form. (C1.3.3.1-3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations. (C2.1.1.7)
 - c. Limited host nation support. (C2.8.5)
2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host nation support. (C2.8.5)

Common Military Conditions

1. Limited personnel expertise. (C2.2.4.5)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3)

2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3)

This task is analyzed in the WMD Interdiction and Elimination JCIDS.

2.14 Task SENSES 14: Monitor international scientific and technology developments for potential CBRN/TIM implications

2.14.1 Functional Area Analysis

2.14.1.1 Definition

To use national means to gather information on international scientific and technology developments, assess the information for applicability to CBRN/TIM weapons use, and distribute the information to agencies that require the information. Tracks international developments in biology, chemistry, nuclear physics, and nanotechnologies that could affect the development or use of CBRN/TIM weapons. Fuses this information with other intelligence and operational and environmental data to provide guidance for planning.

2.14.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.2.5), JP (2-0, 2-02).

2.14.1.2.1 Supported Task: N/A

2.14.1.2.2 Lateral Task: SNSHA 1

2.14.1.2.3 Supporting Task: STSENS 6

2.14.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military. N/A

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

2.14.2 Functional Needs Analysis

2.14.2.1 Capability and Deficiency Assessment Summary

Table 2.14-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfighter, JRO-CBRND must proactively engage the J2 to determine the adequacy of current and projected national-level intelligence capabilities to monitor international scientific and technology developments for potential CBRN/TIM implications. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action. The overall current assessment is "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to monitor international scientific and technology developments for potential CBRN/TIM implications resulting in a capability projection of "green."

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may continue to improve DoD's ability to monitor international scientific and technology developments for potential CBRN/TIM implications.

Table 2.14-1. SENSES 14: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2
Current Overall Capability¹	Y ²	Y ³
Near/Mid-Term Overall Capability⁴	G ⁵	G ⁶
Far-Term Overall Capability	G	G

	FAA Measure	Scale
M1	Strategic surprise does not occur due to science and technology developments.	G – Yes, Y – Limited, R – No
M2	International scientific and technology developments with applicability to CBRN/TIM weapons are detected and cataloged.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue.

² The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. There may not be adequate linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts.

³ The J-2 works with various national-level organizations to ensure that information relating to international scientific and technology developments for CBRN/TIM weapons are available if required. Joint intelligence and CBRN officers may not be fully aware of what is required or important.

⁴ In the mid term, joint intelligence and CBRN publications can be updated to adequately address this issue.

⁵ In the mid term, problems with determining appropriate and effective linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts can be identified and corrected as a result of experimentation.

⁶ In the mid term, intelligence/CBRND fusion issues can be identified and corrected as a result of experimentation.

2.14.3 Functional Solution Analysis

2.14.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There may not be adequate linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts.

Non-Materiel Solutions: *Training:* Develop an experimentation plan to determine the linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts. Integrate lessons learned into TTPs and procedures that the J2 can coordinate with the intelligence community.

- 2. Deficiency:** Joint intelligence and CBRN officers may not be fully aware of what is required or important.

Non-Materiel Solutions: *Leadership:* Integrate TTPs developed through experimentation into leader education for both intelligence and CBRN staff officers.

- 3. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.

Non-Materiel Solutions: *Doctrine:* Integrate TTPs developed through experimentation into both intelligence and CBRN joint publications.

2.14.3.2 IMA Assessment Summary

N/A

2.15 Task SENSES 15: Provide Sense Global Family of Engagement Plan policies and guidelines to combatant commanders

2.15.1 Functional Area Analysis

2.15.1.1 Definition

To formulate policy for Sense “Global Family of Engagement Plans” and to provide this policy, as well as specific guidelines, to combatant commanders for execution. The Chairman of the Joint Chiefs of Staff (CJCS), in conjunction with interagency partners, coordinates and develops these policy and guidelines. Because the threat of CBRN/TIM weapons is of concern to all nations and potential allies, offering assistance in establishing Sense capabilities, through training or equipment, can help forge new friendships and cooperation. It will also make Sense issues easier to address in remote or austere areas if the host nation has an existing Sense capability.

2.15.1.2 Derivation

UJTL (SN 9.1.3, SN 8, SN 7.5, SN 5.4.3), CJCSM 3113.01A.

2.15.1.2.1 Supported Task: N/A

2.15.1.2.2 Lateral Tasks: SNSHA 8, SNSHA 11

2.15.1.2.3 Supporting Task: STSENS 7

2.15.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil. N/A

2.15.2 Functional Needs Analysis

2.15.2.1 Capability and Deficiency Assessment Summary

Table 2.15-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The CJCS has numerous responsibilities to include, but not limited to, preparing and reviewing joint policies and guidelines, etc. The “Global Family of Engagement Plans” is the phrase used in the Theater Engagement Planning (TEP) Joint Manual (*CJCSM 3113.01a*) to describe action mandated by *Defense Planning Guidance FY 2002–2007, 6 April 2000* to develop a process to globally integrate all military engagement activities. The TEPs from each geographic combatant commander or designated Executive Agent are integrated into the “Global Family of Engagement Plans,” which is approved by the CJCS and forwarded to the Under Secretary of Defense for Policy for review. This process and the review and any guidance or support to aid combatant commanders in the initial development of the TEPs are a strategic national-level activity and from the standpoint of Sense, Shape, Shield, and Sustain, as embodied in the CBRND Enabling Concept, must be accomplished, at a minimum, with the technical assistance and support of JRO-CBRND. “Sense Global Family of Engagement Plans” implies the integration of Sense CBRND Enabling Concept ideas into any policies and guidelines that would impact on combatant command development of TEPs. Current overall assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD’s ability to articulate and provide Sense “Global Family of Engagement Plans” and to provide policy, as well as specific guidelines, to combatant commanders for execution. The overall status should improve to “yellow” due to these initiatives but is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The overall status is likely to remain “yellow” due to the inherent difficulties posed by international relations.

Table 2.15-1. SSENS 15. Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R²	R³	R⁴
Near/Mid-Term Overall Capability	Y⁵	Y	Y
Far-Term Overall Capability	Y	Y	Y

	FAA Measure	Scale
M1	Sense Global Family of Engagement Plan policies and guidelines are established.	G – Yes, Y – Limited, R – No
M2	Existing policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	Joint exercises/experimentation provide feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No

¹ No doctrine, i.e., staff guidance or joint TTPs, has been established specifically for restoration operations.

² No. Although generic guidance exists in CJCSM 3113.01a, the “Global Family of Engagement Plans” does not include Sense initiatives.

³ There are no polices or guidelines to update.

⁴ While there have been many joint exercises, an exercise focused on restoration operations and the efficacy of Sense “Global Family of Engagement Plan” policies and guidelines has not been conducted.

⁵ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

2.15.3 Functional Solution Analysis

2.15.3.1 DOTLPP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRN Sense considerations are not included in the “Global Family of Engagement Plans.”

Non-Materiel Solutions: *Doctrine:* Ensure that “Global Family of Engagement Plans” policies and guidelines include CBRN Sense considerations.
- 2. Deficiency:** No exercises focused on CBRN Sense considerations.

Non-Materiel Solutions: *Doctrine:* Establish working groups to establish policies and guidelines that include CBRN Sense considerations into TEP. *Training:* Develop exercises that include CBRN Sense considerations and focus on gathering information of the efficacy of Global Family of Engagement planning. *Facilities:* Incorporate into Joint National Training Capability.
- 3. Deficiency:** No doctrine, i.e., staff guidance or joint TTPs (JTTPs), has been established in support of this task.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, i.e., staff guidance/policies, (Chairman of the Joint Chiefs of Staff Instruction [CJCSI], Chairman of the Joint Chiefs of Staff Manual [CJCSM], or JTTPs). Such policies and guidelines should be included in documents like CJCSM 3113.01A Theater Engagement Planning, Defense Planning Guidance, the Joint Staff Capabilities Plan, and any CBRN-specific publications might provide guidance on CBRN defense integration into TEP.
- 4. Deficiency:** No training on this task provides feedback.

Non-Materiel Solutions: *Training:* Develop training on Global Family of Engagement Plan CBRN Sense considerations so that lessons learned can be gathered.
- 5. Deficiency:** No JPME education on Global Family of Engagement Planning including CBRN Sense considerations.

Non-Materiel Solutions: *Leadership:* Develop JPME leader education on Global Family of Engagement Plan CBRN Sense considerations. Provide materials to the Joint Forces Staff College so they can use CBRN Sense considerations as a TEP example.

2.15.3.2 IMA Assessment Summary

N/A

2.16 Task SENSES 16: Provide global screening for endemic disease and/or hazardous substances in the environment

2.16.1 Functional Area Analysis

2.16.1.1 Definition

To use national means to provide global screening for endemic diseases and/or hazardous substances in the environment. All interagency capabilities are employed to ensure that endemic diseases and/or hazardous substances in the environment are detected and that national military forces are warned and appropriate preventive action is taken.

2.16.1.2 Derivation

UJTL (SN 4.3.3, SN 9.1.3).

2.16.1.2.1 Supported Task: N/A

2.16.1.2.2 Lateral Task: SNSHA 1

2.16.1.2.3 Supporting Task: STSENS 8

2.16.1.3 Condition

Perform this task under conditions of:

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

2.16.2 Functional Needs Analysis

2.16.2.1 Capability and Deficiency Assessment Summary

Table 2.16-1 discusses the only capability that exists to perform the task to the designated standards.

Current Capability and Deficiency

Resources and DOTMLPF exist to support CJCS staff information and data collection, processing, and correlation from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures. The DoD Global Emerging Infections

Surveillance and Response System (GEIS) and Armed Forces Medical Intelligence Center (AFMIC) maintain active surveillance for infectious diseases that might affect military personnel, readiness, and operations and are resources for the CJCS staff. Dissemination of warnings to national strategic forces identifying these potential hazards and diseases, and the associated protective measures are incorporated within existing doctrine. Deficiencies are related to the level of automation of information and data resources and their compatibility.

Projected Near/Mid-Term Capability and Deficiency

No foreseeable changes in the near/mid term.

Projected Far-Term Capability and Deficiency

No foreseeable changes in the far term.

Table 2.16-3. SNSSENS 16: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y	Y	Y	Y
Far-Term Overall Capability	Y	Y	Y	Y

	FAA Measure	Scale
M1	All diseases/hazards are identified.	G – Yes, Y – Limited, R – No
M2	Medical, operational, intelligence, and environmental data are correlated.	G – Yes, Y – Limited, R – No
M3	Diseases/hazards are identified in time to warn forces and take appropriate preventive measures.	G – Yes, Y – Limited, R – No
M4	Diseases/hazards are identified in time to treat forces.	G – Yes, Y – Limited, R – No

¹ Adequate DOTLPF exists to conduct this task.

² Limited. Pathogens of military importance are identified. Outbreaks of new or mutated diseases assessed by the Centers for Disease Control and/or World Health Organization are reviewed by AFMIC for inclusion. The DoD GEIS also provides information on infectious diseases that pose a threat to personnel or reduce medical readiness. Other types of hazards are reviewed for their impact upon military forces, depending upon type and scope. For example, ITF-40 assesses a number of industrial chemicals for their potential impact. However, ITF-40 does not assess all the potential industrial chemicals, possibly existing within an area of interest. Information must be collected, processed, and correlated from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures.

³ Limited. Resources such as the Centers for Disease Control, World Health Organization, International Atomic Energy Agency, AFMIC, GEIS, North Atlantic Treaty Organization, Food and Agriculture Organization, and others are identified as reliable sources for data and information about most areas of interest. However, much of the information and data must be collected, processed, correlated, evaluated, and assessed manually. Many resource systems are not integrated or are not automated. Information systems within DoD and other government agencies are frequently stovepiped and the information must be manually transferred from one system to another. Additionally, data structures and fields are not always compatible between systems impacting application of data transfer utilities.

⁴ Limited. Diseases and hazards within an area of interest are not static. These change overtime. National Strategic plan implementation processes incorporate requirements for ensuring currency of information and decisioning parameters. Adjustments are made as necessary. Identification of endemic diseases and hazards of military importance are disseminated and are accompanied with guidance on preventive measures. Changes to this information is disseminated throughout operations. However, the largely manual nature of the current process is time consuming and the potential exists for exposure prior to receipt of warning.

⁵ Limited. Capability relies on in-country intelligence and data, which may be of questionable reliability.

2.16.3 Functional Solution Analysis

2.16.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all potential hazards have been assessed for their military importance. For example, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest.
Non-Materiel Solutions: *Doctrine:* Expand existing doctrine to include all potential TIC hazards. *Leadership:* Build leadership awareness of potential gap in existing information and potential sources for information and data.
- 2. Deficiency:** Data structures and fields are not always compatible between systems impacting application of data transfer utilities.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, processes, and procedures for Defense Information Systems Agency (DISA)-compatible data mining of DoD and non-DoD legacy systems.
- 3. Deficiency:** The largely manual nature of the current process is time-consuming, and the potential exists for exposure prior to receipt of warning.
Non-Materiel Solutions: *Leadership:* Develop leadership awareness of issues associated with information collection and processing and the need for force preparedness and prior knowledge of hazards/diseases of military importance in area of interest.

2.16.3.2 IMA Assessment Summary

N/A

2.17 Task SENSES 17: Develop global environmental background data including climatology

2.17.1 Functional Area Analysis

2.17.1.1 Definition

To use national means to obtain and assess global environmental background data (including climatology) for potential CBRN/TIM implications. All interagency capabilities are employed to obtain this information and to ensure that national military forces have access to processed data.

2.17.1.2 Derivation

UJTL (SN 9.1.3, SN 2.2.1).

2.17.1.2.1 Supported Task: N/A

2.17.1.2.2 Lateral Task: SNSHA 1

2.17.1.2.3 Supporting Task: STSENS 9

2.17.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

2.17.2 Functional Needs Analysis

2.17.2.1 Capability and Deficiency Assessment Summary

Table 2.17-1 discusses the various DoD and national capabilities that currently exist to perform the task to the designated standards. Located at the University of California's Lawrence Livermore National Laboratory, the National Atmospheric Release Advisory Center (NARAC) is a national support and resource center for planning, real-time assessment, emergency response, and detailed studies of incidents involving a wide variety of hazards, including nuclear, radiological, chemical, biological or natural emissions. NARAC is a distributed system, providing modeling and geographical information tools for deployment to an end user's

computer system, as well as real-time access to global meteorological and geographical databases and advanced three-dimensional model predictions from the national center. DoD operates a military environmental service system to provide specialized global meteorological, space, environmental, and oceanographic analysis and prediction services in support of military forces. Minor deficiencies in capability include the need to integrate CBRN considerations into environmental and climatology processes, TTPs, and doctrine. In addition, more awareness of the NARAC program is needed through education.

Current Capability and Deficiency

Current capabilities are robust and mature with only minor deficiencies in data currency and program awareness.

Projected Near/Mid-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises.

Projected Far-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises.

Table 2.17-1. SENSES 17: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
National Atmospheric Release Advisory Center (NARAC)	Y ¹	G ²	G ³
Department of Defense Weather Programs	G ⁴	G ⁵	G ⁶
Near/Mid			
National Atmospheric Release Advisory Center (NARAC)	G ⁷	G	G
Department of Defense Weather Programs	G	G	G
Far			
National Atmospheric Release Advisory Center (NARAC)	G	G	G
Department of Defense Weather Programs	G	G	G
Current Overall Capability	G	G	G
Near/Mid-Term Overall Capability	G	G	G
Far-Term Overall Capability	G	G	G

	FAA Measure	Scale
M1	Environmental background data are available for critical areas.	G – Yes, Y – Limited, R – No
M2	Climatology data are available for critical areas.	G – Yes, Y – Limited, R – No
M3	Available data can be accessed by forces with requirements.	G – Yes, Y – Limited, R – No

¹ Environmental background data are available but may be dated.

² The emergency response system collects meteorological data for the region around the release location and data from other systems.

³ Yes. More awareness of program is needed.

⁴ Environmental background data are available or can be obtained for any area of the world.

⁵ Climatology data are available or can be obtained for any area of the world.

⁶ Total access is available through military command and control and communications systems.

⁷ Environmental data should be updated in the near/mid term.

2.17.3 Functional Solution Analysis

2.17.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRN considerations need to be integrated into environmental and climatology processes, TTPs, and doctrine.
Non-Materiel Solutions: *Doctrine:* Doctrine, TTPs, policies, and guidelines need to be established for integrating CBRN considerations and for regular updating and centralizing of environmental background data in critical area of operations.

- 2. Deficiency:** More awareness of NARAC program is needed through education.
Non-Materiel Solutions: *Leadership:* Awareness of this capability needs to be addressed throughout the JPME education process.

2.17.3.2 IMA Assessment Analysis

N/A

CHAPTER 3. STRATEGIC THEATER SENSE TASKS

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3.9 Task STSENS 9: Develop theater environmental background data including climatology38

3.0 Strategic Theater Sense

3.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives; define limits and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans. The strategic theater (ST) sublevel encompasses combatant command (COCOM) tasks. Nine strategic theater sense tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA) including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)–sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the Strategic Theater Sense area, restates relevant information from the CBRND FAA, including a description of each of the nine Strategic Theater Sense tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The FSA section addresses possible solutions for the deficiencies identified in the FNA section. The non-materiel solutions address one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. Most of the Strategic Theater Sense tasks involve required capabilities of major staffs or staff sections within the U.S. Department of Defense (DoD). In those areas where a DoD staff or agency needed to interact within the interagency, the task focused on DoD capabilities required to facilitate the interaction.

3.0.2 FNA Summary

The table below summarizes the overall current and projected capability to perform the Strategic Theater Sense tasks identified in the CBRND Defense (CBRND) FAA. The overall capability to conduct Strategic Theater Level Sense tasks (STSENSs) in the current time frame is assessed as “yellow.” The COCOM J-2 is responsible for working with national/theater-level organizations to obtain intelligence that is required to support joint theater operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the COCOM commander’s main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the operational deployment of CBRN weapons in theater. To be proactive, the COCOM CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are

listed, and issues that need to be further assessed and clarified are provided for JRO-CBRND action. While the J2 and theater intelligence organizations have the responsibility to gather intelligence on CBRN threat-related issues, they do not have the requisite understanding of CBRN issues to fully address the requirements without assistance from the COCOM CBRND staff. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to articulate and assess Sense requirements, but the overall status will remain “yellow” due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 3.0-1. Strategic Theater Sense Summary FNA Findings

CBRN Strategic Theater Sense Task Number	CBRN Strategic Theater Sense Task Title	Capability		
		Current	Near/Mid	Far
STSENS 1	Sense the storage locations of CBRN/TIM weapons or components in theater.	●	●	●
STSENS 2	Sense the operational deployment of CBRN/TIM weapons in theater.	●	●	●
STSENS 3	Sense the employment of CBRN/TIM weapons in theater.	●	●	●
STSENS 4	Sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials.	●	●	●
STSENS 5	Monitor CBRN treaty signatories and elimination states for compliance.	N/A	N/A	N/A
STSENS 6	Monitor theater scientific and technology developments for potential CBRN/TIM implications.	●	●	●
STSENS 7	Develop TEPs for Sense-related issues.	●	●	●
STSENS 8	Provide theater screening for endemic diseases and/or hazardous substances in the environment.	●	●	●
STSENS 9	Develop theater environmental background data including climatology.	●	●	●
OVERALL		●	●	●

3.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential solutions for the capability gaps identified in the FNA section.

3.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter include basic actions required to better prepare the appropriate staffs. No training or experimentation has taken place to facilitate the formulation of tactics, techniques, and procedures (TTPs) designed to facilitate the ability of intelligence personnel to assess CBRND “sense” requirements. It is imperative that these exercises take place and lessons learned be integrated into doctrine, TTPs, and guidance. Other solutions include the development of leader education programs for both CBRND and intelligence staff officers so that they are better prepared to understand the correlation between proliferation or theater scientific/technology developments and potential CBRN/ toxic industrial material (TIM) operational implications. A detailed analysis of how the theater intelligence/CBRN community is organized and staffed to perform CBRN intelligence analysis and collection activities must be conducted. In the case of hazards involving non-U.S. allies or countries that restrict information, it is imperative that appropriate exercises/experimentation take place and lessons learned be integrated into doctrine, TTPs, and guidance.

3.0.3.2 IMA

There are no materiel requirements.

3.1 Task STSENS 1: Sense the storage locations of CBRN/TIM weapons or components in theater

3.1.1 Functional Area Analysis

3.1.1.1 Definition

To obtain information and data from all sources that determine where a military force or transnational organization is storing CBRN/TIM weapons or components. Areas of interest include storage locations, storage capacities, safety precautions, prevailing meteorological conditions at sites, types of weapons or components stored, and facility entrances.

3.1.1.2 Derivation

UJTL (ST 9.6, ST 2, ST 2.2.1).

3.1.1.2.1 Supported Task: SSENS 7

3.1.1.2.2 Lateral Task: STSHA 1

3.1.1.2.3 Supporting Task: OPSSENS 1

3.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

3.1.2 Functional Needs Analysis

3.1.2.1 Capability and Deficiency Assessment Summary

Table 3.1-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM J-2 assists the commander of a combatant command by providing higher echelon, up to and including the National Military Joint Intelligence Center (NMJIC), and subordinate commands with a single, coordinated CBRN intelligence picture by fusing national and theater intelligence into all-source estimates and assessments. The COCOM J-2 is responsible for working with national/theater-level organizations to obtain intelligence required to support joint theater operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the COCOM commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the storage locations of CBRN/TIM weapons or components. To be proactive, the COCOM CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed, and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this Joint Capabilities Integration and Development System [JCIDS] analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to sense the storage locations of CBRN/TIM weapons or components in theater. The overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the COCOM staff to develop intelligence indicators for sensing the storage locations of CBRN/TIM weapons or components in theater, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 3.1-1. STSENS 1: Capability and Deficiency Assessment

Capability: Combatant Command J-2	M1	M2	M3
Current Overall Capability¹	Y²	Y³	Y⁴
Near/Mid-Term Overall Capability	Y	Y	Y
Far-Term Overall Capability⁵	Y	Y	Y

	FAA Measure	Scale
M1	Storage locations of CBRN/TIM weapons or components are detected and identified.	G – Yes, Y – Limited, R – No
M2	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No
M3	Intelligence on storage locations of CBRN/TIM weapons or components is accurate.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. The COCOM CBRN staff is not adequately staffed and organized to meet its intelligence-related responsibilities. The COCOM J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The COCOM J-2 works with various national/theater-level organizations to determine where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The COCOM J-2 works with various national/theater-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied in determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components.

⁴ The COCOM J-2 works with various national/theater-level organizations to ensure accuracy of intelligence determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

3.1.3 Functional Solution Analysis

3.1.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the Ideas for Materiel Approaches (IMA) section.

- 1. Deficiency:** Techniques and procedures to facilitate detecting and where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective theater techniques and procedures for detecting and identifying where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to provide useful indicators. These indicators must include types of storage facilities, techniques for storage in unlikely locations, storage capacities, safety and security measures, transport and agent release techniques, and storage capacity.
- 2. Deficiency:** Techniques and procedures to ensure accurate intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective techniques and procedures to ensure accurate theater intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to develop metrics to measure accuracy.
- 3. Deficiency:** Adequate resources and means may not be sufficiently applied to accurately determine where a nation-state or transnational organization is storing CBRN/TIM weapons or components.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the COCOM J2 as well as each theater intelligence organization must be analyzed from a CBRN standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander.

Training: JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement.

Leadership: JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts.

Personnel: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience.

Facilities: Training requirements should be analyzed and special training facilities developed/modified if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
- 5. Deficiency:** COCOM CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* COCOM CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel:* COCOM CBRND should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues.
- 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable the COCOM J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic theater CBRND. *Leadership:* Develop an education program that will enable the COCOM J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic theater CBRND.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Doctrine:* Develop doctrine to provide guidance and outline interaction and exchange of information between J-2, the intelligence community, and other participating entities. *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
- 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training:* Conduct small-scaled training sessions focused on communications and recognizing less obvious indicators of CBRN/TIM weapons storage. Incorporate the derived information into subsequent exercises that facilitate this and other areas of the task.
- 9. Deficiency:** Joint Professional Military Education (JPME) does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

3.1.3.2 IMA Assessment Summary

N/A

3.2 Task STSENS 2: Sense the operational deployment of CBRN/TIM weapons in theater

3.2.1 Functional Area Analysis

3.2.1.1 Definition

To obtain information and data from all sources that determine when a military force or transnational organization is preparing to conduct or is conducting an operational deployment of CBRN/TIM weapons. Includes information on civil and military plans related to deployment, training conducted by military forces and civilians, and the overall CBRN/TIM defensive preparedness of military forces.

3.2.1.2 Derivation

UJTL (ST 9.6, ST 2, ST 2.2.1).

3.2.1.2.1 Supported Task: SENSES 8

3.2.1.2.2 Lateral Task: STSHA 1

3.2.1.2.3 Supporting Task: OPSSENS 2

3.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Transnational organization
 - a. Negligible intelligence database. (C2.4.2)
 - b. Negligible theater intelligence access. (C2.4.2)
2. Nation-states
 - a. Marginal intelligence database. (C2.4.2)
 - b. Difficult theater intelligence access. (C2.4.2)

Common Military

1. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

3.2.2 Functional Needs Analysis

3.2.2.1 Capability and Deficiency Assessment Summary

Table 3.2-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM J-2 assists the commander of a combatant command by providing higher echelon, up to and including the NMJIC, and subordinate commands with a single, coordinated CBRN intelligence picture by fusing national and theater intelligence into all-source estimates and assessments. The COCOM J-2 is responsible for working with national/theater-level organizations to obtain intelligence that is required to support joint theater operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the COCOM commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the operational deployment of CBRN weapons in theater. To be proactive, the COCOM CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to articulate and assess "sense" requirements but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the COCOM staff to develop intelligence indicators for sensing the operational deployment of CBRN/TIM weapons in theater, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 3.2-1. STSENS 2: Capability and Deficiency Assessment

Capability: Combatant Command J-2	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability	Y ⁷	Y	G	Y	Y
Far-Term Overall Capability⁸	Y ⁹	Y	G	Y	Y

	FAA Measure	Scale
M1	Deploying CBRN/TIM weapons/units are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on deploying CBRN/TIM weapons/units is accurate.	G – Yes, Y – Limited, R – No
M3	Deployment warning is provided to theater forces.	G – Yes, Y – Limited, R – No
M4	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No
M5	There are indications (e.g., message traffic between potential suppliers and political leaders, indications of recent purchases of CBRN/TIM or precursors, production equipment in operation, etc.) of increased interest in CBRN/TIM weapons.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. The COCOM CBRN staff is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The COCOM J-2 works with various national/theater-level organizations to detect and identify countries or transnational organizations deploying CBRN/TIM weapons/units/teams. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The COCOM J-2 works with various national/theater-level organizations to ensure accuracy of intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ Nothing precludes providing deployment warning to theater forces once the deployment is identified, detected, and confirmed.

⁵ The COCOM J-2 works with various national/theater-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations deploying CBRN/TIM weapons/units/teams are detected.

⁶ The COCOM J-2 works with various national/theater-level organizations to determine indications of increased interest in CBRN/TIM weapons. Adequate resources and means may not be applied to ensure countries or transnational organizations showing increased interest are detected.

⁷ Near and mid-term improvements for all measures will depend upon the emphasis placed upon, and efficacy of experimentation which will be designed to close knowledge gaps.

⁸ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁹ Once knowledge gaps are closed, concepts may be refined and new capabilities will be proposed and refined as a result of experimentation.

3.2.3 Functional Solution Analysis

3.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations deploying CBRN/TIM weapons/units/teams may not be adequate. **Non-Materiel Solutions:** *Doctrine:* JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective techniques and procedures for detecting and identifying countries or transnational organizations deploying CBRN/TIM weapons/units/teams and to provide useful indicators. These indicators must include the means to determine agent types, nuclear weapon types and yields, TIMS being considered, means by which to release TIMS, delivery modes or systems, and unit designations and formations.
- 2. Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams may not be adequate. **Non-Materiel Solutions:** *Doctrine:* JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams and to develop metrics to measure accuracy.
- 3. Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization deploying CBRN/TIM weapons/units/teams is detected. **Non-Materiel Solutions:** *Organization:* The CBRN organization or staffing of the COCOM J2 as well as each theater intelligence organization must be analyzed from a CBRN standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. *Training:* Conduct a small-scaled exercise where “to identify resources needed to detect the operational deployment of CBRN/TIM weapons” is one of the primary objectives. In addition, JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel:* Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities:* Training requirements should be analyzed and special training facilities developed/modified if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address techniques and procedures that will facilitate sensing the operational deployment for CBRN/TIM weapons in theater.

Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address techniques and procedures and to interface with each other so that intelligence/CBRND roles and responsibilities are clearly delineated. Incorporate information attained from the exercise into the doctrine and joint intelligence and CBRN publications. *Training:* Conduct a small-scaled exercise where “to identify resources needed to detect the operational deployment of CBRN/TIM weapons” is one of the primary objectives.
- 5. Deficiency:** COCOM CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities.

Non-Materiel Solutions: *Organization:* COCOM CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel:* COCOM CBRND should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues.
- 6. Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.

Non-Materiel Solutions: *Training:* Develop training that will enable the COCOM J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic theater CBRND. *Leadership:* Develop an education program that will enable the COCOM J2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic theater CBRND.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.

Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. These training programs would evolve from generalized, small-scaled training sessions to small-scaled, area-focused exercises. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
- 8. Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.

Non-Materiel Solutions: *Training:* JRO-CBRND must work with J2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
- 9. Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.

Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

3.2.3.2 IMA Assessment Summary

N/A

3.3 Task STSENS 3: Sense the employment of CBRN/TIM weapons in theater

3.3.1 Functional Area Analysis

3.3.1.1 Definition

To obtain information and data from all sources that determine when a military force or transnational organization is preparing to or is employing CBRN/TIM weapons. Areas of interest include when the weapons will be employed, theater targets selected, weapons systems involved, locations of weapons systems, and forces/personnel involved in the employment. Extracts information from the medical, operational, intelligence, and environmental communities to identify potential biological warfare activities. Includes verification of first use.

3.3.1.2 Derivation

UJTL (ST 9.6, ST 2, ST 2.2.1).

3.3.1.2.1 Supported Task: SSENS 11

3.3.1.2.2 Lateral Task: STSHA 1

3.3.1.2.3 Supporting Tasks: OPSSENS 3, OPSSENS 7

3.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric. CBRN/TIM effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Limited foreign government support. (C3.1.2.3)

3.3.2 Functional Needs Analysis

3.3.2.1 Capability and Deficiency Assessment Summary

Table 3.3-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM J-2 assists the commander of a COCOM by providing higher echelon, up to and including the NMJIC, and subordinate commands with a single, coordinated CBRN intelligence picture by fusing national and theater intelligence into all-source estimates and assessments. The COCOM J-2 is responsible for working with national/theater-level organizations to obtain intelligence that is required to support joint theater operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the COCOM commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the employment of CBRN/TIM weapons in theater. To be proactive, the COCOM CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the COCOM staff to develop intelligence indicators for sensing the employment of CBRN/TIM weapons in theater, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 3.3-1. STSENS 3: Capability and Deficiency Assessment

Capability: Combatant Command J-2	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability	Y ⁷	Y	Y	Y	Y
Far-Term Overall Capability⁸	Y ⁹	Y	Y	Y	Y

	FAA Measure	Scale
M1	CBRN attacks are detected and identified.	G – Yes, Y – Limited, R – No
M2	Reports on CBRN attacks are accurate.	G – Yes, Y – Limited, R – No
M3	Unambiguous attack warning is provided.	G – Yes, Y – Limited, R – No
M4	First use is verified.	G – Yes, Y – Limited, R – No
M5	Accurate attack assessments are provided.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIM as a weapon, or third-party situations where U.S. resources can not be brought to bear.

² The COCOM J-2 works with the COCOM J-3 and various national/theater-level organizations to detect and identify CBTN/TIM attacks. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to detect or identify the attack, and in the case of a biological attack or attacks involving TIM, it may be difficult to determine whether it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to detect or identify attacks may not be adequate.

³ Methods and procedures for accurately reporting CBRN attacks against U.S. forces are mature and effective. Methods and procedures for accurately reporting third-party, terrorist and TIM attacks may not be adequate.

⁴ The COCOM J-2 works with the COCOM J-3 and various national/theater-level organizations to provide unambiguous CBRN/TIM attack warning. In the case of determining whether a nation-state has conducted a CBRN attack against U.S. Forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to attribute the attack, and in the case of a biological attack or attacks involving TIM, it may be difficult to determine whether it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to provide unambiguous warning may not be adequate.

⁵ Methods and procedures for verifying first use of CBRN against U.S. forces are mature and effective. Methods and procedures for verifying first use in third-party, terrorist, and TIM attacks may not be adequate.

⁶ Methods and procedures for providing accurate attack assessments when CBRN is used against U.S. forces are mature and effective. Methods and procedures providing accurate attack assessments in third-party, terrorist, and TIM attacks may not be adequate.

⁷ Near/mid-term improvements for all measures will depend upon the emphasis placed upon, and efficacy of experimentation which will be designed to close knowledge gaps.

⁸ As a result of focused experimentation, joint intelligence and CBRN publications will be able to adequately address the issue of sensing theater hazards in third-party situations where U.S. resources cannot be brought to bear.

⁹ Once knowledge gaps are closed, concepts may be refined and new capabilities will be proposed and refined as a result of experimentation.

3.3.3 Functional Solution Analysis

3.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures involving sensing of terrorist CBRN attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing the CBRN attacks of terrorists. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of CBRN attacks of terrorists at the strategic theater level. Initial training should identify 2–3 essential, more general objectives that target personnel as a whole. Subsequent training/exercises should build upon initial objectives and encompass broader aspects of the task.

2. **Deficiency:** Techniques and procedures involving sensing of small biological attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing of small biological attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of biological attacks of terrorists at the strategic theater level. Initial training should identify 2-3 essential, more general objectives that target personnel as a whole. Subsequent training/exercises should build upon initial objectives and encompass broader aspects of the task.

3. **Deficiency:** Techniques and procedures involving sensing of TIM attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing of TIM attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of TIM attacks of terrorists at the strategic theater level. Initial training should identify 2-3 essential, more general objectives that target personnel as a whole. Subsequent training/exercises should build upon initial objectives and encompass broader aspects of the task.

4. **Deficiency:** Techniques and procedures involving sensing of third-party attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing third-party CBRN attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of third-party CBRN attacks at the strategic theater level.

- 5. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIMs as a weapon, or third-party situations where U.S. resources can not be brought to bear.

Non-Materiel Solutions: *Doctrine:* Integrate all lessons learned and procedures into appropriate joint publications.

3.3.3.2 IMA Assessment Summary

N/A

3.4 Task STSENS 4: Sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials

3.4.1 Functional Area Analysis

3.4.1.1 Definition

To obtain information and data from all sources that determine the location and source of theater CBRN/TIM hazards due to employment or release other than attack (ROTA) of CBRN/TIM weapons or materials. Areas of interest include detecting, identifying, and quantifying those CBRN/TIM hazards in all physical states (solid, liquid, gas). Enables the continued monitoring and identification of hazards in support of shaping, shielding, and sustaining.

3.4.1.2 Derivation

UJTL (ST 9.6, ST 2, ST 2.2.1).

3.4.1.2.1 Supported Task: SENSES 12

3.4.1.2.2 Lateral Task: STSHA 1

3.4.1.2.3 Supporting Task: OPSSENS 4

3.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN/TIM effects. (C1.3.3)
2. Nuclear radiation effects. (C1.3.3.1.2)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)

Civil

1. TIMs are present. (C3.3.7.5)

3.4.2 Functional Needs Analysis

3.4.2.1 Capability and Deficiency Assessment Summary

Table 3.4-1 discusses the capabilities that currently exist to perform the task to the designated standards. These are the only capabilities that exist, and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

The COCOM J-2 assists the commander of a COCOM by providing higher echelon, up to and including the NMJIC, and subordinate commands with a single, coordinated CBRN intelligence picture by fusing national and theater intelligence into all-source estimates and assessments. Similarly, the combatant command J-3 is where all the COCOM's planning, policies, intelligence, manpower, communications, and logistics functions are translated into action. This is the directorate that moves military forces and serves as the operational link between the component warfighting commanders and the combatant commander. The J-3 is responsible for synchronizing and monitoring theater-wide military operations and activities including reports of theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. The COCOM staffs for intelligence and operations are able under most circumstances to effectively sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. As the combatant commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J-2 and J-3 to determine the adequacy of current and projected national- and theater-level operational and intelligence capabilities to sense when theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials are present. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action. The overall current capability is "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. However, the overall capability remains "yellow."

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may continue to improve the ability to sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve the ability of the COCOM to articulate and improve "sense" requirements resulting in a capability projection of "green."

Table 3.4-1. STSENS 4: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
Combatant Command J-2	Y ¹	Y ²	G ³
Combatant Command J-3	Y ⁴	Y ⁵	G ⁶
Near/Mid			
Combatant Command J-2	Y	Y	G
Combatant Command J-3	Y	Y	G
Far			
Combatant Command J-2	G ⁷	G	G
Combatant Command J-3	G ⁸	G	G
Current Overall Capability	Y	Y	G
Near/Mid-Term Overall Capability	Y	Y	G
Far-Term Overall Capability	G	G	G

	FAA Measure	Scale
M1	Hazards are detected and identified.	G – Yes, Y – Limited, R – No
M2	Reports on hazards are accurate.	G – Yes, Y – Limited, R – No
M3	Hazard warning is provided.	G – Yes, Y – Limited, R – No

¹ The J-2 works with the J-3 and various theater-level organizations to detect and identify CBRN/TIM hazards. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. While it may not be possible to attribute CBRN/TIM hazards as attacks, it will be possible to detect and identify hazards. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves non-U.S. allies or countries that restrict information and access may not be adequate.

² Methods and procedures for accurately reporting hazards involving U.S. forces are mature and effective. Methods and procedures for accurately reporting hazards involving non-U.S. allies or countries that restrict information and access may not be adequate.

³ Once a hazard or potential hazard is detected and identified, nothing precludes providing hazard warning to theater forces and to the National Military Command Center (NMCC).

⁴ The J-3 is responsible for operations and command and control systems and ongoing current operations. The J-3 will coordinate all information, and in conjunction with the J-2, deconflict and assess the hazard reports and send out taskings theater-wide for further required detection, identification, or monitoring missions within the capabilities of operational forces. Coordination will be required with the NMCC for detection and identification outside of theater capabilities.

⁵ Nothing precludes accurate reports within the operational capabilities of the combatant command. The J-3 must coordinate with the NMCC for information or requirements outside of theater capabilities.

⁶ Once a hazard or potential hazard is detected and identified, nothing precludes providing hazard warning to theater forces and to the NMCC.

⁷ New initiatives and better fusion between CBRND and J2 staffs as a result of focused experimentation will address and resolve the issue of sensing theater hazards in third-party situations where U.S. resources cannot be brought to bear. DOTMLPF enhancements will be available and integrated where applicable.

⁸ The J3 will be able to effectively interface with the NMCC on coordination of issues outside of the theater as a result of focused experimentation.

3.4.3 Functional Solution Analysis

3.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** In the event of theater CBRN/TIM hazards not involving U.S. forces or allies, it may be difficult to detect or identify hazards and gain required information.
Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all issues surrounding sensing theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include detecting and identifying hazards when they affect non-U.S. allies or countries that restrict information and access.
- 2. Deficiency:** In the event of theater CBRN/TIM hazards involving non-U.S. allies or countries that restrict information and access it may be difficult to gain accurate required information.
Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that will address all accuracy issues surrounding sensing theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include determining how to gain accurate information on hazards when they affect non-U.S. allies or countries that restrict information and access.
- 3. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing theater hazards in third-party situations where U.S. resources cannot be brought to bear.
Non-Materiel Solutions: *Doctrine:* Integrate all information concerning actions to be taken when hazards affect non-U.S. allies or countries that restrict information and access and integrate lessons learned and procedures developed through experimentation into appropriate joint publications.
- 4. Deficiency:** Experimentation and training may not be conducted as frequently and extensively as required in order to identify capability gaps and required enhancements.
Non-Materiel Solutions: *Training:* Conduct experimentation and training as required in order to identify capability gaps and required enhancements.

3.4.3.2 IMA Assessment Summary

N/A

3.5 Task STSENS 5: Monitor compliance of theater signatories to treaties that touch on CBRN/TIM matters (e.g., Chemical Weapons Convention) and states that are eliminating their WMD CBRN treaty signatories and elimination states for compliance

3.5.1 Functional Area Analysis

3.5.1.1 Definition

To use COCOM resources to determine whether CBRN treaty signatories and those states voluntarily or involuntarily participating in CBRN elimination procedures are in compliance.

3.5.1.2 Derivation

UJTL (ST 9.6, ST 2, ST 2.2.1, ST 8).

3.5.1.2.1 Supported Tasks: SSENS 1, SSENS 13

3.5.1.2.2 Lateral Task: STSHA 1

3.5.1.2.3 Supporting Task: OPSSENS 5

3.5.1.3 Condition

Perform this task under conditions of:

Physical

1. CBRN threat form. (C1.3.3.1-3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations. (C2.1.1.7)
 - c. Limited host nation support. (C2.8.5)
2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host nation support. (C2.8.5)

Common Military Conditions

1. Limited personnel expertise. (C2.2.4.5)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3.)

2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3.)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

3.6 Task STSENS 6: Monitor theater scientific and technology developments for potential CBRN/TIM implications

3.6.1 Functional Area Analysis

3.6.1.1 Definition

To use combatant command resources to gather information on theater scientific and technology developments, assess the information for applicability to CBRN/TIM weapons use, and distribute the information to theater forces and national-level agencies that require the information. Tracks theater developments in biology, chemistry, nuclear physics, and nanotechnologies that could affect the development or use of CBRN/TIM weapons. Fuses this information with other intelligence and operational and environmental data to provide guidance for planning.

3.6.1.2 Derivation

UJTL (ST 9.6, ST 2.4.2.5).

3.6.1.2.1 Supported Tasks: SSENS 1, SSENS 14

3.6.1.2.2 Lateral Task: STSHA 1

3.6.1.2.3 Supporting Task: OPSSENS 6

3.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military. N/A

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

3.6.2 Functional Needs Analysis

3.6.2.1 Capability and Deficiency Assessment Summary

Table 3.6-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM J-2 assists the commander of a COCOM by providing higher echelon, up to and including the NMJIC, and subordinate commands with a single, coordinated CBRN intelligence picture by fusing national and theater intelligence into all-source estimates and assessments. The COCOM J-2 is responsible for working with national- and theater-level organizations to obtain intelligence that is required to support joint theater operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the COCOM commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the COCOM CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to monitor theater scientific and technology developments for potential CBRN/TIM implications. For the purposes of this analysis, current capabilities are listed, and issues that need to be further assessed and clarified are provided for JRO-CBRND action. There may not be adequate linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts. Joint intelligence and CBRN officers may not be fully aware of what is required or important. Joint intelligence and CBRN publications do not adequately address this issue. The overall current capability is "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve the ability of the DoD to monitor international scientific and technology developments for potential CBRN/TIM implications, but a capability projection of "yellow" is still made for the near/mid term due to anticipated coordination challenges with theater partners and cooperating countries.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities and cooperative ventures with theater partners resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) should continue to improve the ability of the DoD to monitor international scientific and technology developments for potential CBRN/TIM implications resulting in a capability projection of "green."

Table 3.6-1. STSENS 6: Capability and Deficiency Assessment

Capability: Combatant Command J-2	M1	M2
Current Overall Capability¹	Y ²	Y ³
Near/Mid-Term Overall Capability⁴	Y	Y
Far-Term Overall Capability	G	G

	FAA Measure	Scale
M1	Strategic theater surprise due to science and technology developments does not occur.	G – Yes, Y – Limited, R – No
M2	Theater scientific and technology developments with applicability to CBRN/TIM weapons are detected and cataloged.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue.

² The J-2 works with various national/theater-level organizations to ensure that strategic surprise does not occur. There may not be adequate linkage between the implications of international scientific and technology developments for CBRN/TIM weapons and operational impacts.

³ The J-2 works with various national/theater-level organizations to ensure that information relating to international scientific and technology developments for CBRN/TIM weapons are available if required. Joint intelligence and CBRN officers may not be fully aware of what is required or important.

⁴ Joint intelligence and CBRN publications will be updated to adequately address this issue.

3.6.3 Functional Solution Analysis

3.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or there are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There may not be adequate linkage between the implications of theater scientific and technology developments for CBRN/TIM weapons and operational impacts.
Non-Materiel Solutions: *Doctrine:* Develop doctrine to provide guidance and outline interaction and exchange of information between J-2, the intelligence community, and other participating entities. *Training:* Develop an experimentation plan to determine the linkage between the implications of theater scientific and technology developments for CBRN/TIM weapons and operational impacts. Integrate lessons learned into TTPs and procedures that the J2 can coordinate with the intelligence community.
- 2. Deficiency:** Joint intelligence and CBRN officers may not be fully aware of what is required or important.
Non-Materiel Solutions: *Doctrine:* Redefine the operational limitation of medics working as operational/intelligence personnel. *Organization:* Provide medical intelligence support or medical expertise to J-2 resources/offices. *Leadership:* Integrate TTPs developed through experimentation into leader education for both intelligence and CBRN staff officers. *Personnel:* Increase allocation of medical personnel to J-2 staff.
- 3. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Integrate TTPs developed through experimentation into both intelligence and CBRN joint publications.

3.6.3.2 IMA Assessment Summary

N/A

3.7 Task STSENS 7: Develop TEPs for Sense-related issues

3.7.1 Functional Area Analysis

3.7.1.1 Definition

To develop Theater Engagement Plans (TEPs) that will allow cooperation and the building of trust through a combination of Sense-related exercises, training, equipment exchange, and other cooperative efforts. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. To ensure cooperation and interoperability, the combatant commander develops TEPs for Sense-related considerations and activities for assigned theater or designated countries. TEPs that include Sense-related considerations and activities for assigned theater or designated countries can help to mitigate reluctance to support the United States. If countries are provided with the means to predict and determine CBRN/TIM attacks or if they are assured of U.S. assistance, they will feel less threatened. The Chairman of the Joint Chiefs of Staff (CJCS), in conjunction with interagency partners, coordinates “Global Family of Engagement Plan” policy and guidelines to combatant commanders for Sense-related considerations.

3.7.1.2 Derivation

UJTL (ST 9.6, ST 8.2.1, ST 8.1.2), CJCSM 3113.01a.

3.7.1.2.1 Supported Task: SSENS 15

3.7.1.2.2 Lateral Task: STSHA 9

3.7.1.2.3 Supporting Task: OPSSENS 8

3.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

3.7.2 Functional Needs Analysis

Capability and Deficiency Assessment Summary

Table 3.7-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM develops TEPs for restoration operation considerations and activities for assigned theater or designated countries. Nothing precludes the COCOM staff from establishing these TEPs now, but there is very little in the way of existing doctrine or TTPs to help guide them. A TEP is primarily a strategic planning document intended to link COCOM-planned regional engagement activities with national strategic objectives. TEPs are based on defense planning guidance. COCOM-planned and -supported operations and activities produce multiple benefits in readiness, modernization, and engagement. However, peacetime military engagement activities must be prioritized to ensure that efforts are focused on those that are of greatest importance without sacrificing warfighting capability. Because WMD represents the most significant threat to global security, it is an ideal candidate for theater engagement planning. TEPs identify the synchronization of these activities on a regional basis and illustrate the efficiencies gained from regional COCOM engagement activities that support national strategic objectives. No Sense-related experimentation or exercises have been conducted to provide feedback on efficacy of TEPs for specific countries. Leader education does not address this issue. The overall current assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to develop TEPs for Sense-related issues, but the overall status will remain “yellow” due to the inherent difficulty in initiating and developing new theater TEP programs.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The overall status is likely to remain “yellow” due to the inherent difficulties posed by international relations.

Table 3.7-1. STSENS 7: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	G ³	R ⁴
Near/Mid-Term Overall Capability	Y	G	R
Far-Term Overall Capability⁵	Y	G	Y ⁶

	FAA Measure	Scale
M1	“Sense” related TEPs are established for designated countries.	G – Yes, Y – Limited, R – No
M2	Existing TEPs are updated regularly.	G – Yes, Y – Limited, R – No
M3	Joint exercises/experimentation provide feedback on efficacy of TEPs for specific countries.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Nothing precludes a COCOM staff from initiating theater engagement planning for sense-related considerations. No guidance has been provided, and no doctrine exists specifically addressing restoration operation integration into theater engagement planning.

³ Nothing precludes meeting this standard once sense-related TEPs are established.

⁴ No Sense-related exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.

⁵ Doctrine will be developed. Leader education will begin to address this issue.

⁶ Results of experimentation and feedback from insertion in training exercises will begin to provide valuable data on TEP-related issues.

3.7.3 Functional Solution Analysis

3.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No guidance has been provided and no doctrine/TTPs exists specifically addressing restoration operation integration into theater engagement planning.
Non-Materiel Solutions: *Doctrine:* Establish policies, TTPs, and guidelines that include practical ways to enhance sense-related consideration integration into theater engagement planning. *Training:* Conduct training to test, validate, and identify additional ways to enhance Sense-related consideration integration.
- 2. Deficiency:** No Restoration Operation exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.
Non-Materiel Solutions: *Training:* Develop exercises to include Sense-related considerations with TEP countries to determine efficacy of policy once established..
- 3. Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* At the urging of the Joint Forces Staff College (JFSC), and as part of a Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND) joint education initiative, a team began to investigate ways to develop CBRN defense initiatives as part of theater engagement planning. The subject matter experts at the JFSC felt that in the current global environment, CBRND was an ideal platform for military engagement, enhancing a common global defense capability against weapons of mass destruction. The team plans to present these JCIDS tasks to the JFSC as a foundation for the development of TEP education materials when they are finalized.

3.7.3.2 IMA Assessment Summary

N/A

3.8 Task STSENS 8: Provide theater screening for endemic diseases and/or hazardous substances in the environment

3.8.1 Functional Area Analysis

3.8.1.1 Definition

To use COCOM resources to provide theater screening for endemic diseases and/or hazardous substances in the environment. All theater capabilities are employed to ensure that endemic diseases and/or hazardous substances in the environment are detected, theater military forces are warned, and appropriate preventive action is taken.

3.8.1.2 Derivation

UJTL (ST 4.2.2, ST 9.6).

3.8.1.2.1 Supported Task: SSENS 16

3.8.1.2.2 Lateral Task: STSHA 1

3.8.1.2.3 Supporting Task: OPSSENS 9

3.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

3.8.2 Functional Needs Analysis

3.8.2.1 Capability and Deficiency Assessment Summary

Table 3.8-1 discusses the only capability that exists to perform the task to the designated standard. Resources and DOTMLPF exist to support COCOM staff information and data collection, processing, and correlation from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures. The DoD Global Emerging Infections Surveillance and Response System (GEIS) and Armed Forces Medical Intelligence

Center (AFMIC) maintain active surveillance for infectious diseases that might affect military personnel, readiness, and operations and are resources for the COCOM staff. Dissemination of warnings to theater forces identifying these potential hazards and diseases and the associated protective measures are incorporated within existing doctrine. Deficiencies are related to the level of automation of information and data resources and their compatibility.

Current Capability and Deficiency

Pathogens of military importance are identified. Outbreaks of new or mutated diseases assessed by the Centers for Disease Control (CDC) and/or the World Health Organization (WHO) are reviewed by AFMIC for inclusion. The GEIS also provides information on infectious diseases that pose a threat to personnel or reduce medical readiness. Other types of hazards are reviewed for their impact upon military forces, depending upon type and scope. For example, ITF-40 assesses a number of industrial chemicals for their potential impact. Information must be collected, processed, and correlated from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures.

Resources such as the CDC, WHO, the International Atomic Energy Agency (IAEA), AFMIC, GEIS, North Atlantic Treaty Organization (NATO), Food and Agriculture Organization (FAO), and others are identified as reliable sources for data and information about most areas of interest. The combination of in-theater and reachback resources provide the COCOM staff with information sources and data essential to the assessment process.

Diseases and hazards within an area of interest are not static. These change overtime. COCOM plan implementation processes incorporate requirements for ensuring currency of information and decision parameters. Adjustments are made as necessary. Identification of endemic diseases and hazards of military importance are disseminated and are accompanied with guidance on preventive measures. Changes to this information are disseminated throughout operations.

Adequate DOTLPF exists to conduct this task.

Not all potential hazards have been assessed for their military importance. For example, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest.

Much of the information and data must be manually collected, processed, correlated, evaluated, and assessed. Many resource systems are not integrated or are not automated. Information systems within DoD, theater, and other government agencies are frequently stovepiped, and the information must be manually transferred from one system to another. Additionally, data structures and fields are not always compatible between systems impacting application of data transfer utilities.

The largely manual nature of the current process is time consuming and the potential exists for exposure prior to receipt of warning.

The overall current capability is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

There are no foreseeable changes in capability in the near/mid term.

Projected Far-Term Capability and Deficiency

There are no foreseeable changes in capability in the far term.

Table 3.8-1. STSENS 8: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4
Current Overall Capability¹	Y²	Y³	Y⁴	Y⁵
Near/Mid-Term Overall Capability	Y	Y	Y	Y
Far-Term Overall Capability	Y	Y	Y	Y

	FAA Measure	Scale
M1	All diseases/hazards are identified	G – Yes, Y – Limited, R – No
M2	Medical, operational, intelligence, and environmental data are correlated	G – Yes, Y – Limited, R – No
M3	Diseases/hazards are identified in time to warn forces and take appropriate preventive measures	G – Yes, Y – Limited, R – No
M4	Diseases/hazards are identified in time to treat forces.	G – Yes, Y – Limited, R – No

¹ Adequate DOTLPF exists to conduct this task.

² Limited. Pathogens of military importance are identified. Outbreaks of new or mutated diseases assessed by the CDC and/or WHO are reviewed by AFMIC for inclusion. The GEIS also provides information on infectious diseases that pose a threat to personnel or reduce medical readiness. Other types of hazards are reviewed for their impact upon military forces, depending upon type and scope. For example, ITF-40 assesses a number of industrial chemicals for their potential impact. However, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest. Information must be collected, processed, and correlated from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures.

³ Limited. Resources such as the CDC, WHO, IAEA, AFMIC, GEIS, NATO, FAO, and others are identified as reliable sources for data and information about most areas of interest. However, much of the information and data must be collected, processed, correlated, evaluated, and assessed manually. The combination of in-theater and reachback resources provide the COCOM staff with information sources and data essential to the assessment process. Many resource systems are not integrated or are not automated. Information systems within DoD, theater, and other government agencies are frequently stovepiped, and the information must be manually transferred from one system to another. Additionally, data structures and fields are not always compatible between systems impacting application of data transfer utilities.

⁴ Limited. Diseases and hazards within an area of interest are not static. These change over time. COCOM plan implementation processes incorporate requirements for ensuring currency of information and decision-making parameters. Adjustments are made as necessary. Identification of endemic diseases and hazards of military importance are disseminated and accompanied with guidance on preventive measures. Changes to this information are disseminated throughout operations. However, the largely manual nature of the current process is time-consuming, and the potential exists for exposure prior to receipt of warning.

⁵ The ability to identify endemic diseases in time to treat forces will rely on access to in-theater intelligence of the populace. This will remain a difficult task under some conditions for the foreseeable future.

3.8.3 Functional Solution Analysis

3.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all potential hazards have been assessed for their military importance. For example, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest.
Non-Materiel Solutions: *Doctrine:* Redefine the operational limitation of medics working as operational/intelligence personnel. *Organization:* Provide medical intelligence support or medical expertise to J-2 resources/offices. *Leadership:* Develop leadership awareness of potential gap in existing information and potential sources for information and data. *Personnel:* Increase allocation of medical personnel to J-2 staff.
- 2. Deficiency:** The largely manual nature of the current process is time-consuming, and the potential exists for exposure prior to receipt of warning.
Non-Materiel Solutions: *Leadership:* Develop leadership awareness of issues associated with information collection and processing and need for force preparedness and prior knowledge of hazards/diseases of military importance in area of interest.

3.8.3.2 IMA Assessment Summary

N/A

3.9 Task STSENS 9: Develop theater environmental background data including climatology

3.9.1 Functional Area Analysis

3.9.1.1 Definition

To use COCOM resources to obtain and assess theater environmental background data (including climatology) for potential CBRN/TIM implications. All theater capabilities are employed to obtain this information and to ensure that theater military forces have access to processed data.

3.9.1.2 Derivation

UJTL (ST 9.6, ST 2.2.3).

3.9.1.2.1 Supported Task: SSENS 17

3.9.1.2.2 Lateral Task: STSHA 1

3.9.1.2.3 Supporting Task: OPSSENS 10

3.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C 2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

3.9.2 Functional Needs Analysis

3.9.2.1 Capability and Deficiency Assessment Summary

Tables 3.9-1 discusses the capability that currently exists to perform the task to the designated standards within the theater. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The combatant command J-3 is where all the COCOM's planning, policies, intelligence, manpower, communications, and logistics functions are translated into action. This is the directorate that moves military forces and serves as the operational link between the component warfighting commanders and the combatant commander. The J-3 is responsible for developing theater environmental background data, including climatology. The COCOM J-3 works with various theater DoD assets, as well as the CJCS, which can access national DoD assets that operate a military environmental service system to provide specialized theater meteorological, space, environmental, and oceanographic analysis and prediction services in support of military forces. Environmental background data are available or can be obtained for any area of the theater. Climatology data are available or can be obtained for any area of the theater. Total access is available through military command and control and communications systems. DOTLPF is adequate in most areas. CBRN considerations need to be integrated into environmental and climatology processes, TTPs and doctrine. The overall current capability is "green."

Projected Near/Mid-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises.

Projected Far-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises. This will ultimately result in effective enhancements to all DOTLPF.

Table 3.9-1. STSENS: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3
Current Overall Capability¹	G²	G³	G⁴
Near/Mid-Term Overall Capability	G	G	G
Far-Term Overall Capability⁵	G	G	G

	FAA Measure	Elaboration	Scale
M1	Environmental background data are available for essential theater areas.	Assesses if a means is available to gather environmental background data at any location. Does not take into account time/automation factors. If time/automation becomes a factor, a tactical-level materiel solution that speeds process may need to be considered.	G – Yes Y – Limited R – No
M2	Climatology data are available for essential theater areas.	Assesses if a means is available to gather climatology data at any location.	G – Yes Y – Limited R – No
M3	Available data can be accessed by theater forces with requirements.	Assesses ability of theater forces to access data once they are available. Ability to assess data for CBRN implications is not part of metric.	G – Yes Y – Limited R – No

¹ Theater CBRN considerations need to be integrated into environmental and climatology processes, TTPs, and doctrine.

² Environmental background data is available or can be obtained for any area of the theater.

³ Climatology data is available or can be obtained for any area of the theater.

⁴ Total access is available through military command and control and communications systems.

⁵ Through the results of experimentation and other initiatives, theater CBRN considerations will be integrated into environmental and climatology processes, TTPs, and doctrine.

3.9.3 Functional Solution Analysis

3.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRN considerations need to be integrated into environmental and climatology processes, TTPs, and doctrine.

Non-Materiel Solutions: *Doctrine:* Integrate CBRN considerations into environmental and climatology processes, TTPs, and doctrine at the theater level.

3.9.3.2 IMA Assessment Summary

N/A

CHAPTER 4. OPERATIONAL SENSE TASKS

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4.0 Operational Sense

4.0.1 Introduction

The Operational (OP) level of war is where campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces and provide the means by which tactical successes are exploited to achieve strategic objectives. Ten OP Sense (OPSENS) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA), including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)–sponsored FAA/ Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the OPSENS area, restates relevant information from the chemical, biological, radiological, and nuclear defense (CBRND) FAA, including a description of each of the 10 OPSENS tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. The non-materiel solutions address one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. Most of the OPSENS tasks involve required capabilities of major staffs or staff sections within the U.S. Department of Defense (DoD). In those areas where a DoD staff or agency needed to interact within the interagency, the task focused on DoD capabilities required to facilitate the interaction.

4.0.2 FNA Summary

Table 4.0-1 summarizes the overall current and projected capability to perform the OPSENS tasks identified in the CBRND FAA. The overall capability to conduct OPSENS tasks in the current time frame is assessed as “yellow.” The OP-level J-2 is responsible for working with theater-level organizations to obtain intelligence that is required to support joint OP-level operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J-2 personnel may not have a full grasp of what needs to be coordinated. As the OP-level commander’s main source of expertise in addressing CBRN defense issues involving the warfighter, the OP-level CBRND staff must proactively engage the J-2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the employment of CBRN/toxic industrial material (TIM) weapons in theater. To be proactive, the OP-level

CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action. While the J-2 and OP-level intelligence organizations have the responsibility to gather intelligence on CBRN threat-related issues, they do not have the requisite understanding of CBRN issues to fully address the requirements without assistance from the OP-level CBRND staff. It is projected that improvements due to coordination/ doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) enhancements will dramatically improve the ability of the OP-level staff to articulate and assess Sense requirements and the overall status will improve to “green.”

Table 4.0-1. Operational Sense Summary FNA Findings

CBRN Operational Sense Task Number	CBRN Operational Sense Task Title	Capability		
		Current	Near/Mid	Far
OPSENS 1	Sense the storage locations of CBRN weapons or components in the JOA.	●	●	●
OPSENS 2	Sense the operational deployment of CBRN weapons in the JOA.	●	●	●
OPSENS 3	Sense the employment of CBRN weapons in the JOA.	●	●	●
OPSENS 4	Sense JOA CBRN hazards due to employment or ROTA of CBRN/TIM weapons or materials.	●	●	●
OPSENS 5	Monitor combatant command designated activities within the JOA for compliance with CBRN treaties or elimination requirements.	N/A	N/A	N/A
OPSENS 6	Collect enemy weapons systems and new technologies for exploitation of potential CBRN implications.	●	●	●
OPSENS 7	Collect data for determining employment of CBRN/TIM weapons in the JOA.	●	●	●
OPSENS 8	Provide Sense country assistance teams to support TEP.	●	●	●
OPSENS 9	Provide JOA screening for endemic disease and/or hazardous substances in the environment.	●	●	●
OPSENS 10	Develop JOA environmental background data including climatology.	●	●	●
OVERALL		●	●	●

4.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF solutions for the capability gaps identified in the FNA section.

4.0.3.1 DOTMLPF

The DOTMLPF solutions identified in this chapter include basic actions required to better prepare the appropriate staffs. No training or experimentation has taken place to enable the formulation of tactics, techniques, and procedures (TTPs) designed to facilitate the ability of intelligence personnel to assess CBRND Sense requirements. It is imperative that these exercises take place and lessons learned be integrated into doctrine, TTPs, and guidance. Other solutions include the development of leader education programs for both CBRND and intelligence staff officers and a detailed analysis of how the OP-level intelligence/CBRN community is organized and staffed to perform CBRN intelligence analysis and collection activities. In the case of deficiencies associated with service component–captured materiel exploitation units that are trained to find and exploit enemy equipment or supplies of CBRN intelligence value and potential, DOTMLPF solutions, TTPs, and doctrine across the services need to be assessed. Training/education on this task needs to be integrated into the intelligence tasks of all Service and joint schools and courses. In the case of deficiencies associated with collecting samples to verify CBRN weapon employment and potential DOTMLPF solutions, TTPs must be developed to guide the actions of non-Chemical commanders and units that may be required to collect samples.

4.0.3.2 IMA

There are no materiel requirements.

4.1 Task OPSENS 1: Sense the storage locations of CBRN weapons or components in the JOA

4.1.1 Functional Area Analysis

4.1.1.1 Definition

To obtain information and data from all sources that determine where a military force or transnational organization is storing CBRN/TIM weapons or components in the joint operations area (JOA). Areas of interest include storage locations, storage capacities, safety precautions, prevailing meteorological conditions at sites, types of weapons or components stored, and facility entrances.

4.1.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

4.1.1.2.1 Supported Task: STSENS 1

4.1.1.2.2 Lateral Task: OPSHA 1

4.1.1.2.3 Supporting Tasks: TASENS 1, TASENS 2, TASENS 3, TASENS 4, TASENS 5, TASENS 6, TASENS 7, TASENS 8, TASENS 9, TASENS 10, TASENS 11, TASENS 12

4.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

4.1.2 Functional Needs Analysis**4.1.2.1 Capability and Deficiency Assessment Summary**

Table 4.1-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The OP-level J-2 is responsible for working with theater-level and component command intelligence organizations to obtain intelligence that is required to support JOA operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J-2 personnel may not have a full grasp of what needs to be coordinated. As the OP-level commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the OP-level CBRND staff must proactively engage the J-2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the storage locations of CBRN/TIM weapons or components. To be proactive, the OP-level CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this Joint Capabilities Integration and Development System [JCIDS] analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the OP-level staff to sense the storage locations of CBRN/TIM weapons or components in the JOA, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the OP-level staff to develop intelligence indicators for sensing the storage locations of CBRN/TIM weapons or components in the JOA, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 4.1-1 OPSENS 1: Capability and Deficiency Assessment

Capability: Operational-Level Unit J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y	Y	Y
Far-Term Overall Capability⁵	Y	Y	Y

	FAA Measure	Elaboration	Scale
M1	Storage locations of CBRN weapons or components in the JOA are detected and identified.	Assesses techniques and procedures used by the OP-level J-2 to work with intelligence organizations to ensure adequate detection and identification.	G – Yes Y – Limited R – No
M2	Intelligence on storage locations of CBRN weapons or components is accurate.	Assesses techniques and procedures used by the OP-level J-2 to work with intelligence organizations to ensure accuracy of intelligence.	G – Yes Y – Limited R – N
M3	Operational surprise does not occur.	Assesses whether adequate resources and means are applied to obviate operational surprise.	G – Yes Y – Limited R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. In some cases, the OP-level CBRN staff is not adequately staffed and organized to meet its intelligence-related responsibilities. The OP-level J-2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The OP-level J-2 works with various theater-level and component command intelligence organizations to determine where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The OP-level J-2 works with various theater-level and component command intelligence organizations to ensure accuracy of intelligence determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The OP-level J-2 works with various theater-level and component command intelligence organizations to ensure that operational surprise does not occur. Adequate resources and means may not be sufficiently applied in determining where a nation-state or transnational organization is storing CBRN/TIM weapons or components.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

4.1.3 Functional Solution Analysis

4.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the Ideas for Materiel Approaches (IMA) section.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop effective JOA techniques and procedures for detecting and identifying where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to provide useful indicators. Each service organization that might form the foundation of a joint task force (JTF) has a different approach to both CBRN intelligence and its CBRN staffing. Indicators to be developed must include types of storage facilities, techniques for storage in unlikely locations, storage capacities, safety and security measures, transport and agent release techniques, and storage capacity. *Training:* Conduct small-scaled training sessions focused on recognizing less obvious indicators of CBRN/TIM weapons storage. Incorporate the derived information into subsequent exercises that facilitate this and other areas of the task.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop effective techniques and procedures to ensure accurate theater intelligence on where a nation-state or transnational organization is storing CBRN/TIM weapons or components and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that storage of CBRN/TIM weapons or components is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the various potential OP-level J-2s and their typical alignment component command intelligence organizations must be analyzed from a CBRN standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified in order for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. *Training:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with the various

potential OP-level J-2s and their typical alignment component command intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Analyze training requirements and develop/modify special training facilities if required.

- 4. Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue. **Non-Materiel Solutions:** *Doctrine*: Enhance joint intelligence and CBRN publications to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated. Incorporate information attained from the exercise into the doctrine and joint intelligence and CBRN publications. *Training*: Conduct a small-scaled exercise where “to identify resources needed to detect the operational deployment of CBRN/TIM weapons” is one of the primary objectives.
- 5. Deficiency:** Combatant command (COCOM) CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities. **Non-Materiel Solutions:** *Organization*: Each JTF CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel*: Each JTF CBRND should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues. Ensure that a diverse COCOM CBRND staff with personnel from different arenas and specialties is maintained. *Training*: Conduct small-scaled training sessions focused on intelligence-related responsibilities. Incorporate the derived information into subsequent exercises that facilitate this and other areas of the task. This approach would better identify staffing and organization issues that could be addressed in doctrine.
- 6. Deficiency:** The J-2 staff is not adequately trained/educated in CBRN issues. **Non-Materiel Solutions:** *Training*: Develop training that will enable each JTF J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of OP-level CBRND. *Leadership*: Develop an education program that will enable each JTF J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of OP-level CBRND. *Personnel*: Ensure that a diverse J-2 staff with personnel from different arenas and specialties is maintained.
- 7. Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues. **Non-Materiel Solutions:** *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities. *Personnel*: Ensure that a diverse J-2 staff with personnel from different arenas and specialties is maintained.

8. Deficiency: Experimentation/red teaming does not provide feedback on intelligence indicators for this task.

Non-Materiel Solutions: *Training:* JRO-CBRND must work with both the intelligence and CBRN communities to integrate this task into both intelligence and CBRN experimentation campaign plans.

9. Deficiency: Joint Professional Military Education (JPME) does not adequately cover the fusion of intelligence/CBRN issues.

Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME. Consider expanding JPME courses to include civilian courses.

4.1.3.2 IMA Assessment Summary

N/A

4.2 Task OPSENS 2: Sense the operational deployment of CBRN weapons in the JOA

4.2.1 Functional Area Analysis

4.2.1.1 Definition

To obtain information and data from all sources that determine when a military force or transnational organization is preparing to conduct or is conducting an operational deployment of CBRN/TIM weapons in the JOA. Includes information on civil and military plans related to deployment, training conducted by military forces and civilians, and the overall CBRN/TIM defensive preparedness of military forces.

4.2.1.2 Derivation

UJTL (OP 7.5, ST 2.2.2).

4.2.1.2.1 Supported Task: STSENS 2

4.2.1.2.2 Lateral Tasks: OPSHA 1, OPSHA 2

4.2.1.2.3 Supporting Task: TASENS 15

4.2.1.3 Condition

Perform this task under conditions of:

Physical. NA

Military

1. Transnational organization
 - a. Negligible intelligence database. (C2.4.2)
 - b. Negligible theater intelligence access. (C2.4.2)
2. Nation-states
 - a. Marginal intelligence database. (C2.4.2)
 - b. Difficult theater intelligence access. (C2.4.2)
3. Common Military Conditions
 - a. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

4.2.2 Functional Needs Analysis

4.2.2.1 Capability and Deficiency Assessment Summary

Table 4.2-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The OP-level J-2 is responsible for working with theater-level and component command intelligence organizations to obtain intelligence that is required to support JOA operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary deployment of CBRN weapons with the appropriate CBRN staff element. But because of documented training, education, and experience issues, J-2 personnel may not have a full grasp of what needs to be coordinated. As the OP-level commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the OP-level CBRND staff must proactively engage the J-2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the operational deployment of CBRN weapons in the JOA. To be proactive, the OP-level CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the OP-level staff to sense the operational deployment of CBRN weapons in the JOA, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the OP-level staff to develop intelligence indicators for sensing the storage locations of CBRN/TIM weapons or components in the JOA, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 4.2-1. OPSENS 2: Capability and Deficiency Assessment

Capability: Operational-Level Unit J-2	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y	Y	G	Y
Far-Term Overall Capability⁶	Y ⁷	Y	G	Y

	FAA Measure	Elaboration	Scale
M1	Deploying CBRN weapons/units in the JOA are detected and identified.	Assesses techniques and procedures used by the OP-level J-2 to work with the J-3 and various OP-level organizations to detect and identify deploying CBRN weapons/units.	G – Yes Y – Limited R – No
M2	Intelligence on deploying CBRN weapons/units is accurate.	Assesses techniques and procedures used by the OP-level J-2 to work with intelligence organizations to ensure accuracy of intelligence on deploying CBRN weapons/units.	G – Yes Y – Limited R – No
M3	Deployment warning is provided to JOA forces.	Assesses efficacy of warning capability once deployment is detected and identified.	G – Yes Y – Limited R – No
M4	Operational surprise does not occur.	Assesses whether adequate resources and means are applied to obviate operational surprise.	G – Yes Y – Limited R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. The OP-level CBRN staff is not adequately staffed and organized to meet its intelligence-related responsibilities. The J-2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The OP-level J-2 works with various theater-level and component command intelligence organizations to detect and identify deploying CBRN weapons/units in the JOA. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The OP-level J-2 works with various theater-level and component command intelligence organizations to ensure accuracy of intelligence detecting and identifying deploying CBRN weapons/units in the JOA. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ Nothing precludes providing warning of operational deployment of CBRN weapons in the JOA to JOA forces once the deploying units are detected and identified.

⁵ The OP-level J-2 works with various theater-level and component command intelligence organizations to ensure that operational surprise does not occur. Adequate resources and means may not be sufficiently applied in detecting and identifying deploying CBRN weapons/units in the JOA.

⁶ DOTLPP enhancements will be made possible as a result of experimentation designed to close intelligence fusion knowledge gaps.

⁷ DOTLPP enhancements will be made possible as a result of experimentation designed to close intelligence fusion knowledge gaps.

4.2.3 Functional Solution Analysis

4.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Techniques and procedures to facilitate detecting and identifying the operational deployment of CBRN weapons in the JOA may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop effective JOA techniques and procedures for detecting and identifying the operational deployment of CBRN weapons in the JOA and to provide useful indicators. Each service organization that might form the foundation of a joint task force has a different approach to both CBRN intelligence and their CBRN staffing. Indicators to be developed must include the means to determine agent types, nuclear weapon types and yields, TIMS being considered, means by which to release TIMS, delivery modes or systems, and unit designations, locations, routes, and formations.
- 2. Deficiency:** Techniques and procedures to ensure accurate intelligence on the operational deployment of CBRN weapons in the JOA may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop effective techniques and procedures to ensure accurate JOA intelligence on countries or transnational organizations deploying CBRN/TIM weapons/units/teams and to develop metrics to measure accuracy.
- 3. Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation-state or transnational organization preparing to operationally deploy CBRN weapons in the JOA is detected.

Non-Materiel Solutions: *Organization:* Analyze the CBRN organization or staffing of the various potential OP-level J-2s and their typical alignment component command intelligence organizations from a CBRN standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified, and quantified for Shape to provide a clear understanding of the current and *predicted* CBRN situation to the commander. *Training:* Conduct a small-scaled exercise where “to identify resources needed to detect the operational deployment of CBRN/TIM weapons” is one of the primary objectives. In addition, JRO-CBRND must work with the COCOM J2 and/or theater intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with the various potential OP-level J-2s and their typical alignment component command intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of collection. The education process must provide analysts and

collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Analyze training requirements and developed/modify special training facilities if required.

4. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue. **Non-Materiel Solutions**: *Doctrine*: Enhance joint intelligence and CBRN publications to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated. Incorporate information attained from the exercise into the doctrine and joint intelligence and CBRN publications.
5. **Deficiency**: COCOM CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities. **Non-Materiel Solutions**: *Organization*: Each OP-level CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel*: Each OP-level CBRND staff should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues.
6. **Deficiency**: The J-2 staff is not adequately trained/educated in CBRN issues. **Non-Materiel Solutions**: *Training*: Develop training that will enable each JTF J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of OP-level CBRND. *Leadership*: Develop an education program that will enable each JTF J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of OP-level CBRND.
7. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues. **Non-Materiel Solutions**: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
8. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task. **Non-Materiel Solutions**: *Training*: JRO-CBRND must work with both the intelligence and CBRN communities to integrate this task into both intelligence and CBRN experimentation campaign plans.
9. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues. **Non-Materiel Solutions**: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.

4.2.3.2 IMA Assessment Summary

N/A

4.3 Task OPSENS 3: Sense the employment of CBRN weapons in the JOA

4.3.1 Functional Area Analysis

4.3.1.1 Definition

To obtain information and data from all sources that determine when a military force or transnational organization is preparing to or is employing CBRN/TIM weapons in the JOA. Areas of interest include when the weapons will be employed, JOA targets selected, weapons systems involved, locations of weapons systems, and forces/personnel involved in the employment. Extracts information from the medical, operational, intelligence, and environmental communities to identify potential biological warfare activities. Includes intelligence assessment of industrial sites, storage and transport means for toxic industrial chemical (TIC) threats, hazards, and evidence of intentional or inadvertent release.

4.3.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

4.3.1.2.1 Supported Task: STSENS 3

4.3.1.2.2 Lateral Task: OPSHA 1

4.3.1.2.3 Supporting Tasks: TASENS 14, TASENS 16

4.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Limited foreign government support. (C3.1.2.3)

4.3.2 Functional Needs Analysis

4.3.2.1 Capability and Deficiency Assessment Summary

Table 4.3-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The OP-level J-2 is responsible for working with theater-level organizations to obtain intelligence that is required to support joint OP-level operations. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J2 personnel may not have a full grasp of what needs to be coordinated. As the OP-level commander's main source of expertise in addressing CBRND issues involving the warfight, the OP-level CBRND staff must proactively engage the J2 to determine the adequacy of current and projected theater-level intelligence capabilities to sense the employment of CBRN/TIM weapons in theater. To be proactive, the OP-level CBRND staff must be better prepared on intelligence/CBRND fusion issues. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLTPF enhancements will dramatically improve the ability of the OP-level staff to sense the employment of CBRN weapons in the JOA, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve the ability of the OP-level staff to develop intelligence indicators for sensing the employment of CBRN weapons in the JOA, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 4.3-1. OPSENS 3: Capability and Deficiency Assessment

Capability: Operational-Level Unit J-2	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y	Y	Y	Y
Far-Term Overall Capability⁶	Y	Y	Y	Y

	FAA Measure	Elaboration	Scale
M1	CBRN/TIM attacks are detected and identified.	Assesses techniques and procedures used by the OP-level J-2 to work with the J-3 and also intelligence and OP-level organizations to detect and identify CBRN/TIM attacks	G – Yes Y – Limited R – No
M2	Reports on CBRN/TIM attacks are accurate.	Assesses techniques and procedures used by the OP-level J-2 to work with the J-3 and also intelligence and operational organizations to ensure accuracy of CBRN/TIM attack reports.	G – Yes Y – Limited R – No
M3	Unambiguous attack warning is provided.	Assesses techniques and procedures used by the OP-level J-2 to work with the J-3 and various theater-level organizations to provide unambiguous CBRN/TIM attack warning	G – Yes Y – Limited R – No
M4	Attack assessments are accurate.	Assesses techniques and procedures used by the OP-level J-2 to ensure accuracy of attack assessments	G – Yes Y – Limited R – No

¹ Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIM as a weapon, or third-party situations where U.S. resources can not be brought to bear.

² The OP-level J-2 works with the OP-level J-3 and various theater-level organizations to detect and identify CBRN/TIM attacks. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to detect or identify the attack, and in the case of a biological attack or attacks involving TIM, it may be difficult to determine whether it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to detect or identify attacks may not be adequate.

³ Methods and procedures for accurately reporting CBRN attacks against U.S. forces are mature and effective. Methods and procedures for accurately reporting third-party, terrorist, and TIM attacks may not be adequate.

⁴ The OP-level J-2 works with the OP-level J-3 and various theater-level organizations to provide unambiguous CBRN/TIM attack warning. In the case of determining whether a nation-state has conducted a CBRN attack against U.S. forces, the process is mature and effective. In the event of terrorist use of CBRN, it may be difficult or impossible to attribute the attack, and in the case of a biological attack or attacks involving TIM, it may be difficult to determine whether it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves terrorists or non-U.S. allies and to provide unambiguous warning may not be adequate.

⁵ Methods and procedures for providing accurate attack assessments when CBRN is used against U.S. forces are mature and effective. Methods and procedures providing accurate attack assessments in third-party, terrorist, and TIM attacks may not be adequate.

⁶ Joint intelligence and CBRN publications will adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIM as a weapon, and third-party situations where U.S. resources cannot be brought to bear.

4.3.3 Functional Solution Analysis

4.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Techniques and procedures involving sensing of terrorist CBRN attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing the CBRN attacks of terrorists. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments, and establishing verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of CBRN attacks of terrorists at the operational level.

2. **Deficiency:** Techniques and procedures involving sensing of small biological attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing of small biological attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments, and establishing verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of small biological attacks at the operational level.

3. **Deficiency:** Techniques and procedures involving sensing of TIM attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing of TIM attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments, and establishing verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of TIM attacks at the operational level.

4. **Deficiency:** Techniques and procedures involving sensing of third-party attacks may not be adequate.

Non-Materiel Solutions: *Doctrine:* Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing third-party CBRN attacks. Issues to be resolved include detecting and identifying the attacks, providing unambiguous warning of attacks or impending attacks, providing accurate reports and assessments and verification techniques and procedures. *Training:* Develop an experimentation/exercise campaign to address all issues surrounding the sensing of third-party CBRN attacks at the operational level.

- 5. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing the terrorist use of CBRN weapons, the use of TIM as a weapon, or third-party situations where U.S. resources can not be brought to bear.

Non-Materiel Solutions: *Doctrine:* Integrate all lessons learned and procedures into appropriate joint publications.

4.3.3.2 IMA Assessment Summary

N/A

4.4 Task OPSENS 4: Sense JOA CBRN hazards due to employment or ROTA of CBRN/TIM weapons or materials

4.4.1 Functional Area Analysis

4.4.1.1 Definition

To obtain information and data from all sources that determine the location and source of JOA CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Areas of interest include detecting, identifying, and quantifying those CBRN/TIM hazards in all physical states (solid, liquid, gas located in the air, on the ground, or in water). Enables the continued monitoring and identification of hazards in support of shaping, shielding, and sustaining.

4.4.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

4.4.1.2.1 Supported Task: STSENS 4

4.4.1.2.2 Lateral Task: OPSHA 1

4.4.1.2.3 Supporting Tasks: TASENS 1, TASENS 2, TASENS 3, TASENS 4, TASENS 5, TASENS 6, TASENS 7, TASENS 8, TASENS 9, TASENS 10, TASENS 11, TASENS 12

4.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)

Civil

1. TIMs are present. (C3.3.7.5)

4.4.2 Functional Needs Analysis

4.4.2.1 Capability and Deficiency Assessment Summary

Table 4.4-1 discusses the capabilities that currently exist to perform the task to the designated standard. There are two capabilities that exist, and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

The OP-level staffs for Intelligence and Operations are able under most circumstances to effectively sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. The J-2 works with the J-3 and various OP-level organizations to detect and identify CBRN/TIM hazards. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. While it may not be possible to attribute CBRN/TIM hazards as attacks, it will be possible to detect and identify hazards. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves non-U.S. allies or countries that restrict information and access may not be adequate. As the OP-level commander's main source of expertise in addressing CBRN defense issues involving the warfighter, the OP-level CBRND staff must proactively engage the J-2 and J-3 to determine the adequacy of current and projected JOA operational and intelligence capabilities to sense when JOA CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials are present. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve the ability of the OP-level staff to articulate and improve Sense requirements. Continuing problems with information coordination and collection in the event of use not involving U.S. forces or allies will continue to result in a capability projection of "yellow."

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may continue to improve the ability to sense theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. It is anticipated that problems associated with information coordination and collection in the event of use not involving U.S. forces or allies will be rectified as a result of experimentation and permit a capability projection of "green."

Table 4.4-1. OPSENS 4: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
Operational-Level J-2	Y ¹	Y ²	G ³
Operational-Level J-3	Y ⁴	Y ⁵	G ⁶
Near/Mid			
Operational-Level J-2	Y	Y	G
Operational-Level J-3	Y	Y	G
Far			
Operational-Level J-2	G ⁷	G	G
Operational-Level J-3	G ⁸	G	G
Current Overall Capability	Y	Y	G
Near/Mid-Term Overall Capability	Y	Y	G
Far-Term Overall Capability	G	G	G

	FAA Measure	Elaboration	Scale
M1	Hazards are detected and identified.	Assesses techniques and procedures used by the OP-level J-2/J-3 to work with various OP-level organizations to detect and identify CBRN/TIM hazards. Recognizes inherent current delay in sensing most biological attacks and concentrates on processing of technically available data when they become available.	G – Yes Y – Limited R – No
M2	Reports on hazards are accurate.	Assesses techniques and procedures used by the OP-level J-2/J-3 to work with intelligence and operational organizations to ensure accuracy of CBRN/TIM hazard reports. Recognizes inherent current difficulty in immediately sensing most biological attacks and concentrates on accuracy of data when it becomes available.	G – Yes Y – Limited R – No
M3	Hazard warning is provided.	Assesses efficacy of warning capability once hazard is detected and identified.	G – Yes Y – Limited R – No

¹ The J-2 works with the J-3 and various OP-level organizations to detect and identify CBRN/TIM hazards. In the case of a nation-state conducting a CBRN attack against U.S. forces, the process is mature and effective. While it may not be possible to attribute CBRN/TIM hazards as attacks, it will be possible to detect and identify hazards. In the event of use not involving U.S. forces or allies, it may be difficult to gain required information. Techniques and procedures to facilitate this process when it involves non-U.S. allies or countries that restrict information and access may not be adequate.

² Methods and procedures for accurately reporting hazards involving U.S. forces are mature and effective. Methods and procedures for accurately reporting hazards involving non-U.S. allies or countries that restrict information and access may not be adequate.

³ Once a hazard or potential hazard is detected and identified, nothing precludes providing hazard warning to JOA forces and to the COCOM.

⁴ The J-3 is responsible for operations and command and control systems and ongoing current operations. The J-3 will coordinate all information and, in conjunction with the J-2, deconflict and assess the hazard reports and send out taskings JOA-wide for further required detection, identification, or monitoring missions within the capabilities of operational forces. Coordination will be required with the COCOM for detection and identification outside of JOA capabilities.

⁵ Nothing precludes accurate reports within the operational capabilities of the combatant command. The J-3 must coordinate with the COCOM for information or requirements outside of JOA capabilities.

⁶ Once a hazard or potential hazard is detected and identified, nothing precludes providing hazard warning to JOA forces and to the COCOM.

⁷ It is anticipated that problems associated with information coordination and collection in the event of use not involving U.S. forces or allies will be rectified as a result of experimentation and permit a capability projection of “green.”

⁸ It is anticipated that problems associated with information coordination and collection in the event of use not involving U.S. forces or allies will be rectified as a result of experimentation and permit a capability projection of “green.”

4.4.3 Functional Solution Analysis

4.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** In the event of JOA CBRN/TIM hazards not involving U.S. forces or allies, it may be difficult to detect or identify hazards and gain required information.
Non-Materiel Solutions: Doctrine: Using the results of both experimentation and exercises, develop TTPs that address all issues surrounding sensing theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include detecting and identifying hazards when they affect non-U.S. allies or countries that restrict information and access.
- 2. Deficiency:** In the event of JOA CBRN/TIM hazards involving non-U.S. allies or countries that restrict information and access, it may be difficult to gain accurate required information.
Non-Materiel Solutions: Doctrine: Using the results of both experimentation and exercises, develop TTPs that address all accuracy issues surrounding sensing theater CBRN/TIM hazards due to employment or ROTA of CBRN/TIM weapons or materials. Issues to be resolved include determining how to accurately gain information on hazards when they affect non-U.S. allies or countries that restrict information and access.
- 3. Deficiency:** Joint intelligence and CBRN publications do not adequately address the issue of sensing JOA hazards in third-party situations where U.S. resources cannot be brought to bear.
Non-Materiel Solutions: Doctrine: Integrate all information concerning actions to be taken when hazards affect non-U.S. allies or countries that restrict information and access and integrate lessons learned and procedures developed through experimentation into appropriate joint publications.
- 4. Deficiency:** Experimentation and training may not be conducted as frequently and extensively as required to identify capability gaps and required enhancements.
Non-Materiel Solutions: Training: Conduct experimentation and training as required to identify capability gaps and required enhancements.

4.4.3.2 IMA Assessment Summary

N/A

4.5 Task OPSENS 5: Monitor combatant command designated activities within the JOA for compliance with CBRN treaties or elimination requirements

4.5.1 Functional Area Analysis

4.5.1.1 Definition

To use JTF resources to monitor COCOM-designated activities within the JOA for compliance with CBRN treaties or elimination requirements.

4.5.1.2 Derivation

UJTL (OP 7.5, OP 5.7.7, OP 3.3.2).

4.5.1.2.1 Supported Task: STSENS 5

4.5.1.2.2 Lateral Task: N/A

4.5.1.2.3 Supporting Task: N/A

4.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Cooperative nation
 - a. Partial preexisting arrangements (C2.1.1.2)
 - b. Limited military commitments from other nations (C2.1.1.7)
 - b. Limited host nation support (C2.8.5)
2. Uncooperative nation
 - a. No preexisting arrangements (C2.1.1.2)
 - b. Negligible military commitments from other nations (C2.1.1.7)
 - c. No host nation support (C2.8.5)

Common Military Conditions

1. Limited personnel expertise. (C2.2.4.5)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3)
2. Uncooperative nation

- a. Negative foreign government support. (C3.1.2.3)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

4.6 Task OPSENS 6: Collect enemy weapons systems and new technologies for exploitation of potential CBRN implications

4.6.1 Functional Area Analysis

4.6.1.1 Definition

To use JTF resources to exploit captured technical data on CBRN/TIM weapons and assess enemy capabilities, intent, and probable courses of action (COAs).

4.6.1.2 Derivation

UJTL (OP 7.5, OP 2.3.1).

4.6.1.2.1 Supported Task: STSENS 6

4.6.1.2.2 Lateral Task: N/A

4.6.1.2.3 Supporting Task: N/A

4.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)

Civil. N/A

4.6.2 Functional Needs Analysis

4.6.2.1 Capability and Deficiency Assessment Summary

Table 4.6-1 discusses the capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Each service component intelligence capability has captured material exploitation units that are trained to find and exploit enemy equipment or supplies of CBRN intelligence value. This task can be accomplished now with only minor deficiencies.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) enhancements will continue to improve the ability of OP-level units to collect enemy weapons systems and new technologies for exploitation of potential CBRN implications

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities and cooperative ventures with theater partners resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) should continue to improve the ability of OP-level units to collect enemy weapons systems and new technologies for exploitation of potential CBRN implications.

Table 4.6-1. OPSENS 6: Capability and Deficiency Assessment

Capability: Service Component Intelligence Captured Material Exploitation Units	M1	M2	M3	M4	M5
Current Overall Capability¹	G²	G³	G⁴	Y⁵	G⁶
Near/Mid-Term Overall Capability	G	G	G	Y	G
Far-Term Overall Capability	G⁷	G	G	G⁸	G

	FAA Measure	Scale
M1	Collected information and systems are processed in JOA.	G – Yes, Y – Limited, R – No
M2	Collected information and systems are processed within 24 hours.	G – Yes, Y – Limited, R – No
M3	Intelligence analysts are provided hard-copy formal report of information obtained in processing.	G – Yes, Y – Limited, R – No
M4	Procedures and checklists exist to help collect and evacuate enemy weapons systems and new technologies for exploitation of potential CBRN/TIM implications.	G – Yes, Y – Limited, R – No
M5	Intelligence analysts are provided voice or electronic mail report of information of significance.	G – Yes, Y – Limited, R – No

¹ CBRN specific training on exploitation is not integrated into all phases of service and joint intelligence training.

² Nothing precludes processing collected information in the JOA.

³ Nothing precludes processing collected information within 24 hours.

⁴ Nothing precludes providing hard-copy formal reports of information obtained in processing to intelligence analysts if required.

⁵ While some procedures and checklists exist to help collect enemy weapons systems, all doctrine and TTPs in this area should be reviewed, updated, and consolidated into joint TTPs.

⁶ Nothing precludes providing intelligence analysts with immediate reports of information of significance.

⁷ CBRN specific training on exploitation will be integrated into all phases of service and joint intelligence training.

⁸ Joint experimentation and consolidation of lessons learned will allow Joint TTPs to be developed for the collection of enemy weapons systems and new technologies for exploitation of potential CBRN implications.

4.6.3 Functional Solution Analysis

4.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. Deficiency: Doctrine and TTPs may not be adequate.

Non-Materiel Solutions: *Doctrine:* All doctrine and TTPs in this area should be reviewed, updated, and consolidated into joint TTPs. Incorporate information attained from the exercise into the doctrine and joint intelligence and CBRN publications. *Training:* Conduct training to test, validate, and identify gaps and inconsistencies in current doctrine and TTPs.

2. Deficiency: CBRN specific training on exploitation is not integrated into all phases of service and joint intelligence training.

Non-Materiel Solutions: *Doctrine:* Review Chairman of the Joint Chiefs of Staff Instruction (CJCSI) for Officer Professional Military Education (OPME)/JPME and ensure that CBRN-related intelligence learning areas are integrated appropriately. Review CBRN integration into intelligence tasks of all Service and joint schools and courses.

4.6.3.2 IMA Assessment Summary

N/A

4.7 Task OPSENS 7: Collect data for determining employment of CBRN/TIM weapons in the JOA

4.7.1 Functional Area Analysis

4.7.1.1 Definition

To follow theater policy, standards, and procedures for determining employment of CBRN/TIM weapons. Includes sampling and procedures to be followed in verifying use of CBRN/TIM weapons in the air, on the ground, or in water.

4.7.1.2 Derivation

UJTL OP 7.5.

4.7.1.2.1 Supported Task: STSENS 3

4.7.1.2.2 Lateral Task: N/A

4.7.1.2.3 Supporting Tasks: TASENS 1, TASENS 2, TASENS 3, TASENS 4, TASENS 5, TASENS 6, TASENS 7, TASENS 8, TASENS 9, TASENS 10, TASENS 11, TASENS 12

4.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN effects. (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)

Civil. N/A

4.7.2 Functional Needs Assessment

4.7.2.1 Capability and Deficiency Assessment Summary

Table 4.7-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The J-3 manages the entire process of gathering data for determining employment of CBRN/TIM weapons in the JOA. The process is mature and has been employed in the field.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will result in improved doctrine and TTPs.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities and cooperative ventures with theater partners resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) should continue to improve the ability of OP-level units to collect data for determining employment of CBRN/TIM weapons in the JOA through continuing improvements in TTPs.

Table 4.7-1. OPSENS 7: Capability and Deficiency Assessment

Capability: Operational-Level Unit J-3	M1	M2	M3
Current Overall Capability¹	G²	G³	G⁴
Near/Mid-Term Overall Capability	G	G	G
Far-Term Overall Capability⁵	G	G	G

	FAA Measure	Scale
M1	Samples are provided to lab to facilitate verification of CBRN/TIM weapon use.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists are developed to facilitate the collection of data for determining employment of CBRN/TIM weapons in the JOA.	G – Yes, Y – Limited, R – No
M3	There are no faulty sample-handling or chain-of-custody errors.	G – Yes, Y – Limited, R – No

¹ There is little or no doctrine to help commanders understand their roles in verification of first use. TTPs have not been developed to help guide units not assigned this mission to accomplish sample collection if required.

² Nothing precludes providing samples to verification laboratories. The process is mature and refined.

³ Internal procedures and checklists have been developed by units that have sample collection as an assigned mission.

⁴ Chain of custody procedures are well-established for units that have sample collection as an assigned mission.

⁵ Doctrine will be developed to help commanders understand their roles in verification of first use. TTPs will be developed to help guide units not assigned this mission to accomplish sample collection if required.

4.7.3 Functional Solution Analysis

4.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There is little or no doctrine to help commanders understand their roles in verification of first use.
Non-Materiel Solutions: *Doctrine:* Develop doctrine to help commanders and senior leaders at all levels to understand their roles in verification of first use. Incorporate information attained from the exercise into the doctrine and joint intelligence and CBRN publications.
Training: Conduct training to test, validate, and identify gaps and inconsistencies in current doctrine and TTPs.
- 2. Deficiency:** TTPs have not been developed to help guide units not assigned this mission to accomplish sample collection if required.
Non-Materiel Solutions: *Doctrine:* Develop TTPs have to help guide units not assigned this mission to accomplish sample collection if required. Developed techniques and field expedient techniques and equipment, if required, and describe for use.

4.7.3.2 IMA Assessment Summary

N/A

4.8 Task OPSENS 8: Provide Sense country assistance teams to support TEP

4.8.1 Functional Area Analysis

4.8.1.1 Definition

To provide Sense country assistance teams to support the Theater Engagement Plan (TEP) that has been provided by the combatant commander. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. The TEPs for Sense considerations are executed by special teams and units that demonstrate Sense capability or provide Sense-related training to selected countries.

4.8.1.2 Derivation

UJTL (OP 7.5, OP 4.7.1), CJCSM 3113.01a.

4.8.1.2.1 Supported Task: STSENS 7

4.8.1.2.2 Lateral Task: OPSHA 9

4.8.1.2.3 Supporting Task: N/A

4.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

4.8.2 Functional Needs Analysis

4.8.2.1 Capability and Deficiency Assessment Summary

Table 4.8-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts has the skill to provide sense country assistance teams to support the TEP, but there are some deficiencies that negatively impact their ability to do so. The overall current capability is assessed as “green.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will continue to improve the ability of the JTF to provide Sense country assistance teams to support TEPs. The overall capability will remain “green” in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities and cooperative ventures with theater partners resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) should continue to improve the ability of OP-level units to provide Sense country assistance teams to support TEPs. Specific doctrine will be developed. The linkage of restoration operations country assistance teams will be integrated into leader education. This task will be integrated as a standard part of training. Teams will be organized, equipped, trained, and educated. The overall capability will improve to “green” in the far-term.

Table 4.8-1. OPSENS 8: Capability and Deficiency Assessment

Capability: Operational-Level HQ	M1	M2	M3	M4
Current Overall Capability¹	Y ²	G ³	G ⁴	G ⁵
Near/Mid-Term Overall Capability	Y	G	G	G
Far-Term Overall Capability⁶	G ⁷	G	G	G

	FAA Measure	Scale
M1	Personnel from allied/friendly nations are enrolled in United States–provided military training.	G – Yes, Y – Limited, R – No
M2	Valid requests for Sense security assistance are met.	G – Yes, Y – Limited, R – No
M3	Quick response to requests for Sense security assistance.	G – Yes, Y – Limited, R – No
M4	Employ assistance team support to/from area of responsibility area of responsibility (AOR) nations (e.g., Cooperative Defense Initiative (CDI)).	G – Yes, Y – Limited, R – No

¹ No specific doctrine has been developed. The linkage of restoration operations restoration operation country assistance teams is not integrated into leader education. This task is not a standard part of training. Teams are not organized, equipped, trained, or educated.

² Nothing prevents personnel from allied/friendly nations from enrolling in United States–provided military training. There is currently no United States–provided military training on Sense-related topics.

³ Once Sense country assistance teams are able to provide sense-related security assistance, nothing precludes valid requests from being met.

⁴ Once Sense country assistance teams are able to provide sense-related security assistance, nothing precludes a quick response to requests.

⁵ Nothing precludes assistance team support to/from AOR nations (e.g., CDI) from being employed once organized, equipped, trained, and educated in/on Sense-related issues.

⁶ Specific doctrine will be developed. The linkage of restoration operations restoration operation country assistance teams will be integrated into leader education. This task will be integrated as a standard part of training. Teams will be organized, equipped, trained, and educated.

⁷ United States–provided military training on Sense-related topics will be developed and be available for presentation to applicable nations.

4.8.3 Functional Solution Assessment

4.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There are currently no United States–provided military TTPs or training on Sense-related topics.
Non-Materiel Solutions: *Doctrine:* Develop Sense-related training for personnel from allied/friendly nations to enroll in. *Training:* Develop specific doctrine to guide and suggest Sense-related TEP opportunities.
- 2. Deficiency:** No specific doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* The Chairman of the Joint Chiefs of Staff (CJCS) has not developed an operational concept for Sense country assistance teams, and specific guidance (technical or procedural) on how to approach this task has not been provided. Develop TTPs, organizational structure, training, leadership education, and equipment for Sense country assistance teams to support TEPs.
- 3. Deficiency:** The linkage of Sense country assistance teams to TEP is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Develop JPME classes for Sense country assistance teams to support TEPs.
- 4. Deficiency:** This task is not a standard part of training.
Non-Materiel Solutions: *Training:* Develop training for Sense country assistance teams to support TEPs.
- 5. Deficiency:** Teams are not organized, equipped, trained, or educated.
Non-Materiel Solutions: *Organization:* Develop organizational table of distribution and allowances (TDA) for Sense country assistance teams to support TEPs. *Training:* Develop training for Sense country assistance teams to support TEPs. *Leadership:* Develop leader education for Sense country assistance teams to support TEPs.

4.8.3.2 IMA Assessment Summary

N/A

4.9 Task OPSENS 9: Provide JOA screening for endemic disease and/or hazardous substances in the environment

4.9.1 Functional Area Analysis

4.9.1.1 Definition

To use JTF resources to provide JOA screening for endemic diseases and/or hazardous substances in the environment. All JOA capabilities are employed to ensure that endemic diseases and/or hazardous substances in the environment are detected, JOA military forces are warned, and appropriate preventive action is taken.

4.9.1.2 Derivation

UJTL (ST 4.2.2.4, OP 2.2.1, OP 7.5).

4.9.1.2.1 Supported Task: STSENS 8

4.9.1.2.2 Lateral Task: N/A

4.9.1.2.3 Supporting Task: N/A

4.9.1.3 Conditions

Perform this task under the following conditions:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

4.9.2 Functional Needs Analysis

4.9.2.1 Capability and Deficiency Assessment Summary

Table 4.9-1 discusses the only capability that exists to perform the task to the designated standard, resident within the JTF staff.

Current Capability and Deficiency

Resources and DOTLPF exist to support JTF staff information and data collection, processing, and correlation from a variety of sources (national, international, military, civilian, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures. The DoD Global Emerging Infections Surveillance and Response System (GEIS) and Armed Forces Medical Intelligence Center (AFMIC) maintain active surveillance for infectious diseases that might affect military personnel, readiness, and operations are resources for the JTF staff through reachback. COCOM resources and information are also available using reachback capabilities. Information and data within the JOA provided by coalition/partner forces, identified in JTF element reports, and developed by medical surveillance processes—to name a few—provide the JTF staff with critical indicators of potential and ongoing issues. Dissemination of warnings to JTF forces identifying these potential hazards and diseases, and the associated protective measures are incorporated within existing doctrine. Deficiencies are related to the level of automation of information and data resources, their compatibility, and supporting reachback capabilities.

Projected Near/Mid-Term Capability and Deficiency

There are no foreseeable changes in the near/mid term.

Projected Far-Term Capability and Deficiency

There are no foreseeable changes in the far term.

Table 4.9-1. OPSENS 9: Capability and Deficiency Assessment

Capability: JTF Staff	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y	Y	Y	Y
Far-Term Overall Capability	Y	Y	Y	Y

	FAA Measure	Scale
M1	All diseases/hazards are identified.	G – Yes, Y – Limited, R – No
M2	Medical, operational, intelligence, and environmental data are correlated.	G – Yes, Y – Limited, R – No
M3	Diseases/hazards are identified in time to warn forces and take appropriate preventive measures.	G – Yes, Y – Limited, R – No
M4	Diseases/hazards are identified in time to treat forces.	G – Yes, Y – Limited, R – No

¹ Adequate DOTLPF exists to conduct this task.

² Limited. Pathogens of military importance are identified. AFMIC and GEIS are resources for information on infectious diseases posing a threat to personnel or reduce medical readiness. Other types of hazards are reviewed for their impact upon military forces, depending upon type and scope. For example, ITF-40 assesses a number of industrial chemicals for their potential impact. However, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest. The COCOM is an informational and support resource for the JTF through reachback. Information must be collected, processed, and correlated from a variety of sources (e.g., coalition/ partner forces, JTF force reports, medical surveillance, etc.) to identify potential hazards and endemic diseases for evaluation and assessment of their probable impact and the necessary protective measures.

³ Limited. Resources such as AFMIC, COCOM, GEIS, and others are identified as reliable sources for data and information about most areas of interest. Additionally, information observed and reported by coalition/partner forces and JTF elements is critical to identifying and assessing ongoing or potential issues. However, much of the information and data must be collected, processed, correlated, evaluated, and assessed manually. Reachback resources provide the JTF staff with information sources and data essential to the assessment process. However, automated reachback capabilities for expert advice, information gathering, and information transfer are not fully developed or available necessitating manual processes. Many resource systems are not integrated or are not automated. Information systems within DoD, Service, theater, other government agencies, and JTF elements are frequently stovepiped, and the information must be manually transferred from one system to another. Additionally, data structures and fields are not always compatible between systems impacting application of data transfer utilities.

⁴ Limited. Diseases and hazards within an area of interest are not static. These change over time. JTF plan implementation processes incorporate requirements for ensuring currency of information and decisioning parameters. Adjustments are made as necessary. Identification of endemic diseases and hazards of military importance are disseminated and are accompanied with guidance on preventive measures. Changes to this information are disseminated throughout operations. However, the largely manual nature of the current process is time-consuming, and the potential exists for exposure prior to receipt of warning.

⁵ Limited. Ability to identify disease in time to treat is dependent on type of disease and in-country/JOA intelligence. Some countries/areas may be reluctant to assist in identifying disease outbreaks due to quarantine and economic concerns.

4.9.3 Functional Solution Analysis

4.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all potential hazards have been assessed for their military importance. For example, ITF-40 does not assess all the potential industrial chemicals possibly existing within an area of interest.
Non-Materiel Solutions: *Leadership:* Ensure leadership awareness of potential gap in existing information and potential sources for information and data.
- 2. Deficiency:** Automated reachback capabilities for expert advice, information gathering, and information transfer are not fully developed or available necessitating manual processes.
Non-Materiel Solutions: *Doctrine:* Emphasize application of automated reachback processes, enforce existing automated system/software standards, and identify resources—both subject matter experts (SMEs) and information/data sources—supporting JTF planning and operations; particularly expeditionary operations. *Organization:* Review existing and adjust as necessary potential SME and information/data resource organizational structures and responsibilities for support of JTF manual and automated reachback. *Training:* Develop training, institutional and unit level, on conduct and application of manual and automated reachback for SME and information/data interchange. *Leadership:* Ensure leadership emphasis upon reachback support (manual and automated) and JTF organic operational resourcing (e.g., data libraries, tools, etc.). *Personnel:* Identify and develop SME resources. *Facilities:* Develop infrastructure enhancements and capabilities supporting JTF automated reachback requirements.
- 3. Deficiency:** The largely manual nature of the current process is time-consuming, and the potential exists for exposure prior to receipt of warning.
Non-Materiel Solutions: *Leadership:* Ensure leadership awareness of issues associated with information collection and processing and need for force preparedness and prior knowledge of hazards/diseases of military importance in area of interest.

4.9.3.2 IMA Assessment Summary

N/A

4.10 Task OPSENS 10: Develop JOA environmental background data including climatology

4.10.1 Functional Area Analysis

4.10.1.1 Definition

To use JTF resources to obtain and assess JOA environmental background data (including climatology) for potential CBRN/TIM implications.

4.10.1.2 Derivation

UJTL (OP 7.5, OP 2.2.3).

4.10.1.2.1 Supported Task: STSENS 9

4.10.1.2.2 Lateral Task: N/A

4.10.1.2.3 Supporting Task: N/A

4.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

4.10.2 Functional Needs Analysis

4.10.2.1 Capability and Deficiency Assessment Summary

Table 4.10-1 discusses the capability that currently exists to perform the task to the designated standards within the theater. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The OP-level/JTF J-3 works with various service component assets, as well as the COCOM J-3, which can access national DoD assets that operate a military environmental service system to provide specialized JOA meteorological, space, environmental, and oceanographic analysis and prediction services in support of military forces.

Projected Near/Mid-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises.

Projected Far-Term Capability and Deficiency

Capabilities will improve only as a result of improved CBRN experimentation and integration into exercises. This will ultimately result in effective enhancements to all DOTLPF. JOA CBRN considerations will be integrated into environmental and climatology processes, TTPs, and doctrine.

Table 4.10-1. OPSENS 10: Capability and Deficiency Assessment

Capability: Operational-Level/JTF J-3	M1	M2	M3
Current Overall Capability¹	G²	G³	G⁴
Near/Mid-Term Overall Capability	G	G	G
Far-Term Overall Capability	G⁵	G	G

	FAA Measure	Elaboration	Scale
M1	Environmental background data are available for essential JOA areas.	Assesses whether a means is available to gather environmental background data at any location. Does not take into account time/automation factors. If time/automation becomes a factor, a tactical-level materiel solution that speeds process may need to be considered.	G – Yes Y – Limited R – No
M2	Climatology data are available for essential JOA areas.	Assesses whether a means is available to gather climatology data at any location. Does not take into account time/automation factors.	G – Yes Y – Limited R – No
M3	Available data can be accessed by JOA forces with requirements.	Assesses ability of JOA forces to access data once they are available. Ability to assess data for CBRN implications is not part of metric.	G – Yes Y – Limited R – No

¹ JOA CBRN considerations are not integrated into environmental and climatology processes, TTPs, and doctrine.

² Environmental background data are available or can be obtained for any area of the JOA.

³ Climatology data are available or can be obtained for any area of the JOA.

⁴ Total access is available through military command and control and communications systems.

⁵ JOA CBRN considerations will be integrated into environmental and climatology processes, TTPs, and doctrine.

4.10.3 Functional Solution Analysis

4.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** JOA CBRN considerations are not integrated into environmental and climatology processes, TTPs, and doctrine.

Non-Materiel Solutions: *Doctrine:* Integrate JOA CBRN considerations into environmental and climatology processes, TTPs, and doctrine.

4.10.3.2 IMA Assessment Summary

N/A

CHAPTER 5. TACTICAL SENSE TASKS

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5.0 Tactical Sense

5.0.1 Introduction

At the tactical level of war, battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. Seventeen tactical sense tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA).

This chapter, detailing the Tactical Sense area, restates relevant information from the CBRND FAA, including a description of each of the 17 Tactical Sense tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and provides brief descriptions of predicted near/mid-term and far-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel and non-materiel solutions. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPF: doctrine, organization, training, leadership, personnel, and facilities. If there are no or only partial non-materiel solutions to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and evaluated in the Ideas for Materiel Approach (IMAs) section. The IMAs can potentially mitigate or resolve in the near/mid- or far-term future.

Most of the Tactical Sense tasks involve detection of chemical, biological, and radiological hazards in the atmosphere, in water, and on surfaces, personnel, and military working animals (MWAs), specifically military working dogs (MWDs). The connectivity and interoperability of detectors (i.e., the ability of detectors to report findings and system status via fully interoperable and net-centric data links to current and programmed SHAPE systems) are key attributes that were not considered during this analysis. The closely related ability of detectors and detection systems to be remotely operated was also not considered. All programmed future Sense systems include these capabilities (interoperability, connectivity, and remote operation) when practical or required, while legacy systems and commercial off-the-shelf (COTS) items have limited or no capability in these areas. Only detection capabilities that are currently fielded by one or more units in the military or projected to be fielded by one or more military units in the future are considered in this assessment. For each task, capabilities are categorized according to the time period during which they are available or are projected to be available (e.g., a capability included under a “near/mid-term” heading is not currently available but is predicted to be available sometime during the near/mid-term future [i.e., FY2007–FY2011] and will remain available through the far-term future [FY2012–FY2020]). Availability of individual capabilities is not considered in task overall capability assessments. An overall capability for a task is determined by simply calculating the arithmetic mean of all relevant individual capabilities.

5.0.2 FNA Summary

The table below summarizes the overall current and projected capability to perform the Tactical (TA)-level Sense (SENS) tasks identified in the CBRND FAA. The overall capability to conduct TASENS tasks in the current time frame is assessed as “yellow.” In regards to chemical detection, there are key deficiencies in the U.S. Department of Defense’s (DoD’s) ability to detect low-level chemical hazards, toxic industrial chemicals (TICs) in general, and TICs and chemical warfare agents (CWAs) in water. DoD also lacks adequate capabilities to detect toxic industrial biologicals (TIBs) in general, biological warfare agents (BWAs) in time to warn, and biological hazards in water. Currently, radiological hazards cannot easily be detected without exposing the operator to potentially harmful radiation. Finally, DoD typically cannot quickly identify deployed and employed CBRN weapons and units on the battlefield.

It is projected that the overall capability will improve, but remain “yellow,” at the end of the FY2007–FY2011 program objective memorandum (POM) period as more advanced detectors are fielded. Near/mid-term future fielding of the Joint Chemical Agent Detector (JCAD), Joint Biological Agent Identification and Diagnostic System (JBAIDS), and Joint Service Lightweight Standoff Chemical Agent Detector (JSLSCAD), among others, is expected to mitigate major capability gaps in the detection of chemical hazards in the atmosphere and biological hazards in environmental samples. The projected overall status is not “green” since key deficiencies are likely to remain in areas including chemical aerosol detection, biological and chemical standoff detection, TIC and TIB detection, low-level chemical and biological detection, sample collection for future analysis, detector susceptibility to interference, authentic standoff radiological detection, radioisotope identification, and sensing tactical deployment and employment of CBRN weapons on the battlefield.

In the foreseeable far-term future (i.e., FY2012–FY2020), the overall capability will improve slightly over the near/mid-term future and thus will remain “yellow.” Far-term fielding of the Joint Chemical Biological Agent Water Monitor (JCBAWM), Joint Modular Chemical and Biological Detection System (JMCBDS), and Joint Biological Standoff Detection System (JBSDS), among others, is expected to mitigate major capability gaps in rapid detection of chemical and biological hazards in the atmosphere and in water. Key deficiencies are likely to remain in those areas discussed in the previous paragraph for the near/mid term.

Table 5-01. Tactical Sense Summary FNA Findings

CBRN Tactical Sense Task Number	CBRN Tactical Sense Task Title	Capability		
		Current	Near/Mid-Term	Far-Term
TASENS 1	Sense the atmosphere for chemical hazards.	●	●	●
TASENS 2	Sense the atmosphere for biological hazards.	●	●	●
TASENS 3.-	Sense the atmosphere for radiological hazards.	●	●	●
TASENS 4	Sense surfaces for chemical hazards.	●	●	●

CBRN Tactical Sense Task Number	CBRN Tactical Sense Task Title	Capability		
		Current	Near/Mid-Term	Far-Term
TASENS 5	Sense surfaces for biological hazards.	●	●	●
TASENS 6	Sense surfaces for radiological hazards.	●	●	●
TASENS 7	Sense water for chemical hazards.	●	●	●
TASENS 8	Sense water for biological hazards.	●	●	●
TASENS 9	Sense water for radiological hazards.	●	●	●
TASENS 10	Sense personnel and MWAs for chemical hazards.	●	●	●
TASENS 11	Sense personnel and MWAs for biological hazards.	●	●	●
TASENS 12	Sense personnel and MWAs for radiological hazards.	●	●	●
TASENS 13	Mark CBR contaminated air, surfaces, and water.	●	●	●
TASENS 14.	Observe the indigenous population for indications of CBRN/TIM attack	●	●	●
TASENS 15	Sense the tactical deployment of CBRN weapons on the battlefield.	●	●	●
TASENS 16	Sense the tactical employment of CBRN weapons on the battlefield.	●	●	●
TASENS 17	Verify completeness of decontamination operations.	●	●	●
OVERALL		●	●	●

5.0.3 Individual Capability Descriptions

The following text briefly describes the 27 chemical, 13 biological, and 15 radiological individual detection capabilities assessed in the FNA.

Individual Chemical Detection Capabilities

AN/KAS-1

The AN/KAS-1, a manual shipboard nerve agent standoff detector, detects vapors in the atmosphere, does not detect concentrations which can cause low-level (e.g., ocular) effects¹ and is susceptible to chemical interference (false positives and negatives). Its performance is highly dependent on the skill level of the operator.²

APD2000

The APD2000, an automatic point detector, detects vapors in the atmosphere and off-gassing from surfaces, personnel, and MWAs; does not detect concentrations which can cause low-level (e.g., ocular) effects; and is susceptible to chemical interference (false positives and negatives).³

ARTEMIS

The ARTEMIS, a far-term future automatic shipboard and fixed-site standoff detector, will detect vapors and aerosols in the atmosphere; will not detect concentrations which can cause low-level (e.g., ocular) effects; and will be susceptible to chemical interference (false positives and negatives).⁴

Chemical Agent Monitor (CAM)/Improved Chemical Agent Monitor (ICAM)

The CAM/ICAM, a point detector, detects vapors in the atmosphere and off-gassing from surfaces, personnel, and MWAs; does not detect concentrations which can cause low-level (e.g., ocular) effects; and is susceptible to chemical interference (false positives and negatives).⁵

Chemical Ag0065nt Point Detector System (CAPDS) MK21 Mod I

The CAPDS, a point detector, detects certain nerve agent vapors in the atmosphere; does not detect concentrations which can cause low-level (e.g., ocular) effects; and is susceptible to chemical interference (false positives and negatives).⁶

Chemical Biological Mass Spectrometer (CBMS)

The CBMS, an ion trap mass spectrometer, will detect all chemical and biological warfare agents. It will detect and identify chemical agents within 15 seconds and biological agents within 3–4 minutes. It is expected to be deployed on the Nuclear, Biological, Chemical Reconnaissance Vehicle (NBCRV) Stryker and Joint NBC Reconnaissance System (JNBCRS).⁷

Gas Toxic Draeger Kit

The Gas Toxic Draeger Kit, a manual TIC point detection kit, detects, identifies, and quantifies vapors.⁸

HAPSITE Chemical Identification System

The HAPSITE Chemical Identification System, a portable gas chromatography/mass spectrometer (GC/MS), provides laboratory-quality analysis for volatile organic chemicals (VOCs) in the atmosphere. With the Headspace Sampling System, it can also detect VOCs off-gassing from water, surfaces, personnel, and MWAs. It is battery-powered and weatherproof and weighs about 35 lbs. It requires some personnel training to operate.⁹

HazMatID Chemical Identification System

The HazMatID is a portable (23 lb.) Fourier transform infrared (FTIR) spectrometer that can be used for both quantitative and qualitative material analysis of solids, powders, pastes, and liquids. The system can identify nerve and blister warfare agents, TICs, forensic drugs, white powders, explosives, weapons of mass destruction (WMD) precursors, and common chemicals within 20 seconds of sample submission.¹⁰

Improved Chemical Agent Point Detection System (IPDS)

The IPDS, a fixed shipboard/shore-based point detector, detects certain nerve agent vapors, does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives).¹¹

Joint Chemical Agent Detector

The JCAD, a near-future automatic point detector, detects vapors only (not aerosols), does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives). The JCAD will sense the atmosphere for chemical hazards. With the XM279 probe attached, it will detect vapors off-gassing from surfaces, personnel, MWAs, and remains.¹²

Joint Chemical and Biological Agent Water Monitor¹³

The JCBAWM, a near/mid-term future portable device, will detect, identify, and quantify chemical and biological agents in water. Its sensitivity will meet tri-service long-term consumption standards. As an objective, it will also detect, identify, and quantify all TICs, agricultural chemicals, and biological pathogens harmful to personnel.¹⁴

Joint Chemical Surface Detector (JCSD)

The JCSD, a near-future automatic standoff detector, will use UV laser technology to provide standoff, real-time detection and identification of chemical liquids deposited on the ground. The JCSD will be employed on the Interim Armored Vehicle–NBC Reconnaissance Variant (IAV–NBCRV), NBC Reconnaissance System (NBCRS Fox) and JNBCRS.¹⁵

Joint Modular Chemical and Biological Detection System¹⁶

The JMCBDS, a far-term, handheld, stationary and on-the-move point chemical and biological (CB) detector, identifier and quantifier, detects vapors (and aerosols as an objective) and is susceptible to chemical interference (false positives and negatives).¹⁷ It will sense the atmosphere. It will sense chemical hazards off-gassing or resuspending from surfaces.

Joint Service Lightweight Standoff Chemical Agent Detector

The JSLSCAD, a near/mid-future automatic standoff detector, detects vapors only (not aerosols), does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives). It can operate while on the move.¹⁸

M18A2 Kit

The M18A2 Kit, a manual point detection kit, detects vapors in the atmosphere and off-gassing from surfaces, personnel, and liquids on surfaces, personnel, and MWAs and is susceptible to chemical interference (false positives and negatives). Vapor samples can also be collected in the sample tubes and then taken to a laboratory for analysis.¹⁹

M8 Detection Paper

M8 Paper, colorimetric chemical detection paper contained within a booklet, detects liquid (>0.02 mL) droplets on surfaces, personnel, and MWAs and is susceptible to chemical interference (false positives).²⁰

M9 Detection Paper

M9 Paper, packaged as a single roll of expendable colorimetric chemical detection paper, detects liquid (>100 µL) droplets on surfaces, personnel, and MWAs and is susceptible to chemical interference (false positives).²¹

M21 Remote Sensing Chemical Agent Alarm (RSCAAL)

The M21, an automatic standoff detector available on tripod or the M93A1 Fox, detects vapors only, does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives). Its performance is degraded under precipitation, fog, extreme turbulence, high humidity, and small temperature differentials at dusk, dawn, and periods with lots of cloud cover (P5, 8, 9, 10, 11). The M21 requires 15 minutes to set up.²² It can be used to sense the atmosphere.

M22 Automatic Chemical Agent Detector Alarm (ACADA)

The M22 ACADA, a point detector, detects vapors in the atmosphere, does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference.²³ With the XM279 probe attached, it can detect vapors off-gassing from surfaces, personnel, MWAs, and remains.

M256A1 Kit

The M256A1 Kit, a manual point detection kit, detects vapors at levels below EC_{t50} in the atmosphere and off-gassing from surfaces, personnel, and MWAs and liquids at levels below ED₅₀ on surfaces, personnel, and MWAs and is susceptible to chemical interference (false positives and negatives).²⁴

M272 Kit

The M272 Kit, an Army portable, lightweight colorimetric kit, detects and identifies nerve, mustard, L, and AC in treated and untreated water sources. It is susceptible to chemical interference (false positives and negatives), it does not meet tri-service field drinking water standards, and some of its reagents are very harmful to the human body.²⁵

M8A1 Automatic Chemical Agent Alarm System

The M8A1, a point detector, detects nerve agent vapors, does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives).²⁶

M90-D-1C

The M90-D-1C, an automatic point detector, detects vapors only, does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives).²⁷

Mobile Mass Spectrometer MM-1

The MM-1, a GC/MS equipped on the M93A1 Fox, detects 60 chemical compounds, including common CW agents and some common precursor and chemical degradation products. It can detect these compounds as vapors in the atmosphere or as liquids on the ground. It is better at

detecting liquids than vapors, requires baselining in clean air, is susceptible to chemical interference (false positives and negatives), and requires extensive personnel training.²⁸

MultiRAE Plus

The MultiRAE Plus, a portable, automatic five-gas modifiable point detector, detects vapors in the atmosphere. It can be configured to sample diffused or pumped gases and has a data-logging feature.²⁹

Viking SpectraTrak

The Viking SpectraTrak, a portable GC/MS, provides laboratory-quality analysis for 62,000 chemicals in the atmosphere and water and deposited on surfaces, personnel, and MWAs. It can operate in a continuous sampling mode or be used to analyze individual samples. It is not waterproof when operating, and it requires extensive personnel training to operate. It is current available to specialized units (e.g., technical escort units) only.³⁰

Individual Biological Detection Capabilities

Dry Filter Unit (DFU)

The DFU, a stand-alone collector, can be used to collect internal and external ambient air particulate samples for subsequent analysis using handheld assays (HHA) and polymerase chain reaction (PCR) assays (e.g., Ruggedized Advanced Pathogen Identification Device [RAPID]). When combined with the aforementioned assays, a DFU enables detection of low concentrations of biological agents.³¹

DoD Biological Sampling Kit (BSK)

The DoD BSK contains a panel of eight HHAs, a blue-capped tube containing a bottle of buffer solution and cotton tipped swabs, and a basic instruction card. It provides a presumptive identification for biological warfare agents in environmental samples.³²

Enzyme-Linked Immunosorbent Assay (ELISA)

ELISA is a laboratory method used to detect biological agents by detecting their antigens (Ag) or their corresponding antibodies (Ab) produced by the host. The sensitivity of ELISA is 10^6 – 10^7 bacterial organisms/mL; 10–100 PFU/mL of Venezuelan Equine Encephalitis virus; 625 pg/mL of Staphylococcal Enterotoxin B (aerosol); and >5 ng/mL of ricin. ELISA typically requires 1–2 hours total in light of the processing, specimen and reagent application, and incubation times.³³

Interim Biological Agent Detection System (IBADS)

The IBADS, a Navy afloat point detector, monitors, collects, detects, and identifies airborne biological agents.³⁴

Joint Biological Agent Identification and Diagnostic System

JBAIDS is a near-future portable, reusable, and modifiable biological agent point detection and identification system for select environmental samples and clinical specimens (including swabs, sera, sputum, bodily exudates, feces, aerosol diluents, autopsy tissues, and soil). It could be used in mobile and fixed facilities, vehicles, aircraft, and ships. Block I JBAIDS will detect and identify all BWA pathogens at concentrations of 1000 CFU/mL and 10,000 PFU/mL (100

CFU/mL and 1,000 PFU/mL as an objective). Block II JBAIDS will detect and identify BWA toxins as well at concentrations of 1 µg/mL (1 pg/mL as an objective).³⁵ JBAIDS will require extensive personnel training to operate.

Handheld Assays with Sample Preparation Materials

HHAs are simple, disposable, portable antibody-based devices that presumptively detect the presence of a particular biological agent in environmental samples. With various immunochromatography strips (e.g., Tetracore BioThreat Alert Test Strips, ANP Tech handheld assay, Environmental Technologies Group SMART Detection tickets, and near-future Battelle/Applied Biosystems PCR and antibody assays), all BWAs with possible exception of VHF can be detected if present at concentrations within detection limits. One vial of buffer solution and an instruction sheet are included with each handheld assay. Prepackaged sterile swabs, small sealable plastic bags, and a timer or wristwatch are not included and must be obtained separately.³⁶

M31A2 Joint Biological Point Detection System (JBPDS)

The JBPDS, a joint point detector, monitors, collects, stores, detects, and identifies airborne biological agents. It is compatible with multiple platforms (e.g., shipboard, portable, trailer-mounted, shelter version, STRYKER, and NBC Recon version) and is the first point detection capability for the Marines. It is anticipated to be used by the Air Force.³⁷

Joint Biological Standoff Detection System³⁸

The JBSDS detects airborne biological clouds by shooting infrared (IR) + ultraviolet (UV) laser beams downrange to detect, track, and discriminate potential threats. The approach is based on LIDAR, which stands for Light Detecting and Ranging. The system will be compatible with multiple vehicle platforms. JBSDS will detect aerosol clouds consistent with a biological warfare (BW) release at ranges up to 5 km with a detection probability of 90% during normal night conditions and discriminate clouds with particles of biological origin from clouds with particles of nonbiological origin up to 1 km with a probability of 90% during normal night conditions and sufficient line of sight.³⁹

Joint Chemical and Biological Agent Water Monitor

The JCBAWM, a far-term future portable device, will detect, identify, and quantify chemical and biological agents in water. Its sensitivity will meet tri-service long-term consumption standards. As an objective, it will also detect, identify, and quantify all TICs, agricultural chemicals, and biological pathogens harmful to personnel.⁴⁰

Joint Modular Chemical and Biological Detection System

JMCBDS is a near-future handheld, stationary and on-the-move point CB detector, identifier, and quantifier (objective). It will be employable on many platforms (e.g., individuals, vehicles, aircraft, unmanned aerial vehicles [UAVs], and ships). It will detect all biological agents listed in the Joint Chiefs of Staff threat list, and it will identify and quantify detected agents as an objective.⁴¹

M31 Biological Integrated Detection System (BIDS)

The BIDS, a vehicle-portable biological point detector, is the Army's first biological detection capability. It monitors, collects, stores, detects, and identifies airborne biological agents.⁴²

Portal Shield

Portal Shield is a network of a variable number of sensors for airborne biological agents mounted around the perimeter of a fixed site, commanded and controlled by a centralized post computer.⁴³

Ruggedized Advanced Pathogen Identification Device

The RAPID, a portable, field-hardened, rapid thermocycler with concurrent fluorescence monitoring, detects and identifies biological agents in buffered samples through the use of real-time polymerase chain reaction (RT-PCR) technology. The sensitivity of RT-PCR is 15 fg–1 pg or 20–2 million plasmid copies for bacteria and 15 fg–1 pg or 100–1 million copies of the complementary deoxyribose nucleic acid (DNA) for viruses. RAPID can test up to 32 prepared test samples within 30 minutes.⁴⁴ JBAIDS will be based on RAPID technology.

Individual Radiological Detection Capabilities**ADM-300**

The ADM-300, an Air Force portable radiation detection, identification, and computation (RADIAC) device, detects, identifies, and quantifies in real time alpha, beta, gamma, and x-radiation emitted from radiological materials in the atmosphere and on surfaces. It measures 0.1 µR/hour–10,000 R/hour for gamma radiation and 10 µR/hour–5 R/hour for beta radiation.⁴⁵

AN/PDQ-1 Multi-Function Radiation (MFR) Detector

The AN/PDQ-1, a Navy portable RADIAC device, detects and identifies in real time beta and gamma radiation emitted from radiological materials in the atmosphere and on surfaces. It also quantifies the detected gamma, but not beta, radiation.⁴⁶

AN/PDR-27

The AN/PDR-27, a Navy portable RADIAC device, detects and identifies in real time beta and gamma radiation emitted from radiological materials in the atmosphere and on surfaces. It also quantifies the detected gamma radiation 0–500 mR/hour.⁴⁷

AN/PDR-43

The AN/PDR-43, a Navy portable RADIAC device, detects and identifies in real time beta and gamma radiation emitted from radiological materials in the atmosphere and on surfaces. It also quantifies the detected gamma, but not beta, radiation 0–500 R/hour.⁴⁸

AN/PDR-56

The AN/PDR-56, a Navy and Marine Corps portable RADIAC device, detects and quantifies in real time alpha radiation emitted from radiological materials in the atmosphere and on surfaces. It measures 0–1,000,000 cpm.⁴⁹

AN/PDR-63

The AN/PDR-63, a Marine Corps portable RADIAC device, detects, identifies, and quantifies in real time beta and gamma radiation emitted from radiological materials in the atmosphere and on surfaces. It measures 0–1 mrad/hour and 0–5000 rad/hour.⁵⁰

AN/PDR-65

The AN/PDR-65, a Navy portable RADIAC device, detects and quantifies in real time gamma radiation emitted from radiological materials in the atmosphere and on surfaces. Its range is 0–10,000 R/hour.⁵¹

AN/PDR-75

The AN/PDR-75, an Army and Marine Corps dosimeter reader (CP-696/PRD-75), and its associated wristwatch-like dosimeter (DT-236/PDR-75) provide the capability to monitor and record the exposure of individual personnel to gamma and neutron radiation. It measures an individual dosimeter's total neutron and gamma dose 0–1000 cCy.⁵²

AN/PDR-77

The AN/PDR-77, an Army portable RADIAC device, detects, identifies, and quantifies in real time alpha, beta, gamma, and x-radiation emitted from radiological materials in the atmosphere and on surfaces. It measures the count rate 1-999,000 cpm.⁵³

AN/UDR-13

The AN/UDR-13, an Army portable RADIAC device, detects, identifies, and quantifies in real time gamma and neutron radiation emitted from radiological materials in the atmosphere and on surfaces. It measures the dose rate 0.1–999 cGy/hour and the total dose 0.1–999 cGy.⁵⁴

AN/VDR-2

The AN/VDR-2, an Army and Marine Corps portable RADIAC device, measures and displays a gamma dose rate from background to 99.9 Gy/hour. Additionally, the AN/VDR-2 measures, stores, and displays accumulated dose from 0.01 μ Gy to 9.99 Gy.⁵⁵

Berkeley Nucleonics Corporation Surveillance & Measurement System 935

The Berkeley Nucleonics Corporation Surveillance and Measurement (SAM) System 935 is a portable radioisotope identifier device. Its internal gamma detector enables multiple and concurrent radionuclide identification within one second. The device measures and displays the dose rate and dose in rem or sieverts. It has programmable audio and visual alarms. The published minimum detectable limit for the device is 0.5 μ R/hour. An external gamma detector and internal neutron detector are optional.⁵⁶

CP-95/DT-60

The CP-95, a Navy dosimeter reader and its associated dosimeter (DT-60), which is about the size of a quarter, provides the capability to monitor and record the exposure of individual personnel to gamma radiation. It measures an individual dosimeter's total gamma dose 10–600 Roentgens.⁵⁷

IM-93 and IM-143

The IM-93 and IM-143 are Navy personal self-reading pocket dosimeters that indicate the total gamma radiation dose 0–600 Roentgens.⁵⁸ The IM-143 is also used by the Marine Corps.

Siemens EPD[®] Mk2

Siemens EPD[®] Mk2 is an electronic personal dosimeter that is sensitive to beta, gamma, and x-radiation. It provides a direct readout of deep/whole body and shallow/skin doses (0 μ Sv to >16 Sv, which is 0 mrem to >1600 rem) and dose rates (0 μ Sv to >4 Sv, which is 0 mrem/hour to >400 rem/hour). The dosimeter includes programmable deep/whole body and shallow/skin dose and dose rate alarms.⁵⁹

5.0.4 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The materiel approaches address both current and nondeveloped technologies for possible materiel solutions.

5.0.4.1 DOTMLPF

Non-materiel (DOTLPP) and materiel (M) solutions have been identified. Non-materiel solution assessments are guided by DOTLPP (doctrine, organization, training, leadership, personnel, and facilities) in accordance with CJCS 3170 and include solutions such as increasing training (T) on a detector due to its sophistication, increasing the number of reconnaissance personnel (P) required to perform a given task, or to determining the threshold contamination level for low-level health effects (D). If non-materiel solutions do not fully address a capability gap, then a materiel solution is sought. A materiel solution under the auspices of Sense may include a chemical detector with greater sensitivity, a standoff chemical detector with an extended range and higher degree of probability, a real-time biological detector, or an increased capability to detect TICs.

5.0.4.2 IMA

The Ideas for Materiel Approaches table below summarizes possible materiel approaches that address the remaining materiel requirements of the doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) assessment. These approaches are in various stages of development. Therefore, some are more readily applicable than others. Of the 18 IMAs, 12 are applicable to chemical detection, 10 are applicable to biological detection, and 6 are applicable to radiological detection.

Table 5-02. Detection/SENSE Ideas for Materiel Approaches

Idea for Materiel Approach	Description
<p>Mass spectrometry</p> <p>Sensing CWAs, TICs, BWAs, TIBs, (rad)</p> <p>Agent physical state(s): gases, aerosols, liquids</p>	<p>Microanalytical approach that uses the difference in mass-to-charge ratios of chemical molecules or biomolecules to separate them from one another. It requires only a few nanograms of an analyte to obtain characteristic information on the analyte's structure and molecular weight. It requires that the sample be introduced in the gaseous phase, and this can be achieved by GC, high-performance liquid chromatography, ion chromatography, or capillary zone electrophoresis for chemical analytes or pyrolysis-gas chromatography-ion mobility spectrometer, Matrix-Assisted Laser Desorption Ionization–Time of Flight (MALDI-TOF), among others, for biological analytes. Theoretically, all known chemical warfare agents, TICs, bacteria, viruses, and toxins can be detected, identified, and quantified by MS, though it is not currently possibly to achieve this in near-real time for detect-to-warn.⁶⁰ Mass spectrometry can also be used to help identify the chemical composition of detected and isolated radioactive materials.</p>

<p>IR, UV, and microwave spectroscopy⁶¹</p> <p>Sensing CWAs, TICs, BWAs, TIBs, and possibly rad</p> <p>Agent physical state(s): gases, aerosols, liquids</p>	<p>Based on the emission and absorption of IR, UV, and microwave radiation by chemicals and biomolecules of interest. Since characteristic vibrational wavelengths of most CW agents (and more specifically the phosphorus-oxygen bond on nerve agents, for example) occur in the IR region of the electromagnetic spectrum, IR spectroscopy is typically used for chemical detection. UV laser and laser-induced fluorescence (LIF) have been used to detect the presence of biological aerosols. Through IR and UV spectroscopy could be used for point detection, they are usually used for standoff detection. They can currently detect, identify, and quantify the line concentrations of chemicals and detect and discriminate between biological and nonbiological aerosols. Note that microwave spectroscopy is currently in the research and development phase.</p> <p>There are many variations of IR, UV, and microwave spectroscopy. Photoacoustic infrared spectroscopy (PIRS) is one such variation, which is presented as a separate IMA since it is frequently assessed separately in technical literature.⁶²</p> <p>In terms of radiological detection, the Canadian CBRN Research & Technology Initiative (CRTI) is developing a standoff radiation detector. A laboratory prototype detector is capable of taking images of a scene and analyzing the images for ionizing radiation signatures. Alpha, beta, and gamma sources have been imaged under a variety of conditions. Alpha sources of only a few millicuries have been imaged at tens of meters with high signal-to-noise ratios.⁶³ The underlying technical approach for the detector has not been disclosed. The detector may be detecting fluorescence of air molecules that are being ionized by the radiation.</p>
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<p>Ionization/ion mobility spectrometry (IMS)</p> <p>Sensing CWAs, TICs</p> <p>Agent physical state(s): gases, vapors</p>	<p>Based on small differences in the velocity of ions along a cylindrical tube across which a constant electric field is applied. An IMS detector typically operates by drawing air at atmospheric pressure into a reaction region, where the sample constituents are ionized. The sample must be in the vapor or gas phase (though theoretically liquid samples could first be volatilized). The ions travel through a charged drift tube, where they collide with a detector plate, thus producing a current that can be registered. A plot of the current versus time provides a characteristic ion mobility spectrum. The intensity of the spectrum peaks corresponds to the agent concentration. The response time ranges from several seconds to a few minutes.⁶⁴</p> <p>By adding an additional gate to the ion drift region, Fourier transform ion mobility spectrometry can be achieved, thus increasing sensitivity, specificity, and reducing false alarms. Discrimination between different organophosphate molecules may be possible; however, the approach still requires the agent be in the gaseous or vapor phase (no aerosols).⁶⁵</p>
<p>Photoacoustic infrared spectroscopy</p> <p>Sensing CWAs, TICs</p> <p>Agent physical state(s): gases, liquids</p>	<p>Like other infrared spectroscopy approaches, PIRS uses the selective absorption of IR radiation by chemical agent vapors and gases to identify and quantify the agent present. However, in contrast to traditional IR spectroscopy, PIRS typically uses a microphone to detect acoustic waves that result from absorption of IR radiation by a sample. It has been claimed that the gas-microphone method has been used for the characterization and analysis of solids and liquids in addition to gases. It is anticipated that a large number of chemical agents can be detected with this technology.⁶⁶</p>
<p>Chemiluminescence</p> <p>Sensing CWAs, TICs</p> <p>Agent physical state(s): gases, liquids</p>	<p>Based on quantitative measurement of the optical emission produced by a chemical reaction of the analyte and a reagent. Since chemiluminescence can take place in either the liquid or gas phase, it can be used for detecting chemicals in water. Phosphorus chemiluminescence detectors can be used to detect many chemical agents and are frequently coupled with gas chromatography.⁶⁷</p>

<p>Surface acoustic wave (SAW)</p> <p>Sensing CWAs, TICs, BWAs, TIBs</p> <p>Agent physical state(s): gases, aerosols</p>	<p>Based on piezoelectric materials (those that produce an electrical current when subjected to pressure or mechanical stress) coated with different absorbent polymers for chemical analytes or antibodies or complementary nucleic acid sequences for biological analytes. The chemical and biological analytes selectively absorb into or bind to the coated piezoelectric materials. Most SAW detectors incorporate an analytical preconcentrator (e.g., GC) to overcome absorption or binding limitations.⁶⁸ Sensitivities on the order of 10^5–10^6 cells have been reported for SAW biological detectors.</p> <p>Regarding SAW chemical detectors, the used absorbent polymers are susceptible to damage from certain highly reactive vapors (e.g., hydrofluoric acid). Furthermore, they are susceptible to interference from absorption of water and consequently must be calibrated to account for ambient relative humidity.</p>
<p>Colorimetric</p> <p>Sensing CWAs, TICs, BWAs, TIBs</p> <p>Agent physical state(s): gases, (aerosols), liquids</p>	<p>Based on a visible color change resulting from a chemical reaction that occurs when particular chemicals interact with various solutions and substrates. In regards to current chemical detection capabilities, the colorimetric approach is typically the fastest, cheapest, lightest, and easiest to use. Color-change detectors can detect nerve, blister, and blood agents with detection tubes, papers, or tickets that are coated with a particular substrate or reagent solutions. Responses range from immediate to several minutes. In addition, colorimetric approaches can detect VOCs, including carboxylic acids, alcohols, amines, ethers, thioethers, and thiols, generated by microorganisms (i.e., bacteria). Since each species of microorganism (e.g., bacteria) emits a distinct profile of enzymatic reaction products in the form of VOCs, biological detection and identification is possible for those microorganisms for which volatile metabolites are known. The ChemSensing Colorimetric Sensor uses this technological approach.⁶⁹</p> <p>Currently, some colorimetric systems have semiquantitative capabilities. Colorimetric detection tubes prove a semiquantitative indication of the amount of agent present. Results are dependent on the analyte being tested, its concentration, and the flow rate.</p>

<p>Raman spectroscopy</p> <p>Sensing CWAs, TICs, BWAs, TIBs</p> <p>Agent physical state(s): gases, aerosols, liquids</p>	<p>Based on the scattering of incident electromagnetic radiation by chemical species present in a (transparent) medium. Though similar in application to IR spectroscopy, the mechanism in Raman scattering differs from infrared absorption; for this reason, it is considered as a separate IMA. Current applications of Raman spectroscopy include nondestructive evaluation of CW agents in glass ampoules and bottles. Since surface-enhanced Raman spectroscopy (SERS) has been demonstrated for the detection of trace levels of CWAs and bacteria both in the vapor phase and in aqueous solution, an array of SERS sensors may be able to rapidly analyze ambient air and drinking water supplies. SERS requires no sample pretreatment and typically provides a response within 30 seconds. Another technique, resonance Raman spectroscopy using UV excitation, may be preferred over SERS in detecting biological agents in light of its more intense scattering and avoidance of background fluorescence.⁷⁰</p> <p>Raman Spectroscopy has been considered as a potential technological basis for standoff detection (specifically biological detection/identification).⁷¹</p>
<p>Photoionization detection</p> <p>Sensing CWAs, TICs</p> <p>Agent physical state(s): gases</p>	<p>Based on the ionization of gaseous or vaporous chemicals through UV irradiation of a particular wavelength and detection of the ions. Specifically, a photoionization detector (PID) operates by passing an air sample between two charged metal electrodes in a vacuum region irradiated with UV radiation. A current, which corresponds to the concentration of the ionized molecular species, is produced as positively charged ions collect at the negative electrode. The specificity of the PID depends on the specificity of the excitation radiation wavelength that ionizes the molecule of interest. PIDs can be highly sensitive and quantitative when properly calibrated, though they have limited specificity and are highly subject to false positives in unknown or mixed environments.⁷²</p>
<p>Flame photometry</p> <p>Sensing CWAs, TICs, BWAs, TIBs</p> <p>Agent physical state(s): gases, aerosols</p>	<p>Based on the emission spectrum obtained through incineration of the sample in a hydrogen-oxygen flame. The emission spectrum allows for quantitative reading of the amount of a certain element in the sample. Sulfur and phosphorous flame photometry are often used to detect mustard and nerve agents, respectively. Since flame photometric detection requires separation technology for specificity, it is commonly coupled with gas chromatography.⁷³</p> <p>Though bacteria contain the same elements (e.g., Na, K, Ca, P, and S), the ratios of two atomic elements in two different bacteria are different. For this reason, flame photometry is predicted to be able to detect and identify bacterial species.⁷⁴</p>

<p>Electrochemistry</p> <p>Sensing CWAs, TICs</p> <p>Agent physical state(s): gases, aerosols</p>	<p>Based on detection of the change of electrical potential due the absorption of a chemical into a solution or thin film. For example, the most common basis for an electrochemical gas sensor uses a conducting wire or filament that is coated with a reactive material that oxidizes rapidly when it encounters a CWA. Though electrochemical sensors are typically specific to a class of chemicals, arrays of different sensors may be able to provide coverage for multiple classes of agents and/or identify specific agents. The response time of electrochemical sensors is generally very fast (less than a minute, often seconds). Nevertheless, they are usually less sensitive than IMS and flame photometry approaches.⁷⁵</p>
<p>Immunoassay (antibody-based), including biochips</p> <p>Sensing BWAs, TIBs</p> <p>Agent physical state(s): aerosols, liquids</p>	<p>Based on the highly specific binding of antigens (immunologically foreign substances) to their corresponding antibodies. The formation of an antigen-antibody complex can be monitored through different mechanisms: directly through interferometry, surface plasmon resonance, piezoelectric crystal microbalance, waveguide coupler, and electrical capacitance or indirectly through fluorescent evanescent biosensor surface, electrochemiluminescence, light-addressable potentiometric sensor immunoassay, and latex particle agglutination/light scattering. Antibodies (or analogous peptides or combinatorially derived molecules) specific for any bacteria, virus, or toxin can be made if the agent can be isolated and modeled. Detection, identification, and even quantification are possible through this technological approach. Technologies incorporating capillary electrophoresis can result in fast analysis times, potentially in near-real time.⁷⁶</p>
<p>Nucleic acid amplification/probing</p> <p>Sensing BWAs, TIBs</p> <p>Agent physical state(s): aerosols, liquids</p>	<p>Based on the extreme selectivity of DNA and ribonucleic acid RNA recognition. This approach (and PCR in particular) utilizes nucleic acid probes that bind specifically to strands of complementary nucleic acids, in this case, from particular pathogens. These complementary nucleic acid segments are amplified and detected typically through luminescent tagging. The nucleic acid amplification approach is highly sensitive and specific. Detection, identification, and quantification of a pathogen of interest are possible. However, the approach cannot detect toxins (since they do not contain nucleic acids) and detection cannot be achieved in near-real time.⁷⁷</p>
<p>Tissue-based sensing</p> <p>Sensing BWAs, TIBs</p> <p>Agent physical state(s): aerosols, liquids</p>	<p>Premised on the responsiveness of living cells and tissues to particular biological, chemical, or physical stimuli. A system may use primary or transformed cells from a variety of sources including neurons, immune cells, endothelial cells, fibroblasts, etc. For example, one system in the research and development stage uses B-cells engineered with recombinant antibodies that are complementary to antigens of specific bacteria and viruses. Detection is achieved through cellular bioluminescence, resulting from activation of a reporter molecule. Near-real-time (<3 min.) detection, identification, and quantification of pathogens (and possibly toxins as well) is feasible.⁷⁸</p>

<p>Multiple technologies (orthogonal)</p>	<p>The use of multiple, complementary technologies to broaden the number of agents detected and increase the reliability of the response. Examples include SAW/IMS, IMC/SAW/electrochemical/SCCell (S-CAD), GC/IMS, IMS/MS, nucleic acid/immunoassay technologies (e.g., PCR and immunological techniques), electrochemiluminescence/equilibrium immunoassay, and fluorescence correlation spectroscopy/PCR.</p>
<p>Gas-filled radiation detectors</p> <p>Sensing alpha, beta, gamma, and neutron radiation (possibly in the same unit)</p>	<p>Based on detection of radiation-induced ionization of a gas contained within a defined gas chamber. When ionizing radiation enters a gas-filled detector, it may produce ions. These ions are detected as they collide with energized negative and positive electrodes within the chamber. All three main types of gas-filled radiation detectors (Geiger-Mueller detectors, proportional gas detectors, and ionization chambers) work through a variation of this mechanism.</p> <p>Geiger-Mueller detectors can respond to gamma and neutron radiation and, if equipped with a sufficiently thin chamber window, alpha and beta radiation as well. Proportional gas detectors can be used to distinguish between alpha and beta radiation. Finally, ionization chambers are typically used for gamma radiation measurements.</p>
<p>Scintillation Radiation Detectors</p> <p>Sensing alpha, beta, gamma, and neutron radiation (though not typically in a single unit)</p>	<p>Based on detection of light that is emitted by particular inorganic crystals or organic compounds when exposed to ionizing radiation. Some of the scintillating materials include ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), and barium fluoride (BaF₂).</p> <p>Scintillation detectors can be used to detect alpha, beta, gamma, and neutron radiation depending on the scintillating material. Scintillation detectors for alpha radiation frequently use zinc sulfide activated with silver, ZnS(Ag), as the scintillating material. Scintillation detectors for beta and gamma radiation often incorporate organic and inorganic, e.g., NaI(Tl), scintillators, respectively. Some scintillation detectors, such as modern liquid scintillation units, can identify alpha, beta, gamma, or neutron-emitting radioisotopes in addition to detecting them.</p>

<p>Semiconductor Radiation Detectors</p> <p>Sensing alpha, beta, and gamma radiation (though not likely in a single unit)</p>	<p>Based on detection of free electrons that are produced by certain semiconductors when they are exposed to ionizing radiation. The electrons are detected as they are collected at the electrodes by the applied voltage. The semiconductors that have been used for radiation detection include germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂). Semiconductor neutron radiation detectors are currently in the research and development phase.</p> <p>Some germanium detectors can also identify gamma-emitting radioisotopes and they provide better energy resolution than the NaI(Tl) scintillation detector. Some silicon detectors have been used for alpha-emitting or beta-emitting radioisotope identification.</p>
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¹ See *Potential Military Chemical/Biological Agents and Compounds*. Also know as FM 3-11.9, MCRP 3-37.1B, NTRP 3-11.32, AFTTP(I) 3-2.55.

² Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 381–83.

³ <http://194.105.117.18/products/Default.asp?Product=3>

⁴ http://www.jpeocbd.osd.mil/ca_artemis.htm

⁵ Required Operational Capability (ROC) for the Chemical Agent Monitor (CAM), TRADOC CAN 81298.

⁶ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 395–97.

⁷ http://www.jpeocbd.osd.mil/ca_cbms.htm;

http://www.ornl.gov/sci/casd/lammert/publications/cbms_brochure.pdf

⁸ <http://www.dcfp.navy.mil/library/dcpubs/tabdce/TABDCESecT.pdf>;

<http://www.dcfp.navy.mil/library/dcpubs/tabdce/TABDCESecD.pdf>;

<http://www.afcintl.com/tubedh.htm>

⁹ California EPA, Evaluation Report for HAPSITE Portable Gas Chromatograph Mass Spectrometer. March 2004.

<http://www.inficonchemicalwarfare-detectionsystems.com/HAPSITEchemident.html>

¹⁰ http://www.sensir.com/Smiths/HazMatID/SD_HazMatIDMarch2005.pdf;

http://www.hazmatid.com/Reference%20Corner/SEN_HazmatID_Bro_071503.pdf;

http://www.marcorsyscom.usmc.mil/sites/nbcds/firs/Technical_Manuals/COTS/HazMat_ID/HazMatID_Hardware_Users_Guide.pdf

¹¹ OPERATIONAL REQUIREMENTS DOCUMENT (ORD) FOR IMPROVED (CHEMICAL AGENT) POINT DETECTION SYSTEM (IPDS). 1 February 1994.

¹² Joint Chemical Agent Detector (JCAD) Milestone III Operational Requirements Document.

¹³ DTO CB.37 Chemical/Biological Agent Water Monitor is developing system concepts and technologies to meet the service requirement for a Joint Chemical/Biological Agent Water Monitor (JCBAWM).

¹⁴ Joint Operational Requirements Document (JORD)USAF (CAF) 007-96 for a JOINT CHEMICAL/ BIOLOGICAL AGENT WATER MONITOR ACAT LEVEL III. 27 March 1998.

¹⁵ http://www.jpeocbd.osd.mil/ca_jcsd.htm

¹⁶ DTO CB.50 Lightweight Integrated CB Detection is developing technology to meet the requirements of the Joint Modular CB Detection (JMCBD) System.

¹⁷ OPERATIONAL REQUIREMENT DOCUMENT (ORD) FOR THE JOINT MODULAR CHEMICAL BIOLOGICAL DETECTOR (JMCBDS) REVISED DRAFT. 8 January 2002.

- ¹⁸ OPERATIONAL REQUIREMENTS DOCUMENT (ORD) FOR JOINT SERVICE LIGHTWEIGHT STANDOFF CHEMICAL AGENT DETECTOR (JSLSCAD) MILESTONE III REVISION(JTD J2-C002-III). 6 February 2001.
- ¹⁹ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 422–23; www.acq.osd.mil/cp/nbc99/99annexa.pdf+m18a2+minutes&hl=en
- ²⁰ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 408–09.
- ²¹ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 418–19.
- ²² Joint Service Operational Requirement (JSOR) for the Remote Sensing Chemical Agent Alarm (RSCAAL). 28 June 1990; <http://www.emedicine.com/emerg/topic924.htm>
- ²³ Joint Service Operational Requirement (JSOR) for the Automatic Chemical Agent Detector Alarm (ACADA). 03 August 1990; <http://www.edgewood.army.mil/ps/download/xm279.pdf>; www.chem-bio.com/resource/1999/issue18.pdf
- ²⁴ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 430–31; http://www.army.mil/fact_files_site/m256a1/; http://www.gulflink.osd.mil/m256/section_02.htm
- ²⁵ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 433–38.
- ²⁶ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 411–15; www.acq.osd.mil/cp/nbc99/99annexa.pdf
- ²⁷ http://www.chem-bio.com/resource/2000/md90_d1_detector.pdf; <http://www.lifesafetysys.com/osb/itemdetails.cfm/ID/506>
- ²⁸ http://www.gulflink.osd.mil/foxnbc/n05_s03.htm; http://www.gulflink.osd.mil/fox_vehicle_ii/fox_vehicle_ii_s04.htm#IV.%20%20OPERATING%20PROCEDURES
- ²⁹ <http://www.skeshopping.com/ProductDetails.asp?ProductCode=730-3121-010&Show=ExtInfo>; http://www.raesystems.com/~raedocs/Data_Sheets/MultiRAE_Plus.pdf
- ³⁰ Chemical and Biological Defense Information Analysis Center. *Worldwide Chemical Detection Equipment Handbook*. Gunpowder Br. APG, Md. October 1995. pp. 446–48. <http://www.gcms.de/download/viking.pdf>
- ³¹ *CBRN Defense Program Annual Report (DRAFT) Annex A: Contamination Avoidance Programs, A-4.*
- ³² *CBRN Defense Program Annual Report (DRAFT) Annex A: Contamination Avoidance Programs, A-5.*
- ³³ *Analytical Laboratory System Chemical and Biological Analytical Capability Market Survey and Technology Report*. October 2003. pp. 5-27, 5-28; <http://jcm.asm.org/cgi/content/full/36/5/1338/T3>; <http://jcm.asm.org/cgi/content/full/36/5/1338/T3>; http://dpalm.uth.tmc.edu/faculty/bios/norris/BT2002_files/Detection.htm
- ³⁴ Mission Need Statement for Biological Detection. 7 August 1992. http://www.tpub.com/content/USMC/mcwp3371cd/css/mcwp3371cd_149.htm
- ³⁵ Operational Requirements Document for JOINT BIOLOGICAL AGENT IDENTIFICATION AND DIAGNOSTIC SYSTEM (JBAIDS) MS B ORD ACAT III, Rev. 2. 1 April 2003.
- ³⁶ <http://www-nehc.med.navy.mil/prevmed/epi/HHA2Nov01.doc>; http://dpalm.uth.tmc.edu/faculty/bios/norris/BT2002_files/Detection.htm

³⁷ http://www.jpeocbd.osd.mil/ca_jbpds.htm; *Operational Requirements Document for JOINT BIOLOGICAL POINT DETECTION SYSTEM, ACAT II, Prepared for MILESTONE C Block I and MILESTONE B Block II, Date 18 Jan 02 , (Stage I, JS/J-6 Interoperability Assessment Resolution, 11 June 2002) (Stage II, JS/J-6 Interoperability Certification, 4 October 2002), Approved 21 Jul 04, Joint Staff Memo J-8A 00251-03*

³⁸ DTO CB.35, Standoff Biological Aerosol Detection, is researching long-wave and mid-wave infrared (LWIR and MWIR), Differential Scattering/Differential Absorption Lidar (DISC/DIAL), and Passive LWIR spectroscopy. Technology developed under this effort is intended to address operational requirements of the Joint Biological Standoff Detection System.

³⁹ Joint Service Chemical and Biological Defense Program FY02-03 Overview; *OPERATIONAL REQUIREMENTS DOCUMENT (ORD) UNCLASSIFIED JOINT BIOLOGICAL STANDOFF DETECTION SYSTEM (JBSDS) FOR Increment 1 ACAT: III, Prepared for Milestone (MS) C Decision, Date 27 Mar 04, Approved 28 Jun 04, JROC Memo 110-04*; Joint Service Chemical and Biological Defense Program, FY 02-03 Overview

⁴⁰ Joint Operational Requirements Document (JORD)USAF (CAF) 007-96 for a JOINT CHEMICAL/BIOLOGICAL AGENT WATER MONITOR ACAT LEVEL III, 27 Mar 1998

⁴¹ OPERATIONAL REQUIREMENT DOCUMENT (ORD) FOR THE JOINT MODULAR CHEMICAL BIOLOGICAL DETECTOR (JMCBDS) REVISED DRAFT 08 Jan 2002

⁴² http://www.jpeocbd.osd.mil/ca_bids.htm; <http://www.fas.org/man/dod-101/sys/land/bids.htm>

⁴³ <http://www.nationaldefensemagazine.org/article.cfm?Id=700>;

http://www.tpub.com/content/USMC/mcwp3371cd/css/mcwp3371cd_149.htm

⁴⁴ <http://www.idahotech.com/rapid/>; *Analytical Laboratory System Chemical and Biological Analytical Capability Market Survey and Technology Report*. October 2003. pp. 5–9.

⁴⁵ http://www.canberra.com/pdf/Products/RPI_pdf/ADM-300.pdf;

<http://www.canberra.com/products/585.asp>

⁴⁶ *CBRN Defense Program Annual Report (DRAFT) Annex A: Contamination Avoidance Programs, A-20,21*

⁴⁷ <http://www.orau.org/ptp/collection/radiac/PDR27.htm>;

<http://www.dcfp.navy.mil/mc/nkoppts/Dose/Dose19.htm>;

<http://www.dcfp.navy.mil/mc/nkoppts/Dose/Dose20.htm>

⁴⁸ <http://www.dcfp.navy.mil/mc/nkoppts/Dose/Dose14.htm>;

<http://www.dcfp.navy.mil/mc/nkoppts/Dose/Dose15.htm>

⁴⁹ http://www.tpub.com/content/USMC/mcwp3372/css/mcwp3372_150.htm;

<http://www.dtic.mil/whs/directives/corres/text/p31508m.txt>

⁵⁰ http://www.torontosurplus.com/redirect.php?middleframe=http://www.torontosurplus.com/sci/Bland_sci55.htm

⁵¹ <http://www.dcfp.navy.mil/mc/nkoppts/Dose/Dose26.htm>;

http://www.tpub.com/content/combat/14057_ppr/css/14057_ppr_213.htm

⁵² http://www.jpeocbd.osd.mil/ca_anpdr75.htm; <http://www.fas.org/man/dod-101/sys/land/an-pdr-75.htm>

⁵³ <http://www.fas.org/man/dod-101/sys/land/an-pdr-77.htm>;

<http://www.canberra.com/products/1158.asp>; http://www.jpeocbd.osd.mil/ca_anpdr77.htm

⁵⁴ <http://www.fas.org/man/dod-101/sys/land/an-udr-13.htm>;

http://www.jpeocbd.osd.mil/ca_anudr13.htm

⁵⁵ <http://www.fas.org/man/dod-101/sys/land/an-vdr-2.htm>;

http://www.jpeocbd.osd.mil/ca_anvdr2.htm

⁵⁶ http://www.berkeleyneleonics.com/resources/935_brochure_4_pages.pdf;
http://hour.to/FAQ/935_FAQ.html#10

⁵⁷ <http://www.dcfp.navy.mil/cbrd/ip/dt-60.htm>

⁵⁸ http://www.tpub.com/content/USMC/mcwp3371cd/css/mcwp3371cd_144.htm;
http://www.tpub.com/content/combat/10572/css/10572_245.htm

⁵⁹ http://www.thermo.com/eThermo/CMA/PDFs/Product/productPDF_24716.pdf

⁶⁰ National Institute of Justice, *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. pp. 22–25; National Institute of Justice, *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001, pp 28–29; NATIBO, *Biological Detection System Technologies Technology and Industrial Base Study*. February 2001. pp. 4-7 to 4-9.

⁶¹ DTO CB.53 Wide-Area Aerial Reconnaissance for Chemical Agents is developing a wide-area aerial reconnaissance system that will allow rapid evaluation of large areas for CW contamination, and provide detailed information as to the position of a CW agent cloud.

⁶² Kosal, Margaret E. “The Basics of Chemical and Biological Detectors,” 24 November 24 2003. <http://cns.miis.edu/pubs/week/031124.htm>; McKone, Thomas E., Beverly M. Huey, et al. (eds.). *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000.
<http://books.nap.edu/books/0309068754/html/>

⁶³ CBRN Research and Technology Initiative. “CRTI 0203RD Standoff Detection of Radiation.”
http://www.crti.drdc-rddc.gc.ca/projects/crti_0203rd_e.html

⁶⁴ Kosal, Margaret E. “The Basics of Chemical and Biological Detectors,” 24 November 2003, <http://cns.miis.edu/pubs/week/031124.htm>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000; McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>

⁶⁵ Tarver, Edward. “External Second Gate, Fourier Transform Ion Mobility Spectrometry: FT-IMS Parametric Optimization for Detection of Weapons of Mass Destruction,” Sandia National Laboratories, Presented at 2004 Biological-Chemical Detection Symposium, Washington, D.C.

⁶⁶ SpectroscopyNow.com, *Photoacoustic Infrared Spectroscopy* description,
http://www.spectroscopynow.com/Spy/basehtml/SpyH/1,1181,3-5-3-0-1-book_detail-0-822,00.html; McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>

⁶⁷ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. pp. 96–97; <http://books.nap.edu/books/0309068754/html/>

⁶⁸ Kosal, Margaret E. “The Basics of Chemical and Biological Detectors.” 24 November 2003. <http://cns.miis.edu/pubs/week/031124.htm>

⁶⁹ Edgewood Chemical Biological Center. *Market Survey: Biological Detectors Guide for Selection of Detection Devices and Systems*. April 2003; Kosal, Margaret E. “The Basics of Chemical and Biological Detectors.” 24 November 2003.
<http://cns.miis.edu/pubs/week/031124.htm>

⁷⁰ Kosal, Margaret E. “The Basics of Chemical and Biological Detectors.” 24 November 2003. <http://cns.miis.edu/pubs/week/031124.htm>; McKone, Thomas E., Beverly M. Huey, et al. (eds.)

Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures. National Academy Press. 2000.

<http://books.nap.edu/books/0309068754/html/>; Detection and Measurement of Chemical Agents, <http://books.nap.edu/html/terrorism/ch4.html>; Farquharson, Stuart, Alan Gift, Paul Maksymiuk, et al. “Chemical agent detection by surface-enhanced Raman spectroscopy” (Abstract).

International Society for Optical Engineering,

<http://bookstore.spie.org/index.cfm?fuseaction=DetailPaper&ProductId=511940&coden>; Kawai, Nancy T. and Kevin M. Spencer. “Raman Spectroscopy for Homeland Defense Applications.” *Raman Technology for Today’s Spectroscopists*. June 2004, pp. 55–58.

⁷¹ Loerop, William. “Chemical Biological Defense Science and Technology Chemical Standoff Briefing.” Edgewood Chemical Biological Center.

http://proceedings.ndia.org/dod_cb/Tuesday_PM/Zarzycki.pdf

⁷² Kosal, Margaret E. “The Basics of Chemical and Biological Detectors.” 24 November 2003. <http://cns.miis.edu/pubs/week/031124.htm>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>; McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000.

<http://books.nap.edu/books/0309068754/html/>

⁷³ Kosal, Margaret E. “The Basics of Chemical and Biological Detectors,” 24 November 2003, <http://cns.miis.edu/pubs/week/031124.htm>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>; McKone, Thomas E., Beverly M. Huey, et al. (eds.). *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000.

<http://books.nap.edu/books/0309068754/html/>

⁷⁴ Philippe, Adam, Damien Descroix, and Jean-Pierre Chiaroni. “Flame Photometry for Biological Detection.” Proceedings from the 6th CBW Protection Symposium. 1998.

⁷⁵ Kosal, Margaret E. “The Basics of Chemical and Biological Detectors.” 24 November 2003. <http://cns.miis.edu/pubs/week/031124.htm>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>; McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000.

<http://books.nap.edu/books/0309068754/html/>

⁷⁶ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. pp. 29–32. <http://www.ojp.usdoj.gov/nij/pubs-sum/190747.htm>; NATIBO. *Biological Detection System Technologies Technology and Industrial Base Study*. February 2001. pp. 4-9 to 4-12.

⁷⁷ National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. p. 32. <http://www.ojp.usdoj.gov/nij/pubs-sum/190747.htm>; NATIBO. *Biological Detection System Technologies Technology and Industrial Base Study*. February 2001. pp. 4-18 to 4-19.

⁷⁸ NATIBO. *Biological Detection System Technologies Technology and Industrial Base Study*. February 2001. pp. 4-12 to 4-13; Harper, James. “Automated CANARY Testbed for Fast Bioaerosol Identification.” MIT Lincoln Laboratory. Presented at 2004 Biological-Chemical Detection Symposium, Washington, D.C.

5.1 Task TASENS 1: Sense the atmosphere for chemical hazards

5.1.1 Functional Area Analysis

5.1.1.1 Definition

To sense the atmosphere for the presence or absence of chemical hazards (encompasses chemical warfare agents and TICs) using sensors. Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen hazard releases and monitoring of known hazard locations. Encompasses “detect to warn” and “detect to treat” situations. The evaluation encompasses all chemical hazards of military and medical importance.

5.1.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.1.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.1.1.2.2 Lateral Task: TASHA 16

5.1.1.2.3 Supporting Task: N/A

5.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Tropical, arctic, and arid climates. (C1.3.1)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. High surface-wind velocity. (C1.3.1.3.3)
8. High/low relative humidity. (C1.3.1.3.5)
9. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
10. Heavy precipitation intensity. (C1.3.1.3.6.2)
11. Extreme turbulence and wind shear. (C1.3.1.3.8)
12. Negligible light. (C1.3.2.1)
13. Chemical effects. (C1.3.3.2).

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)

3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. TICs present in the civilian sector. (C3.3.7.5).

5.1.2 Functional Needs Analysis

5.1.2.1 Capability and Deficiency Assessment Summary

Table 5.1-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 16 current capabilities used to accomplish this task and five projected capabilities to be added in the future (three in the near/mid-term and two in the far-term). The individual capabilities include a range of point and standoff detectors with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current detectors detect the vapor of multiple CWAs and no or few TICs. Detection is usually achieved within two minutes and classification of the detected agent is typically provided. Though most detectors do not quantify the agent concentration, some provide relative hazard indications and more sensitive detectors (e.g., MS) provide absolute quantification capabilities. All but two current detectors are point detectors (AN/KAS-1 and M21 RSCAAL are standoff detectors). Though some point detectors can provide limited detect-to-warn capability, they are mainly used for detect-to-treat purposes.

There is no single capability that can perform the task to all of the designated standards. Mass spectrometers such as the Viking SpectraTrak and HAPSITE appear to be the best overall current capabilities, but they are costly, require substantial training to operate, and do not detect or identify in near-real time; consequently, they do not detect-to-warn and may be unable to identify-to-treat if high concentrations of fast-acting lethal agents are present. In addition, HAPSITE, like most current detectors, does not detect aerosols. The M8A1 ACAA and Viking Spectratrak are the only current detectors known to detect hazards in aerosol form. With few exceptions, current detectors do not detect CWAs at ECt50 ocular levels (IAW: Potential Military Chemical/ Biological Agents and Compounds. Also known as FM 3-11.9, MCRP 3-37.1B, NTRP 3-11.32, AFTTP(I) 3-2.55). No current detector detects VX vapor below immediately-dangerous-to-life-or-health (IDLH) levels, and most detectors detect soman (GD) and cyclosarin (GF) at twice IDLH levels. Other deficiencies include the lack of real-time CWA identification and TIC detection/identification capabilities, lack of agent quantification

capabilities, lack of a detector that also takes samples for future analysis, and detector susceptibility to chemical interference.¹

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” In the near/mid-term future, the introduction of the JCAD, JSLSCAD, and integrated CBMS II will enhance the joint forces’ ability to rapidly (i.e., within 90 seconds) detect, quantify, and identify CWAs for both detect-to-warn and detect-to-treat purposes. JCAD and JSLSCAD will also improve the forces’ ability to determine cumulative doses of personnel exposed to CWAs and TICs. Nevertheless, MS units (including CBMS II) will likely be the only detectors able to detect all CWAs. MS units, gas toxic Draeger kits, JSLSCAD, and JCAD will be the main capabilities to detect TICs. They will detect many or all high-priority TICs.

The general inability to detect aerosols and agent concentrations at or below IDLH levels, the lack of a detector that also takes samples for future analysis, and detector susceptibility to chemical interference are likely to remain deficiencies in the near-future.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “yellow.” In the far-term future, many fielded detectors will detect most, if not, all CWAs and some TICs. Most detectors will quantify and classify, if not identify, agents. MS units, gas toxic Draeger kits, JSLSCAD, and JCAD will likely remain the main capabilities to detect TICs. The introduction of ARTEMIS will increase the forces’ standoff detection capabilities. JMCBDS will provide an integrated chemical/biological detection, identification, and quantification capability and is expected to rapidly and reliably detect, identify, and quantify most CWAs and some TICs.

Many detectors will still not detect aerosols and agent concentrations that are expected to cause low-level effects. Furthermore, there will still be a lack of a detector that also takes samples for future analysis. The risk of chemical interference will remain, though it will be significantly mitigated through more precise sensors, orthogonal technologies, and more advanced algorithms.

¹ Refer to the JRO *Operational Impact Assessment of Non-Traditional Agents* report, July 2003 (S/NF) for information on nontraditional agent detection.

Table 5.1-1. TASENS 1: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current – Near/Mid – Far														
AN/KAS-1	4 ¹	0 ²	0 ³	0 ⁴	N/A ⁵	N/A ⁶	N/A ⁷	5 ⁸	10 ⁹	N/A ¹⁰	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
APD2000	5 ¹⁴	10 ¹⁵	0 ³	0 ¹⁶	10 ¹⁵	0 ³	7 ¹⁷	N/A ¹⁸	5 ¹⁹	5 ²⁰	0 ¹¹	N/A ¹¹	0 ¹²	Unk ²¹
CAM/ICAM	6 ²²	5 ²³	5 ²⁴	0 ⁴	N/A ⁵	N/A ⁶	2 ²⁵	N/A ¹⁸	5 ²⁶	5 ²⁷	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
CAPDS MK21 Mod I	3 ²⁸	0 ²	0 ³	0 ⁴	N/A ⁵	N/A ⁶	1 ²⁹	N/A ¹⁸	5 ³⁰	N/A ¹⁰	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
Gas Toxic Draeger Kit	2 ³¹	10 ¹⁵	10 ³²	2 ³³	10 ¹⁵	10 ³²	Varies ³⁴	N/A ¹⁸	Varies ³⁵	Varies ³⁶	0 ¹¹	N/A ¹¹	5 ³⁷	10 ¹³
HAPSITE (GC/MS)	10 ³⁸	10 ³⁹	10 ⁴⁰	9 ⁴¹	10 ³⁹	10 ⁴⁰	1 ⁴²	N/A ¹⁸	0 ⁴³	5 ⁴⁴	0 ¹¹	N/A ¹¹	5 ³⁷	Unk ²¹
IPDS	5 ⁴⁵	5 ²³	0 ³	0 ⁴	N/A ⁵	N/A ⁶	2 ⁴⁶	N/A ¹⁸	5 ²⁶	5 ²⁷	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
M18A2	8 ⁴⁷	7 ⁴⁸	0 ³	1 ⁴⁹	10 ⁵⁰	0 ³	1 ⁴²	N/A ¹⁸	0 ⁴³	0 ⁵¹	10 ⁵²	10 ⁵³	0 ¹²	10 ¹³
M21 RSCAAL	4 ⁵⁴	0 ²	0 ³	0 ⁴	N/A ⁵	N/A ⁶	N/A ⁵⁵	5 ⁵⁶	10 ⁹	N/A ¹⁰	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
M22 ACADA	6 ⁵⁷	7 ⁵⁸	5 ⁵⁹	0 ⁴	N/A ⁵	N/A ⁶	7 ¹⁷	N/A ¹⁸	5 ⁶⁰	5 ⁶¹	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
M256A1 Kit	9 ⁶²	7 ⁶³	0 ³	1 ⁶⁴	10 ⁵⁰	0 ³	1 ⁶⁵	N/A ¹⁸	0 ⁴³	5 ⁶⁶	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
M8A1 ACAA	3 ⁶⁷	0 ²	0 ³	0 ⁴	N/A ⁵	N/A ⁶	1 ²⁹	N/A ¹⁸	5 ⁶⁸	N/A ¹⁰	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
M90-D-1C	6 ⁶⁹	5 ⁷⁰	5 ⁷¹	1 ⁷²	5 ⁷⁰	5 ⁷¹	1 ²⁹	N/A ¹⁸	5 ³⁰	5 ⁷³	0 ¹¹	N/A ¹¹	0 ¹²	10 ¹³
MM-1 (GC/MS) integrated into M93A1 Fox	10 ⁷⁴	10 ¹⁵	5 ⁷⁵	1 ⁷⁶	10 ¹⁵	5 ⁷⁵	4 ⁷⁷	N/A ¹⁸	5 ⁷⁸	5 ⁷⁹	10 ⁸⁰	10 ⁵³	0 ¹²	10 ¹³
MultiRAE Plus	1 ⁸¹	5 ⁸²	10 ⁸³	5 ⁸⁴	7 ⁸⁵	10 ⁸⁶	2 ⁴⁶	N/A ¹⁸	5 ²⁶	5 ⁸⁷	0 ¹¹	N/A ¹¹	7 ⁸⁸	Unk ²¹
Viking SpectraTrak (GC/MS)	10 ⁸⁹	10 ⁹⁰	10 ⁴⁰	10 ⁹¹	10 ⁹⁰	10 ⁴⁰	1 ⁴²	N/A ¹⁸	0 ⁴³	5 ⁴⁴	0 ¹¹	N/A ¹¹	7 ⁹²	10 ¹³
Near/Mid – Far														
CBMS II integrated into NBCRV Stryker or JNBCRS	10 ⁹³	10 ⁹⁴	Unk	Unk	Unk	Unk	9 ⁹⁵	N/A ⁹⁶	5 ⁹⁷	10 ⁹⁸	10 ⁹⁹	10 ¹⁰⁰	Unk	N/A ¹⁰¹
JCAD	9 ¹⁰²	5 ¹⁰³	10 ¹⁰⁴	2 ¹⁰⁵	Unk	10 ¹⁰⁴	2 ¹⁰⁶	N/A ⁹⁶	5 ¹⁰⁷	5 ¹⁰⁸	0 ¹²²	N/A ¹²²	10 ¹⁰⁹	N/A ¹⁰¹
JSLSCAD	8 ¹¹⁰	5/10 ¹¹¹	10 ¹¹²	9 ¹¹³	5/10 ¹¹¹	10 ¹¹²	N/A ¹¹⁴	5/10 ¹¹⁵	10 ¹¹⁶	10 ¹¹⁷	0 ¹²²	N/A ¹²²	5 ¹¹⁸	N/A ¹⁰¹
Far														
ARTEMIS	10 ¹¹⁹	Unk	Unk	Unk	Unk	Unk	N/A ¹²⁰	10 ¹²¹	10 ¹¹⁶	Unk	0 ¹²²	N/A ¹²²	Unk	N/A ¹⁰¹
JMCBDS	9 ¹²³	5 ¹⁰³	10 ¹⁰⁴	4 ¹²⁴	10 ¹²⁵	10 ¹⁰⁴	1 ¹²⁰	N/A ⁹⁶	5 ¹²⁶	5 ¹²⁷	0 ¹²²	N/A ¹²²	10 ¹⁰⁹	N/A ¹⁰¹
Current Overall Capability	6	5	4	2	8	8	2	5	4	5	1	10	1	10
Near/Mid-Term Overall Capability	6	6	4	2	8	9	3	6	5	6	2	10	2	N/A ¹⁰¹
Far-Term Overall Capability	7	6	5	2	9	9	2	7	5	6	1	10	2	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized CWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Percentage of following 12 agents as described in FM 3-9 that are detected: Nerve agents (GA; GB; GD; GF; VX), vesicants (H/HD; HN-1,2,3; L; CX), cyanides (AC; CK), pulmonary agent (CG)	Percentages standardized to 0–10 scale

	FAA Measure	Elaboration	Scale
M2	All CWAs can be identified?	Ability to classify or identify detected CWAs.	10: Identify detected CWAs 7: Identify some detected CWAs; classify others 5: Classify detected CWAs 0: Neither identify nor classify detected CWAs
M3	All of a potential adversary's weaponized CWAs can be quantified using fielded technologies/ equipment?	Ability to provide snapshot concentration of detected CWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M4	All TICs can be detected using fielded technologies/equipment?	Percentage of the 33 high-priority critical acutely toxic airborne TICs listed in <i>USACHPPM Report 47-EM-6154-03: ITF-40</i> . (FOUO) that are detected.	10: 100% 9: ≥90% 8: ≥80% 2: ≥20% 1: 1%–20% 0: 0%
M5	All TICs can be identified using fielded technologies/equipment?	Ability to classify or identify detected TICs.	10: Identify all detected TICs 7: Identify some detected TICs; classify others 5: Classify detected TICs 0: Neither classify nor identify detected TICs
M6	All TICs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TICs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect chemical hazards?	Time period from CWA/TIC sampling to analysis output. Linear scale 1–10. Applies to point detectors only.	10: ≤12 sec 7: ≤30 sec 2: ≤60 sec 1: >60 sec
M8	Distance between chemical hazard and detector for accurate detection?	Linear scale 1–9. Applies to standoff detection only.	10: >9 km 9: ≤9 km 5: ≤5 km 2: ≤2 km 1: ≤1 km
M9	Chemical hazards are detected in time to warn forces and take appropriate protective measures?	Factors include time to detect chemical hazards (M7), distance between chemical hazard and detector for accurate detection (M8), as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability
M10	Chemical hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability

	FAA Measure	Elaboration	Scale
M11	Sampling collection procedures available for all of a potential adversary's weaponized chemical warfare agents and for all TICs using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	Assuming constant and defined breathing rates and lung retention efficiencies.	10: Complete capability (automatically calculated) 7: Moderate capability (monitoring capability + absolute quantification) 5: Minimal capability (absolute quantification) 0: Cumulative dose cannot be determined.
M14	There is effective DOTLPP in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPP exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations. 5: Most critical aspects of DOTLPP for the task to be performed with this system are addressed. 0: DOTLPP is inadequate or does not exist for the task to be performed with this system.

¹ Limited—Detects only GA, GB, GD, GF, and VX. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only, and is susceptible to chemical interference (false positives and negatives).

² Does not identify or classify detected agents or TICs.

³ Does not quantify amount of detected agents or TICs.

⁴ No TICs detected.

⁵ Does not identify or classify any TICs because it does not detect any TICs

⁶ Does not quantify TIC concentrations because it does not detect any TICs.

⁷ Based on operator skill and experience.

⁸ 5 km range.

⁹ Yes, as a standoff detector, it is assumed that range and response time are sufficient to detect-to-warn forces.

¹⁰ Does not identify or classify agents or TICs.

¹¹ Sampling collection for future analysis capability does not exist with this technology/equipment.

¹² Cumulative dose cannot be determined and presented with data from this technology/equipment (no absolute quantification capability).

¹³ There is effective DOTLPP in place to conduct task with this system.

¹⁴ Limited—Detects only GA, GB, GD (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 30 sec.); HD (2 mg/m³ – IDLH level within 15 sec.), and L (0.38 mg/m³ within 15 sec.). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

¹⁵ Identifies detected agents and TICs

¹⁶ Detects pepper spray and mace (but these are not included in the *ITF-40* 33 high-priority critical acutely toxic airborne toxic industrial chemicals.)

¹⁷ Detects in less than 30 seconds.

¹⁸ Point detector, so no standoff distance.

¹⁹ Can detect within 30 seconds and thus provides some detect-to-warn capability.

²⁰ Identifies hazards within 30 seconds.

²¹ Commercial off-the-shelf detector. Unknown if sufficient DOTLPF in place.

²² Limited—Detects only GA, GB, GD, GF, VX, HD, and L (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF; 10X IDLH for VX; 1/20 IDLH for HD). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

²³ Classifies agents as being nerve or blister agents.

²⁴ Provides relative hazard indication (relative quantification).

²⁵ Detects hazards in less than 1 minute. Note: Requires up to 8 hours to warm up after 30 days storage

²⁶ Detects within 1 minute and thus provides some detect-to-warn capability.

²⁷ Classifies agents within 1 minute.

²⁸ Detects GB, GD, and VX only (0.3 mg/m³ – 3X IDLH for GB, 6X for GD, and 30X IDLH for VX, within 2 minutes). According to FM 3-11.9, incapacitating doses are 75 (GB for resting person), 75–300 (GD), and 50 (VX) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

²⁹ Detects hazards within 2 minutes.

³⁰ Detects within 2 minutes and thus provides some detect-to-warn capability.

³¹ Detects AC (2.4 mg/m³ – 1/25 IDLH level) and CG (0.08 mg/m³) vapors only. According to FM 3-11.9, the incapacitating dose for CG is 1,600 mg-min/m³.

³² Provides absolute quantification capability for all detected agents and TICs.

³³ Limited—Detects CO, ethylene oxide, HCN, HCl, HF, NO₂, and CG.

³⁴ Detects in <1 minute to 10 minutes (depending on compound and concentration).

³⁵ Varies in detection time so detect-to-warn capability varies as well.

³⁶ Possibly identifies detected hazards in time to treat but depends on compound and concentration.

³⁷ Cumulative dose can be roughly estimated, but it cannot be precisely determined since this technology/equipment does not have a monitoring capability.

³⁸ Presumably detects all 12 CWA of interest (claims low ppb to ppt detection limits; 1 ppb = 0.01 mg/m³ for VX – IDLH level; 0.006–0.007 mg/m³ for G-agents – ~1/10 IDLH levels; 0.007 mg/m³ for HD – 1/285 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,600 (CG) mg-min/m³. Detects vapors only.

³⁹ Identifies detected agents and TICs (through mass spectrometry).

⁴⁰ Provides absolute quantification capability for all detected agents and TICs (specifically provides composition intensities, e.g., ppm).

⁴¹ Presumably detects most TICs in ITF-40. Detects vapors only.

⁴² Detects within 10 minutes.

⁴³ Does not provide any detect-to-warn capability.

⁴⁴ Hazards are not identified in time to treat, especially if lethal fast-acting agents at high concentrations are involved.

⁴⁵ Limited—Detects only GA, GB, GD, GF, VX (0.1 mg/m³ – IDLH for GA/GB, 2X IDLH for GD/GF, 10X IDLH for VX, within 60 sec.); and HD (10 mg/m³ – 5X IDLH level, within 60 sec.). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), and 50 (VX) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

⁴⁶ Detects hazards in less than 1 minute.

⁴⁷ Detects GA, GB, GD, GF, VX (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF, 10X IDLH for VX within 4 min. for GB and VX), HD (0.5 mg/m³ – ¼ IDLH within 3 min.), L, CX, AC, and CK. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), and 50 (VX) mg-min/m³. Detects vapors only and is susceptible to chemical interference (false positives and negatives).

⁴⁸ Classifies G and V agents as nerve agents; identifies HD, L, AC, and CG.

⁴⁹ Detects TICs AC and CG.

⁵⁰ Identifies detected TICs.

⁵¹ May require up to 10 minutes to classify or identify, which is generally inadequate for identify-to-treat.

⁵² Vapor samples can be taken and saved for future analysis.

⁵³ Sample integrity is maintained.

⁵⁴ Detects only GA, GB, GD (90 mg/m³), HD (4500 mg/m³), and L (500 mg/m³). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Degraded performance: (P 8, 9) Can be obstructed by snow and rain; (M3) Must be stationary during operation. Does not detect concentrations which can cause low-level (e.g., ocular) effects, detects vapors only; and is susceptible to chemical interference (false positives and negatives)

⁵⁵ Detects within 1 minute. Degraded performance: (P5,8,9,10,11) Under precipitation, fog, extreme turbulence, high humidity, and small temperature differentials at dusk, dawn, and periods with lots of cloud cover; (M3) Minimum time available (15 min. setup time)

⁵⁶ 5 km range. Degraded performance: (P5,8,9,10,11) Under precipitation, fog, extreme turbulence, high humidity, and small temperature differentials at dusk, dawn, and periods with lots of cloud cover; (M3) Minimum time available (15 min. setup time)

⁵⁷ Limited—Detects only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, and L (10 mg/m³ – 5X IDLH level for HD, unknown L). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

⁵⁸ Classifies detected G and V agents as nerve agents; identifies detected H and L agents.

⁵⁹ Relative hazard level provided through three different sensitivity levels.

⁶⁰ Provides some detect-to-warn capability since it detects hazards within 2 minutes and its M42 alarm unit can be placed up to 400 m from the M88 detector unit.

⁶¹ Classifies or identifies agents within 30 seconds.

⁶² Detects GA, GB, GD, GF (0.005 mg/m³ – 1/20 IDLH for GA/GB, 1/10 IDLH for GD/GF), VX (0.02 mg/m³ – 2X IDLH level), HD (2mg/m³ – IDLH level), HN, L (9 mg/m³), CX (3 mg/m³), AC (9 mg/m³ – below IDLH), CK (8 mg/m³), and CX (3 mg/m³) in vapor form and is susceptible to chemical interference. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.

⁶³ Classifies G and V agents as nerve agents; identifies blood and blister agents.

⁶⁴ Detects TICs AC and CK.

⁶⁵ Detects within 15 minutes.

⁶⁶ Hazards are identified in time to treat when M8 paper is used for liquid detection. Hazards are not identified in time to treat when ampoules are used for vapor detection (delayed response; 15-20 minutes).

⁶⁷ Detects only GA, GB, GD (0.1–0.2 mg/m³: 1 – 4X IDLH level), and VX (0.4 mg/m³ – 40X IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), and 50 (VX) mg-min/m³. Detects vapors and inhalable aerosols; does not detect concentrations which can cause low-level (e.g., ocular) effects, and is susceptible to chemical interference (false positives and negatives).

⁶⁸ Provides some detect-to-warn capability since it detects hazards within 2 minutes and its M42 alarm unit can be placed up to 400 m from the M43A1 detector unit.

⁶⁹ Detects GA, GB, GD, and VX (claims 0.02 mg/m³ – 1/5 IDLH level for GA/GB, 2/5 IDLH level for GD, 2X IDLH level for VX; test data 0.01 mg/m³ for GA and GB); HD (claims 0.05 mg/m³; test data 0.033 mg/m³), L (0.05 mg/m³); and AC (1.0 mg/m³ – 1/60 IDLH level). (GF, H, HN, CX, CG, and CK can be programmed into the detector). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

⁷⁰ Classifies agents as nerve, blister, blood and choking agents.

⁷¹ Indicates low, medium, and high concentrations.

⁷² Detects AC only (CI, CG, and CK can be programmed into the detector).

⁷³ Classifies hazards within 2 minutes.

⁷⁴ Detects 20–30 CWAs, precursors, and degradation products (including all 12 CWAs) in vapor (62 mg/m³ for GB – 620X IDLH; 46 mg/m³ for CK; 115 mg/m³ for CG) and liquid form, and is susceptible to chemical interference (false positives and negatives). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.

⁷⁵ Provides relative intensities (concentrations) of detected agents and TICs.

⁷⁶ Detects phosgene, hydrogen cyanide, cyanogen chloride, phosphorus trichloride, and phosphorus oxychloride.

- ⁷⁷ Detects within 45 seconds.
- ⁷⁸ Detects within 45 seconds and thus provides some detect-to-warn capability.
- ⁷⁹ Identifies hazards within 45 seconds.
- ⁸⁰ Liquid and vapor samples can be taken.
- ⁸¹ Presumably only CG detected (though can add AC detection capability); detects vapors only.
- ⁸² Presumably CG and 59 other toxic chemicals are classified as VOCs; if AC detection capability is included, then AC is identified.
- ⁸³ Presumably the total concentration in ppm of CG + 59 other toxic chemicals given; however, if AC detection capability is included, AC concentration is quantified.
- ⁸⁴ Presumably detects acrolein, acrylonitrile, allyl alcohol, ammonia, arsine, carbon monoxide, chlorine, dimethylamine, ethylene oxide, formaldehyde, methylamine, phosgene, propylene oxide, sulfur dioxide, sulfur trioxide + 2 more of following as modular detection/identification/quantification capabilities: carbon monoxide, hydrogen sulfide, sulfur dioxide, chlorine, ammonia, nitric oxide, nitrogen dioxide, hydrogen chloride, and phosphine.
- ⁸⁵ Classifies some TICs within the VOC category; the two modular slots allows for identification of two of the following: carbon monoxide, hydrogen sulfide, sulfur dioxide, chlorine, ammonia, nitric oxide, nitrogen dioxide, hydrogen chloride, and phosphine.
- ⁸⁶ Presumably the total concentration in ppm of 15 TICs plus individual concentrations for of two of the following: carbon monoxide, hydrogen sulfide, sulfur dioxide, chlorine, ammonia, nitric oxide, nitrogen dioxide, hydrogen chloride, and phosphine.
- ⁸⁷ Classifies agents and TICs within 1 minute.
- ⁸⁸ Cumulative dose can be determined and presented since the monitor collects and records up to 20,000 data points with time and date.
- ⁸⁹ Presumably detects all 12 agents of interest; detects all states (claims 5 ppb detection limit for air preconcentrator = 0.05 mg/m³ for VX – 5X IDLH level, 0.030–0.035 mg/m³ for G-agents: 1/3–2/3 IDLH levels, 0.035 mg/m³ for HD – 1/57 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Degraded performance: (P5, 9, 10) Not waterproof when operating; (M5) Negligible personnel experience.
- ⁹⁰ Identifies sampled agents and TICs (through mass spectrometry).
- ⁹¹ Presumably detects all TICs in ITF-40; detects all states.
- ⁹² Since system has continuous sampling capability, cumulative dose can likely be calculated.
- ⁹³ Presumably will detect all CWAs (0.4 mg/m² surface for nerve, blister, blood, and choking agents).
- ⁹⁴ All detected CWAs will be identified.
- ⁹⁵ Will detect and identify within 15 seconds.
- ⁹⁶ Will be point detector, so no standoff distance.
- ⁹⁷ Will detect within 15 seconds and thus provide some detect-to-warn capability.
- ⁹⁸ Will identify within 15 seconds, which provides complete capability.
- ⁹⁹ Liquid and vapor samples will be able to be taken.
- ¹⁰⁰ Sample integrity will be maintained.
- ¹⁰¹ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.
- ¹⁰² Will detect only GA, GB, GD, GF, and VX (0.1 mg/m³ - IDLH level for GA/GB, 2X IDLH level for GD/GF, 10X IDLH for VX, within 30 sec.); HD, HN3, and L (2.0 mg/m³ – IDLH level – within 120 sec.), AC (22 mg/m³ – below IDLH level, within 60 sec.), CK (20 mg/m³ within 60 sec.), and CG vapors only, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.
- ¹⁰³ Will classify agents as nerve, blister, blood, and choking agents.
- ¹⁰⁴ Will provide absolute quantification capability for all detected agents and TICs.
- ¹⁰⁵ Will detect Cl, HBr, HCl, AC, HF, HS, and CG as an objective.
- ¹⁰⁶ Will detect hazards within 1 minute.
- ¹⁰⁷ Will detect within 1 minute and thus will provide some detect-to-warn capability.
- ¹⁰⁸ Will classify hazards within 1 minute.
- ¹⁰⁹ Will monitor exposure and automatically calculate cumulative dose.

- ¹¹⁰ Will detect GA, GB, GD, GF (135 mg/m²; 114 mg/m² as an objective); VX (135 mg/m²; 2.88 mg/m² as an objective); HD, HN3, L (3,300 mg/m²; 1,170 mg/m² as an objective); AC (6,600 mg/m²), and CK (6,000 mg/m²). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Will not detect concentrations which can cause low-level (e.g., ocular) effects and will detect vapors only.
- ¹¹¹ Will classify detected agents and TICs as a threshold requirement; will identify detected agents and TICs as an objective requirement.
- ¹¹² Will provide absolute quantification capability for all detected agents and TICs as an objective.
- ¹¹³ Yes, all 98 TICs listed in Table 3: Hazard Ranking Index in ERDEC-SP-061: ITF-40 (objective).
- ¹¹⁴ Will detect hazards within 90 seconds.
- ¹¹⁵ Will have 5 km range as threshold requirement, 40 km range as objective requirement.
- ¹¹⁶ Yes, as a future standoff detector, assumed that its range and response time will be sufficient to detect-to-warn forces.
- ¹¹⁷ Will classify or identify hazards within 90 seconds.
- ¹¹⁸ The cumulative dose may be estimable since the technology/equipment will provide agent concentration. Unknown if it will have monitoring capability.
- ¹¹⁹ Will detect all 12 CWAs of interest in vapor and aerosol forms. Will not detect concentrations which can cause low-level (e.g., ocular) effects.
- ¹²⁰ Will detect hazards within 2 minutes.
- ¹²¹ Will have 20 km range for CWAs. Unknown for TICs.
- ¹²² This technology/equipment will not have sampling collection for future analysis capability.
- ¹²³ Will detect only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, HN3, L (2.0 mg/m³ – IDLH level within 120 sec.); AC (22 mg/m³ – below IDLH level within 60 sec.); CK (20 mg/m³ within 60 sec.); and CG in vapor and aerosol forms, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.
- ¹²⁴ Will detect ammonia, arsine, chlorine, diborane, fluorine, hydrogen bromide, hydrogen cyanide, hydrogen fluoride, nitric acid, phosgene, phosphorus trichloride, sulphur dioxide, and sulphuric acid.
- ¹²⁵ Will identify all detected TICs as an objective.
- ¹²⁶ Will detect within 2 minutes and thus will provide some detect-to-warn capability.
- ¹²⁷ Will classify or identify CWAs and TICs within 2 minutes.

5.1.3 Functional Solution Analysis

5.1.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of real-time or near real-time TIC detection and identification capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on indicators of TIC releases.
- 2. Deficiency:** General inability to detect (liquid, solid, or dusty) aerosols.
Non-Materiel Solutions: None
- 3. Deficiency:** General inability to detect nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 4. Deficiency:** Susceptibility to chemical interference.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 5. Deficiency:** Lack of real-time or near-real-time CWA identification capabilities.
Non-Materiel Solutions: None
- 6. Deficiency:** Lack of agent quantification capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 7. Deficiency:** Lack of reliable standoff (or remote) detection capability for CWAs and TICs.
Non-Materiel Solutions: None
- 8. Deficiency:** Lack of detectors that also take and maintain physical samples for future analysis capability.
Non-Materiel Solutions: None

5.1.3.2 IMA Assessment Summary

Table 5.1-2 identifies 11 ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting chemical hazards in the atmosphere. Advances in orthogonal technologies may be able to address all identified deficiencies.

Table 5.1-2. TASENS 1: IMA Assessment

Identified Gap	Mass Spectrometry ²	Infrared, Ultraviolet, and Microwave Spectroscopy ³	Ion Mobility Spectrometry ⁴	Photoacoustic Infrared Spectroscopy	Chemiluminescence Detection ⁵	Surface Acoustic Wave Technology ⁶	Multiple, Complementary Technologies (Orthogonal) ⁷	Raman Spectroscopy	Photo-ionization Technology	Flame Photometry ⁸	Electrochemical (Chemiresistor) Sensor Technology
Lack of real-time or near real-time TIC detection and identification capabilities. ⁹		X	X		X ¹⁰	X	X	X			
General inability to detect (liquid, solid, or dusty) aerosols. ¹¹	X ¹²	X				X	X ¹³	X		X	X
General inability to detect nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels.	X ¹⁴	X					X	X		X	
Susceptibility to chemical interference.	X		X			X	X				
Lack of real-time or near-real-time CWA identification capabilities.	X	X	X			X	X	X			
Lack of agent quantification capabilities. ¹⁵	X ¹⁶			X			X		X	X	
Lack of reliable standoff (or remote) detection capability for CWAs and TICs. ¹⁷	X	X	X	X	X	X	X	X	X	X	X
Lack of detectors that also take and maintain samples for future analysis capability. ¹⁸	X	X	X	X	X	X	X	X	X	X	X

¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.mii.edu/pubs/week/031124.htm>; Detection and Measurement of Chemical Agents, <http://books.nap.edu/html/terrorism/ch4.html>; Conventional analytical methods for chemical warfare agents, <http://www.iupac.org/publications/pac/2002/pdf/7412x2281.pdf>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000, <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>; Loerop, William. Chemical Biological Defense Science and Technology Chemical Standoff Briefing. Edgewood Chemical Biological Center. http://proceedings.ndia.org/dod_cb/Tuesday_PM/Zarzycki.pdf

² Includes GC/MS, liquid chromatograph/mass spec (LC/MS), matrix-assisted laser desorption ionization with time-of-flight mass spectrometry.

³ Examples include CO₂ long-wave infrared (LWIR), Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), CO₂ conv Mid-Wave Infrared (MWIR) DISC/DIAL, solid-state (SS) conv MWIR DISC/DIAL, FTIR, Hyperspectral LWIR, Passive MWIR, SS conv LWIR DISC/DIAL, SS conv Short-Wave Infrared (SWIR) – LWIR, SS conv UV-LW IR, Active LWIR Polarization, Active MWIR Polarization, Passive LWIR Polarization, Filtered Forward-Looking Infrared (FLIR), UV LIF/FTIR, and Microwave (GHz and THz) Spectroscopy.

⁴ May be coupled with GC; External Second Gate, Fourier Transform Ion Mobility Spectrometry approach can improve sensitivity and selectivity.

⁵ For example, Phosphorus Chemiluminescence Detection (PCD)

⁶ May be coupled with GC.

⁷ Examples include SAW/IMS, IMC/SAW/Electrochemical/SCCell (S-CAD), GC/IMS.

⁸ May be coupled with GC or reversed-phase liquid chromatography (RPLC).

⁹ Increasing the number of TICs identified by JCAD and/or JMCBDS is a potential solution.

¹⁰ Classifies, but generally does not identify, agents

¹¹ Distributing more Viking SpectraTraks is a potential solution.

¹² Aerosol Mass Spectrometry (e.g., aerosol time-of-flight spectrometry (ATOFMS))

¹³ MS and IMS.

¹⁴ Distributing more Viking SpectraTraks and HAPSITES is a potential solution.

¹⁵ JCAD and/or JMCBDS are expected to eliminate deficiency.

¹⁶ Distributing more Viking SpectraTraks and HAPSITES is a potential solution.

¹⁷ In conjunction with robotics for MS, IMS, PIRS, chemiluminescence detection, SAW Technology, photoionization technology, flame photometry, and electrochemical sensor technology IMAs.

¹⁸ All IMAs could be designed to eliminate this capability gap. Part of the sample would be diverted for storage.

5.2 Task TASENS 2: Sense the atmosphere for biological hazards

5.2.1 Functional Area Analysis

5.2.1.1 Definition

To sense the atmosphere for the presence or absence of biological hazards (encompasses biological warfare agents and TIB material) using sensors. Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen agent releases and monitoring of known hazard locations. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures. The evaluation encompasses all biological warfare hazards of military and medical importance.

5.2.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.2.1.2.1 Supported Tasks: OPSENS 1, OPSENS 4, OPSENS 7

5.2.1.2.2 Lateral Task: TASHA 16

5.2.1.2.3 Supporting Task: N/A

5.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Tropical, arctic, and arid climates. (C1.3.1)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. High surface-wind velocity. (C1.3.1.3.3)
8. High relative humidity. (C1.3.1.3.5)
9. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
10. Heavy precipitation intensity. (C1.3.1.3.6.2)
11. Extreme turbulence and wind shear. (C1.3.1.3.8)
12. Negligible light. (C1.3.2.1)
13. Biological effects. (C1.3.3.3)

Military

1. Stressful mission (C2.1)

2. Location—ashore, afloat, airborne (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. High health risk. (C3.3.1.5)
5. Significant refugee care responsibility. (C3.3.2.3)
6. Toxic industrial biological material present in the civilian sector. (C3.3.7.5)

5.2.2 Functional Needs Analysis

5.2.2.1 Capability and Deficiency Assessment Summary

Table 5.2-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are seven current capabilities used to accomplish this task and four projected capabilities to be added in the future (three in the near/mid-term and one in the far-term). The individual capabilities include a range of point and standoff detectors with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Many, if not most, BWAs can be presumptively detected and identified by collecting and concentrating aerosols through the use of a dry filter unit, followed by manual sample preparation and the following laboratory and field-deployable analytical techniques: immunochromatographic HHAs, which are part of the BSK; ELISA; and RT-PCR, as used by RAPID. Of the 25 BWAs described in the *Medical Management of Biological Casualties*, a complete set of HHAs can detect and identify all agents with the possible exception of the viral hemorrhagic fever agents; however, the BSK contains eight different HHAs and thus detects only eight BWAs per kit. The eight agents in the kit may be assembled to reflect the threat.¹ A comprehensive set of ELISAs, which are laboratory-based, can ostensibly detect and identify all 25 BWAs (as well as any TIB), assuming that an antigen or antibody has been isolated for each agent. RAPID, like all PCR-based technologies, can, with the appropriate reagents, detect and identify all BWA and TIB pathogens, but none of the toxins (since the toxins, unless contaminated with the source organisms, do not provide any genetic material). HHAs and RAPID can generically quantify detected agents (HHAs only through the aide of a reader), whereas some varieties of ELISAs provide absolute quantification capabilities.

The automated systems M31 BIDS, IBADS, JBPDS, and Portal Shield use immunochromatographic assays for detection and thus have capabilities similar to those of the HHAs. They detect and identify between four and ten BWAs, depending on the system, typically

within 15 minutes. Like HHAs, ELISAs, and the RAPID, they can identify-to-treat, but cannot provide a response quickly enough for detect-to-warn. Three systems—the M31E1 BIDS, JBPDS, and Portal Shield—take and maintain physical samples for further analysis (These samples must currently be taken to off-site laboratories to validate the detection analysis).

There is no single, automated, current capability to detect all BWAs. Furthermore, all current automated detectors do quantify agents, and thus, cumulative dose estimates cannot be determined. In addition, they do not detect any TIBs.

Overall current task deficiencies include the lack of real-time BWA detection and identification capabilities, agent quantification capabilities, and field analysis verification capabilities, as well as the lack of TIB detection capabilities and standoff detection capabilities for biological aerosols.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” Near/mid-term capability CBMS II integrated into the NBCRS Stryker and JNBCRS will be required to detect all BWAs in BIDS P3I list at 15 agent-containing particles per liter of air (ACPLA) within 3 minutes (Block I) and all BWAs in the ITF6A list (1990) at 25 ACPLA within 4 minutes. JBAIDS Block I will detect 11 BWA pathogens (as a threshold requirement), whereas Block II will detect the same 11 BWA pathogens plus the four toxins of interest (as a threshold requirement). Unlike current capabilities, JBAIDS will also quantify agent concentrations in the analyzed sample, which may allow for crude estimates of cumulative doses. Analysis output following sample preparation requires 25–40 minutes. The JBSDS will provide a standoff detection capability for potentially hazardous biological aerosols. It will not identify agents, nor will it absolutely or relatively quantify concentrations.

Of the overall current task deficiencies, the lack of field analysis verification capabilities, TIB detection capabilities and discriminatory standoff detection capabilities for biological agents are likely to remain deficiencies in the near/mid term.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “yellow.” The JMCBDS will detect all BWA in the JCS list, but no TIBs. It will identify and quantify all detected agents as an objective. Though it will be a point detector, its quick (<1-minute) response time may enable it to provide some detect-to-warn capability. Like JBAIDS, the JMCBDS will enable crude estimations of cumulative doses if it quantifies detected agents.

Of the overall current task deficiencies, the lack of field analysis verification capabilities, TIB detection capabilities and discriminatory standoff detection capabilities for biological agents are likely to remain deficiencies in the far term.

¹ The collection of surface samples to use in HHA results in a sample for further analysis. Coolers/temperature-controlled equipment to hold and maintain the sample needs to be available if the sample is not immediately evacuated.

Table 5.2-1. TASENS 2: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Current – Near/Mid – Far															
DFU/BSK	3 ¹	10 ²	0 ³	0 ⁴	N/A ⁴	N/A ⁴	6 ⁵	N/A ⁶	0 ⁵	1 ⁷	10 ⁸	10 ⁹	0 ¹⁰	0 ¹¹	5 ¹²
DFU/ ELISA	10 ¹³	10 ²	10 ¹⁴	10 ¹⁵	10 ¹⁶	10 ¹⁴	1 ¹⁷	N/A ⁶	0 ¹⁷	1 ¹⁸	10 ⁸	10 ⁹	0 ¹⁰	0 ¹¹	Unk
DFU/RAPID	8 ¹⁹	10 ²	5 ²⁰	5 ²¹	10 ²²	5 ²⁰	1 ²³	N/A ⁶	0 ²³	1 ²³	10 ⁸	10 ⁹	0 ¹⁰	0 ¹¹	Unk
M31 BIDS	1/3 ²⁴	10 ²	0 ²⁵	0 ⁴	N/A ⁴	N/A ⁴	6 ²⁶	N/A ⁶	0 ²⁶	10 ²⁶	10 ²⁷	10 ²⁷	0 ¹⁰	0 ¹¹	10 ²⁸
IBADS	1 ²⁹	10 ²	5 ³⁰	0 ⁴	N/A ⁴	N/A ⁴	6 ²⁶	N/A ⁶	0 ²⁶	10 ²⁶	Unk	Unk	0 ¹⁰	0 ¹¹	10 ¹³
JBPDS	4 ³¹	10 ²	5 ³⁰	0 ⁴	N/A ⁴	N/A ⁴	6 ²⁶	N/A ⁶	0 ²⁶	10 ²⁶	10 ³²	10 ⁹	0 ¹⁰	0 ¹¹	10 ¹³
Portal Shield	3/4 ³³	10 ²	5 ³⁰	0 ⁴	N/A ⁴	N/A ⁴	5 ³⁴	N/A ³⁵	0 ³⁴	10 ³⁴	10 ⁸	10 ⁹	0 ¹⁰	0 ¹¹	10 ¹³
Near/Mid – Far															
CBMS II integrated into NBCRV Stryker or JNBCRS	10 ³⁶	10 ³⁷	Unk	Unk	Unk	Unk	9 ³⁸	N/A ³⁹	0 ⁴⁰	10 ³⁸	Unk	Unk	0 ⁴¹	Unk	N/A ⁴²
DFU/JBAIDS Blocks I/II	4/6 ⁴³	10 ⁴⁴	10 ⁴⁵	0 ⁴⁶	N/A ⁴⁶	N/A ⁴⁶	4/5 ⁴⁷	N/A ³⁹	0 ⁴⁷	1 ¹⁸	10 ⁴⁸	10 ⁴⁹	0 ⁴¹	5 ⁵⁰	N/A ¹⁰¹
JBSDS	N/A ⁵¹	N/A ⁵²	N/A ⁵³	N/A ⁵¹	N/A ⁵²	N/A ⁵³	N/A ⁵⁴	3/10 ⁵¹	10 ⁵⁵	N/A ⁵²	0 ⁵⁶	N/A ⁵⁶	0 ⁴¹	0 ⁵³	N/A ¹⁰¹
Far															
JMCBDS	10 ⁵⁷	10 ⁵⁸	10 ⁵⁹	0 ⁶⁰	N/A ⁶⁰	N/A ⁶⁰	10 ⁶¹	N/A ³⁹	5 ⁶²	10 ⁶¹	10 ⁴⁸	10 ⁴⁹	0 ⁴¹	7 ⁶³	N/A ¹⁰¹
Current Overall Capability	5	10	4	2	10	8	5	10	2	6	4	10	0	0	9
Near/Mid-Term Overall Capability	5	10	5	2	10	8	5	10	1	6	5	10	0	1	N/A ¹⁰¹
Far-Term Overall Capability	5	10	6	2	10	8	6	8	3	6	6	10	0	1	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized BWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Number of the 25 biological agents described in the <i>Medical Management of Biological Casualties</i> that are detected. Fourteen of the 25 agents are as follow: Anthrax (<i>Bacillus anthracis</i>); Brucellosis (<i>Brucellae</i>); Glanders (<i>Burkholderia mallei</i>); Melioidosis (<i>Burkholderia pseudomallei</i>); Q Fever (<i>Coxiella burnetii</i>); Plague (<i>Yersinia pestis</i>); Tularemia (<i>Francisella tularensis</i>); Botulinum toxin; Ricin; SEB; T-2 Mycotoxins; Smallpox (variola major and minor); Viral Equine Encephalitis (e.g., VEE, WEE, and EEE); and Ebola and Marburg hemorrhagic fever viruses. Linear 2–10	10: All 25 BWAs detected 8: ≥20 BWAs detected 6: ≥15 BWAs detected 4: ≥10 BWAs detected 2: ≥5 BWAs detected 1: ≥1 BWA detected 0: No BWAs detected
M2	All of a potential adversary’s weaponized BWAs can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected BWAs.	10: Identify detected BWAs 7: Identify some detected BWAs; classify others 5: Classify detected BWAs 3: Some detected BWAs are classified or identified 0: Neither identify nor classify detected BWAs

	FAA Measure	Elaboration	Scale
M3	All of a potential adversary's weaponized BWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected BWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M4	All TIB material can be detected using fielded technologies/equipment?	Toxic industrial biological material includes medical waste, raw sewage, and vaccine-related biologics. Pathogens and toxins within TIB material are what are generally detected.	10: All pathogens and toxins within TIB material, including medical waste, raw sewage, and vaccine-related biologics can be detected 5: All TIB pathogens or toxins within one or more categories (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 3: Some TIB pathogens and toxins within one category (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 0: No TIB pathogens and toxins can be detected
M5	All TIB material can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected TIB material.	10: All pathogens and toxins within TIB material can be identified 7: Identify some TIB pathogens and toxins; classify others 5: Classify detected TIB pathogens and toxins 3: Some detected TIB pathogens and toxins are classified or identified 0: Neither classify nor identify detected TICs
M6	All TIB material can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TIBs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect biological hazards?	Time period from BWA/TIB sampling to analysis output (after sample preparation, and if attack time is known). Linear scale 2–9. Applies to point detectors only.	10: ≤1 minute 9: ≤4 minutes 8: ≤7 minutes 7: ≤10 minutes 4: ≤40 minutes 2: ≤60 minutes 1: >60 minutes

	FAA Measure	Elaboration	Scale
M8	Distance between biological hazard and detector for accurate detection?	Linear scale 1–9. Applies to standoff detection only.	10: ≥ 9 km 9: ≥ 9 km 5: ≤ 5 km 2: ≤ 2 km 1: ≤ 1 km
M9	Biological hazards are detected in time to warn forces and take appropriate protective measures?	Dependent upon time to detect biological hazards (M7), distance between biological hazard and detector for accurate detection (M8), as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability
M10	Biological hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards. Of all considered BWAs, ricin may require the most rapid response. Immunoglobulin therapy must be administered within 1 hour of ricin exposure to be effective.	10: Complete capability (<1 hour) 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary’s weaponized BWAs and for all TIB material using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Time to validate the presence of biological hazards in the atmosphere?	Refers to confirmatory identification.	10: Rapidly—validation performed expeditiously by particular technology/equipment. 5: Moderately delayed—mobile analysis tools can validate onsite. 0: Delayed—offsite laboratory analysis required for validation.
M14	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	If an absolute quantification capability is provided, then it is possible that the cumulative dose can be estimated (thus a minimal capability). If a monitoring capability is provided, then a more accurate cumulative dose can be calculated (moderate capability). If the cumulative dose is automatically calculated, then a complete capability is provided.	10: Complete capability 7: Moderate capability 5: Minimal capability 0: Cumulative dose cannot be determined

	FAA Measure	Elaboration	Scale
M15	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of the task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Current and near-future HHAs detect all BWAs with the possible exception of the viral hemorrhagic fevers; however, the BSK contains eight different HHAs and thus detects eight BWAs. The HHA sensitivity is 10²–10⁶ CFU/mL (*B. anthracis*) and 50–1200 ng/mL (*Botulinum* toxin A and *Botulinum* toxin F, respectively). Degraded performance: (C6) Toxic Industrial Biological Material present in civilian sector. Susceptible to interference (false positives and negatives due to matrix effects, among others); (M3) Minimal time available. Requires sample preparation prior to applying sample to assay.

² All detected BWAs are identified. In light of how biological detection works, detected BWAs are also identified.

³ Does not absolutely quantify agent. However, may provide relative indication of quantity, but only through the use of a reader. Soldiers will not likely have the reader.

⁴ According to specifications, does not detect any TIBs.

⁵ Detects and identifies within 15 minutes following sample preparation.

⁶ Point detector.

⁷ Since concept of operations involves testing once every 1–8 hours (mission dependent), there is only a minimal capability to identify-to-treat exposed personnel.

⁸ Collects physical sample for future analysis.

⁹ Maintains physical sample integrity.

¹⁰ Requires samples to be confirmed off site in laboratory.

¹¹ Does not provide absolute quantification capability, so cumulative dose cannot be determined.

¹² There is effective DOTLPF in place to conduct task, at least for bacillus bacteria (specifically anthrax). Procedures for other agents are probably similar.

¹³ Ostensibly all BWAs can be detected by ELISA. ELISA's sensitivity is 10⁵–10⁶ CFU/mL (*B. anthracis*); 10–100 PFU/mL of Venezuelan Equine Encephalitis virus; and 625 pg/mL of Staphylococcal Enterotoxin B (aerosol) and greater than 5 ng/mL of ricin.

¹⁴ Some varieties of ELISA can absolutely quantify the antigen or antibody concentration.

¹⁵ Theoretically, any agent (i.e., antigen or antibody) for which an ELISA has been designed can be detected through this method; however, only one particular pathogen or toxin antigen or antibody can be tested per ELISA model.

¹⁶ A particular TIB pathogen or toxin is identified if it is detected, since ELISA is highly specific and detects a particular agent.

¹⁷ Typically requires 1–2 hours (following sample collection and preparation) for detection, identification, and if applicable, quantification, primarily because of incubation time.

¹⁸ Since concepts of operations involves collecting the filter for testing once every 1–8 hours (mission dependent), identify-to-treat capability is minimal.

¹⁹ RAPID may be able to detect all pathogens; PCR does not detect toxins, though the toxic material may be contaminated with source genetic material. (In this assessment, it is assumed that this is not the case). Standard PCR has a sensitivity of 10–100 CFU/mL bacteria (*B. anthracis*); and 15 fg–1 pg or 100–1 million copies of the complementary DNA for viruses.

²⁰ RAPID, through RT-PCR, may provide generic quantification.

²¹ Theoretically, any TIB pathogen can be detected with appropriate reagents; toxins cannot be detected unless contaminated with source genetic material.

²² All detected TIBs are identified.

²³ Detects and identifies within 30 minutes following sample preparation, but sample preparation requires several hours.

²⁴ Detects four to eight agents detected (including anthrax, plague, botox, and SEB). The required sensitivity of the BIDS is 25 ACPLA (NDI model) and 15 ACPLA (P31 model).

-
- ²⁵ Does not provide absolute or generic (snapshot) quantification capability.
- ²⁶ Detects and identifies within 15 minutes.
- ²⁷ Refers to M13E1 BIDS model only.
- ²⁸ There is effective DOTLPF in place to conduct task with this system.
- ²⁹ Detects four agents.
- ³⁰ Provides generic quantification capability with the use of a reader.
- ³¹ Detects 10 agents including: anthrax, smallpox, plague, tularemia, botox, SEB, and viral hemorrhagic fevers Ebola/Marburg. The required sensitivity of the JBPDS is 1 ACPLA, though this capability has not likely been achieved.
- ³² Collects 4–5 mL sample for future analysis.
- ³³ Detects 8–10 agents.
- ³⁴ Detects within 25 minutes.
- ³⁵ Networked point detectors.
- ³⁶ Block I will detect all BW agents in BIDS P31 list at 15 ACPLA in 3 minutes. Block II will identify BW agents in ITF6A list (1990) at 25 ACPLA in 4 minutes.
- ³⁷ At the very least, Block II will identify detected BWAs.
- ³⁸ Will detect within 3–4 minutes.
- ³⁹ Will be a point detector.
- ⁴⁰ May detect within 3 minutes, but this is the threshold for detect-to-warn capability according to James Harper presentation of *Rapid Identification of Biological Pathogens with the CANARY System*. It is concluded that it will not have any detect-to-warn capability.
- ⁴¹ Will require samples to be confirmed off site in laboratory
- ⁴² Future system(s). Thus, DOTLPF is also future and cannot be evaluated.
- ⁴³ Block I will detect Anthrax; Brucella; Ebola VHF virus; Marburg VHF virus; Viral Encephalitis viruses (VEE/WWW/EEE); Glanders; Melioidosis; Plague; Q Fever; Smallpox; and Tularemia (and Typhus) as a threshold requirement; and Crimean-Congo hemorrhagic virus; Dengue fever; Hantaviruses; and Rift Valley fever virus (and Cholera, Cryptosporidium; E. coli; Influenza; Salmonella; and Shigella) as an objective; Block II will add toxins Botulinum, microcystins, ricin, SEB, and T-2 Mycotoxins.
- ⁴⁴ Will identify all detected agents.
- ⁴⁵ Will quantify the concentration in the sample.
- ⁴⁶ Will not detect any TIBs.
- ⁴⁷ Will detect and identify within 40 minutes (25-minute objective) for Blocks I and II following sample preparation.
- ⁴⁸ Will provide physical sample collection capability for future analysis.
- ⁴⁹ Will maintain integrity of physical sample.
- ⁵⁰ Cumulative dose will be able to be estimated from data (minimal capability).
- ⁵¹ Will detect aerosol clouds consistent with a BW release above naturally occurring backgrounds at ranges up to 5 km (15 km [O]) of at least 10,000 ACPLA (5,000 [O]) with a detection probability of 90% (95%[O]) in near-real time during normal night conditions and sufficient line of sight. [T].
- ⁵² Will detect aerosol clouds and discriminate clouds with particles of biological origin from clouds with particles of nonbiological origin at average cloud concentrations of 3,000 (1,000 [O]) ACPLA up to 1 km (3 km [O]) with a probability of 90% (95% [O]) in near-real time during normal night conditions and sufficient line of sight [T].
- ⁵³ Will not provide generic (snapshot) quantification capability.
- ⁵⁴ Will provide real-time detection of aerosol clouds consistent with a BW release and real-time discrimination of clouds with particles of biological origin from clouds with particles of nonbiological origin.
- ⁵⁵ Will be a standoff detector with considerable range and real-time detection capability.
- ⁵⁶ Will not collect physical sample.
- ⁵⁷ Will detect all agents in JCS threat list. Will detect 1 ACPLA or as low as reasonably achievable (ALARA).
- ⁵⁸ Will identify all detected agents as an objective.
- ⁵⁹ Will provide absolute quantification capability as an objective.
- ⁶⁰ Will not detect any TIBs.
- ⁶¹ Will detect within 1 minute.
-

⁶² Though a point detector may provide partial detect-to-warn capability since detection time is 1 minute, which is less than 3-minute threshold for detect-to-warn capability according to James Harper presentation of *Rapid Identification of Biological Pathogens with the CANARY System*.

⁶³ Since it will have absolute quantification and monitoring capability, JMCBDS will provide moderate cumulative dose determination capability.

5.2.3 Functional Solution Analysis

5.2.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Lack of real-time or near-real-time BWA detection and identification capabilities.
Non-Materiel Solutions: None
2. **Deficiency:** Lack of standoff detection/identification (not just bio/nonbio discrimination) capability for biological agents.
Non-Materiel Solutions: None
3. **Deficiency:** Validation of findings requires laboratory testing.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to permit validation by a reliable on-site detection/identification capability (e.g., portable PCR), if appropriate, as confirmatory detection/identification is ultimately dependent upon doctrine, not materiel capabilities.
4. **Deficiency:** Lack of TIB detection capability.
Non-Materiel Solutions: None
5. **Deficiency:** Lack of agent quantification capabilities.
Non-Materiel Solutions: None
6. **Deficiency:** Lack of physical sampling capability for future analysis.
Non-Materiel Solutions: None

5.2.3.2 IMA Assessment Summary

Table 5.2-2 identifies nine ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting biological hazards in the atmosphere. Advances in mass spectrometry, immunoassays, tissue-based detection, or orthogonal technologies may be able to address all identified deficiencies.

Table 5.2-2. TASENS 2: IMA Assessment

TASENS 2: Sense the atmosphere for biological hazards ¹									
Identified Gap	Idea for Materiel Approach (IMA)								
	Mass Spectrometry ²	Immunoassay (Antibody-Based) ³	Genetic (Nucleic Acid-Based) ⁴	Tissue-Based	Flame Photometry ⁵	Colorimetric ⁶	Multiple, Complementary Technologies (Orthogonal) ⁷	Raman Spectroscopy	Infrared (IR), Ultraviolet (UV), and Microwave Spectroscopy ⁸
Lack of real-time or near real-time BWA detection and identification capabilities. ⁹	X ¹⁰	X		X		X	X	X	X
Lack of standoff (or remote) detection/identification (not just bio/nonbio discrimination) capability for biological agents. ¹¹	X	X	X	X	X		X	X	X
Lack of TIB-detection capability.	X	X	X	X	X	X	X	X	X
Lack of agent-quantification capabilities. ¹²	X	X	X	X	X	X	X		
Lack of physical-sampling capability for future analysis. ¹³	X	X	X	X	X	X	X	X	X

¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.miiis.edu/pubs/week/031124.htm>; Detection and Measurement of Biological Agents, <http://books.nap.edu/html/terrorism/ch6.html>; National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. <http://www.ojp.usdoj.gov/nij/pubs-sum/190747.htm>; Edgewood Chemical Biological Center, Market Survey: Biological Detectors Guide for Selection of Detection Devices and Systems. April 2003.

² Includes GC/MS, LC/MS, Gas Chromatography-Ion Trap Tandem Mass Spec (GC-MS-MS), Matrix-assisted laser desorption ionization (MALDI) Mass Spec.

³ Includes SAW technology.

⁴ Includes PCR amplification and RT-PCR amplification, DNA microchip technology, SAW technology, DNA-recognition enzymes.

⁵ Philippe, Adam, Damien Descroix, and Jean-Pierre Chiaroni. "Flame Photometry for Biological Detection." Proceedings from the 6th CBW Protection Symposium. 1998.

⁶ ChemSensing Colorimetric Sensor.

⁷ Includes nucleic acid/immunoassay technologies (e.g., PCR and immunological techniques), electrochemiluminescence/equilibrium immunoassay, Fluorescence correlation spectroscopy/PCR.

⁸ CO₂ long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), CO₂ conv mid-wave IR (MWIR) DISC/DIAL, solid-state (SS) conv MWIR DISC/DIAL, FTIR, Hyperspectral LWIR, Passive MWIR, SS conv LWIR DISC/DIAL, SS conv short-wave IR (SWIR) – LWIR, SS conv UV-LW IR, Active LWIR Polarization, Active MWIR Polarization, Passive LWIR Polarization, Filtered Forward-Looking Infrared (FLIR), UV LIF/FTIR.

⁹ JMCBDS is expected to provide rapid BWA detection capability (i.e., within 1 minute)

¹⁰ A time-of-flight mass spectrometer being developed by Johns Hopkins' Applied Physics Laboratory can, within minutes, identify biological agent aerosols, though in less detail than slower mass spectrometry-based detectors. Brown, Kathryn. "Up in the Air." *Science*. 305: 27. August 2004. pp. 1228–29.

¹¹ In conjunction with UAV for MS, Immunoassay, Genetic, Tissue-Based, and Flame Photometry IMAs.

¹² JBAIDS and JMCBDS are expected to quantify agent and thus eliminate capability gap.

¹³ All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.3 Task TASENS 3: Sense the atmosphere for radiological hazards

5.3.1 Functional Area Analysis

5.3.1.1 Definition

To sense the atmosphere for the presence or absence of radiation hazards and toxic industrial radiological (TIR) material using sensors. Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen hazard releases and monitoring of known hazard locations. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures.

5.3.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.3.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.3.1.2.2 Lateral Task: TASHA 16

5.3.1.2.3 Supporting Task: N/A

5.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Tropical, arctic, and arid climates. (C1.3.1)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. High surface-wind velocity. (C1.3.1.3.3)
8. High relative humidity. (C1.3.1.3.5)
9. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
10. Heavy precipitation intensity. (C1.3.1.3.6.2)
11. Extreme turbulence and wind shear. (C1.3.1.3.8)
12. Negligible light. (C1.3.2.1)
13. Strong nuclear atmosphere weapons effects. (C1.3.3)
14. Moderate nuclear radiation effects. (C1.3.3.1.2)

Military

1. Stressful mission. (C2.1)

2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. TIMs present in the civilian sector. (C3.3.7.5)

5.3.2 Functional Needs Analysis

5.3.2.1 Capability and Deficiency Assessment Summary

Table 5.3-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 15 current capabilities used to accomplish this task. The capabilities include a range of portable RADIAC devices and dosimeters.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current RADIACs detect and identify beta radiation and detect, identify, and quantify gamma radiation. All RADIACs perform their functions in real time (though the level of confidence increases with increased sampling time) and thus provide a complete detect-to-warn capability. Many also automatically calculate the cumulative dose. Dosimeters generally measure the total dose from gamma radiation exposure. Most are not self-indicating and need to be placed within a reader to retrieve the dose information. Many currently fielded dosimeters were designed for fallout operations and are incapable of supporting operations in lower-level radiation environments.

There is no single capability that can perform the task to all of the designated standards. ADM-300 detects most forms of radiation (alpha, beta, gamma, and x-ray), but it, like all RADIACs, detects, identifies, and quantifies only the radiation, not the radioisotope. Furthermore, the ADM-300, like all RADIACs and dosimeters, must be exposed to radiation to detect it. Overall task deficiencies include the lack of radioisotope identification capabilities, reliable alpha detection capabilities, monitors that can detect all types of radiation, and detectors that take sample for future analysis and the complete lack of true standoff detection capabilities.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far-term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.3-1. TASENS 3: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current – Near/Mid – Far									
ADM-300	8 ¹	5 ²	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	10 ⁸	10 ⁹
AN/PDQ-1 MFR ¹⁰	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	0 ⁶	5 ⁷	Unk	10 ¹³
AN/PDR-27	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	0 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-43	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-56	2 ¹⁴	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-63	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-65	2 ¹⁶	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	10 ¹⁷	10 ¹³
AN/PDR-75	4 ¹⁸	0 ¹⁹	10 ²⁰	0 ²¹	0 ²²	3 ²³	5 ²⁴	10 ²⁵	10 ¹³
AN/PDR-77	8 ²⁶	5 ²	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/UDR-13	4 ²⁷	5 ²	10 ³	10 ⁴	0 ⁵	5 ²⁸	5 ⁷	10 ¹⁷	10 ¹³
AN/VDR-2	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	0 ⁶	5 ⁷	10 ¹⁷	10 ¹³
Berkeley SAM 935	4 ²⁹	10 ³⁰	10 ³	10 ⁴	0 ⁵	10 ³¹	10 ³²	10 ¹⁷	10 ¹³
CP-95/DT-60	2 ³³	N/A ¹⁵	10 ³⁴	0 ²¹	0 ²²	3 ²³	5 ³⁵	10 ³⁶	10 ¹³
IM-143/ IM-93	2 ³³	N/A ¹⁵	10 ³⁴	10 ³⁷	0 ²²	3 ²³	5 ³⁵	10 ³⁶	10 ¹³
Siemens EPD MK2	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ³¹	5 ⁷	10 ¹⁷	10 ¹³
Current Overall Capability	4	4	9	8	0	9	5	9	10
Near/Mid-Term Overall Capability	4	4	9	8	0	9	5	9	10
Far-Term Overall Capability	4	4	9	8	0	9	5	9	10

	FAA Measure	Elaboration	Scale
M1	All radiological hazards (including TIR material) can be detected using fielded technologies/equipment?	Number of radiation types (i.e., alpha, beta, gamma, neutron, and x-ray) detected. Note: Fielded technologies/equipment detect radiological hazards by detecting the radiation emitted from these hazards. TIR material includes depleted uranium (DU), a common battlefield hazard resulting from certain types of ammunition and damaged armor.	10: All five types 8: Four types 6: Three type 4: Two types 2: Single type 0: No radiological hazards detected
M2	All radiological hazards (including TIR material) can be identified using fielded technologies/ equipment?	Ability to identify type of radiation detected or the radioisotope emitting the radiation. Note: Fielded technologies/equipment that identify radioisotope also identify the type(s) of radiation detected.	10: Identifies radioisotope emitting radiation 5: Identifies type of radiation detected 0: No identification capability
M3	All radiological hazards (including TIR material) can be quantified using fielded technologies/ equipment?	Ability to quantify activity of radiological material (i.e., Cu or Bq), or the exposure (i.e., Roentgen or Coulomb/kg) or dose rate (rad, rem, Gy, or Sv) from emitted radiation.	10: Absolute quantification 5: Generic quantification (or absolute quantification of one radiation type and no quantification of another type) 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	Time to detect radiological hazard?	Time period from exposure to radiation to analysis output.	10: Near real time 0: Not near real time
M5	Distance between radiological hazard and detector for accurate detection?	Since fielded technologies/equipment detect the radiation emitted from radiological hazards, the distance depends on range of emitted radiation. All field technologies/equipment must be exposed to emitted radiation to detect the radiological hazard. If a radiological detector did not need to be exposed to radiation emitted from a radiological hazard to detect that hazard, then it would exhibit true standoff capability.	10: Exposure to emitted radiation not required to detect hazard 0: Exposure to emitted radiation required to detect hazard
M6	Radiological hazards are detected in time to warn forces and take appropriate protective measures?	Dosimetry is a key protection measure used to ensure personnel do not exceed the command dose level. Complete capability requires automated dosimeters capable of alarming when dose rates and total doses are reached that are well below traditional nuclear warfare levels.	10: Complete capability (alarming personal dosimeter with digital readout, dose rate alarm, and total dose alarm suitable for both occupational exposure use [meets OSHA requirements for tracking low-level exposures] and nuclear warfare operations [fully EMP hardened]) 5: Partial capability (Personal dosimeter with ability for wearer to read in the field, suitable for nuclear warfare operations and with range of 0.1–1000 cGy and display scales ranging cGys to 100s of cGy) 0: No capability
M7	Radiological hazards are identified in time to treat forces?	A complete capability requires both near real-time identification of the emitted radiation type(s) and radioisotope. Identification of the emitted radiation type(s) enables appropriate medical response to radiation exposure and identification of the radioisotope determines to appropriate medical course of action to radiological material internalization.	10: Complete capability (near real-time identification of radioisotope and emitted radiation type[s]) 5: Partial capability (Delayed identification of emitted radiation type[s]) 0: No capability (no identification capability)
M8	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	If an absolute quantification capability is provided, then it is possible that the cumulative dose can be estimated (thus a minimal capability). If a monitoring capability is provided, then a more accurate cumulative dose can be calculated (moderate capability). If the cumulative dose is automatically calculated, then a complete capability is provided.	10: Complete capability 7: Moderate capability 5: Minimal capability 0: Cumulative dose cannot be determined.
M9	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

-
- ¹ Detects most radiation types (alpha, beta, gamma, and x-ray) emitted from radiological materials.
 - ² Identifies type of radiation, but not radioisotope.
 - ³ Absolutely quantifies radiation level.
 - ⁴ Real-time detection. Level of confidence increases with increased sampling time and radiation levels.
 - ⁵ Requires exposure to emitted radiation to detect hazard.
 - ⁶ Not a dosimeter.
 - ⁷ Provides partial identify-to-treat capability since immediately identifies detected radiation type, but not the radioisotope.
 - ⁸ Automatically calculates cumulative dose since system capable of dose and dose rate alarms across entire measurement range; also predictive algorithm provides estimate of time in field before alarm; unknown whether cumulative dose is directly output.
 - ⁹ There is effective DOTLPF in place to conduct task with this system.
 - ¹⁰ In combination with OA-9449/PDQ probe. The MFR alone detects gamma radiation; with the probe, it measures gamma radiation and detects beta radiation.
 - ¹¹ Detects beta/gamma radiation emitted from radiological materials.
 - ¹² Absolutely quantifies gamma radiation level; detects, but does not quantify, beta radiation.
 - ¹³ Absolutely quantifies radiation level and provides monitoring capability and thus provides moderate capability to determine cumulative dose.
 - ¹⁴ Detects alpha radiation emitted from radiological materials (particularly plutonium).
 - ¹⁵ Detects only one type of radiation, so identification capability is not applicable.
 - ¹⁶ Detects gamma radiation emitted from radiological materials (particularly plutonium).
 - ¹⁷ System automatically calculates cumulative dose.
 - ¹⁸ The DT-236 dosimeter records the total dose to gamma and neutron radiation. The CP-696 reader is required to retrieve the dose information.
 - ¹⁹ Does not differentiate between dose received from gamma radiation and dose received from neutron radiation.
 - ²⁰ Absolutely quantifies total gamma and neutron dose absorbed by dosimeter.
 - ²¹ Dose can be viewed only when dosimeter is placed within reader; therefore, radiation exposure cannot be detected in near real time.
 - ²² Dosimeter must be exposed to radiation to warn of radiation hazard.
 - ²³ Dosimeter, but can't be read by wearer in the field.
 - ²⁴ Through reader, displays total dose to penetrating (i.e., gamma and neutron) radiation, which allows for partial identify-to-treat capability.
 - ²⁵ Dosimeter records total cumulative dose to gamma and neutron radiation.
 - ²⁶ Detects alpha, beta, gamma, and x-radiation emitted from radiological materials.
 - ²⁷ Detects gamma/neutron radiation emitted from radiological materials.
 - ²⁸ Partial capability. Dosimeter measures the gamma/neutron dose rate from 0.1–999 cGy/hour and the total dose from 0.1–999 cGy.
 - ²⁹ Detects gamma radiation and with optional neutron detector, neutron radiation as well.
 - ³⁰ Identifies the radioisotope.
 - ³¹ Complete capability.
 - ³² Provides complete identify-to-treat capability since immediately identifies radioisotope.
 - ³³ Dosimeter indicates total dose to gamma radiation only.
 - ³⁴ Absolutely quantifies total gamma radiation dose absorbed by dosimeter.
 - ³⁵ Provides partial identify-to-treat capability. As dosimeter detects only gamma radiation, an indication of a significant dose could suggest and help treat acute radiation syndrome, e.g.
 - ³⁶ Dosimeter records cumulative dose to gamma radiation.
 - ³⁷ As a self-indicating pocket dosimeter, possibly allows for near-real-time detection of gamma radiation; however, dose rate must be high for increase in dose to be noticeable during a short period.

5.3.3 Functional Solution Analysis

5.3.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of reliable alpha-detection capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300, AN/PDR-56 and AN/PDR-77.
- 2. Deficiency:** Lack of monitors that can detect most or all types of radiation.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300.
- 3. Deficiency:** Lack of true standoff detection capability.¹
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of radioisotope-identification capabilities.
Non-Materiel Solutions: None
- 5. Deficiency:** Lack of self-indicating, alarming person dosimeters with low-to-high level detection capability.
Non-Materiel Solutions: None

5.3.3.2 IMA Assessment Summary

Table 5.3-2 identifies four ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting radiological hazards in the atmosphere. Advances in scintillation or semiconductor radiation detection technologies may be able to address all identified deficiencies.

¹ Current detectors must be exposed to radiation to detect the presence of a radiological source. This fact means that the users of handheld radiation detectors may also be exposed to radiation. CRTI is currently developing a standoff radiological detection capability. http://www.crti.drdc-rddc.gc.ca/projects/crti_0203rd_e.html

Table 5.3-2. TASENS 3: IMA Assessment

TASENS 3: Sense the atmosphere for radiological hazards ¹				
Identified Gaps	Ideas for Material Approaches (IMA)			
	Gas-Filled Radiation Detectors ²	Scintillation Radiation Detectors ³	Semiconductor Radiation Detectors ⁴	Infrared, Ultraviolet, and Microwave Spectroscopy
Lack of reliable alpha detection capabilities. ⁵	X	X	X	
Lack of monitors that can detect all types of radiation. ⁶	X	X	X	
Lack of true standoff (or remote) detection capability. ⁷	X	X	X	X ⁸
Lack of radioisotope identification capabilities. ⁹		X	X	
Lack of self-indicating, alarming person dosimeters with low-to-high level detection capability.		X	X	

¹ <http://hps.org/publicinformation/ate/q534.html>

² Includes Geiger-Mueller detectors, proportional gas detectors, and ionization chambers

³ Includes ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), barium fluoride (BaF₂)-based detectors

⁴ Includes germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂)-based detectors

⁵ Distributing more ADM-300 and AN/PDR-77 is a potential solution.

⁶ Distributing more ADM-300 is a potential solution.

⁷ In conjunction with robotics or UAVs for gas-filled detector, scintillation detector, and semiconductor detector IMAs.

⁸ CRTI is developing a standoff radiation detector that may be technically based on electromagnetic spectroscopy of surrounding air molecules being ionized by the radiation.

http://www.crti.drdc-rddc.gc.ca/projects/crti_0203rd_e.html

⁹ Distributing gamma and/or alpha scintillation detectors with radioisotope identification capabilities is a potential solution.

5.4 Task TASENS 4: Sense surfaces for chemical hazards

5.4.1 Functional Area Analysis

5.4.1.1 Definition

To sense the presence or absence of chemical hazards (encompasses chemical warfare agents and TICs) on surfaces. Includes the functions of detection, identification, and quantification of the hazard. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known hazard locations, and collection of samples for further analysis. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures.

5.4.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.4.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.4.1.2.2 Lateral Task: N/A

5.4.1.2.3 Supporting Task: N/A

5.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. High sea state. (C1.2.1.3)
4. Tropical, arctic, and arid climates. (C1.3.1)
5. Summer, winter seasons. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot, very cold air temperature. (C1.3.1.3.1)
8. High surface-wind velocity. (C1.3.1.3.3)
9. High relative humidity. (C1.3.1.3.5)
10. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
11. Heavy precipitation intensity. (C1.3.1.3.6.2)
12. Extreme turbulence and wind shear. (C1.3.1.3.8)
13. Negligible light. (C1.3.2.1)
14. Chemical effects. (C1.3.3.2)

Military

1. Stressful mission. (C2.1)

2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Low mission priority. (C3.1.3.2)
4. TICs present in the civilian sector. (C3.3.7.5)

5.4.2 Functional Needs Analysis

5.4.2.1 Capability and Deficiency Assessment Summary

Table 5.4-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 10 current capabilities used to accomplish this task and four projected capabilities to be added in the future (three in the near/mid-term and one in the far-term). The individual capabilities include a range of point detectors and a future standoff detector with differing capabilities to meet the identified standards (Note: The ratings may be based on vendor-provided claims).

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current detectors do not directly detect chemical agents on surfaces but rather detect vapors off-gassing from the deposited agent. The APD2000, CAM/ICAM, HAPSITE with the headspace sampling system, and M22 ACADA with XM279 probe all work through this method. Consequently, these detectors’ capabilities for sensing chemical agents on surfaces are generally equivalent to their capabilities for sensing chemical agents in the atmosphere, assuming that the agent is sufficiently volatile for a detectable amount of chemical vapor to accumulate above the contaminated surface.

M8 and M9 papers are the primary current capabilities for directly detecting liquid chemical warfare agents (i.e., nerve and blister agents) deposited on surfaces. M8 paper indicates exposure to liquid agent by changing its color from tan to yellow, red, and green for G-agents, H-agents and Lewisite, and V-agents, respectively. M9 paper does not classify or identify detected agents, but turns pink, red, reddish-brown, or red-purple when exposed to liquid G-agents, H-agents, V-agents, and Lewisite. The HazMatID is another capability that can identify sampled CWA (and TIC) liquids (and solids, powders, and pastes) on surfaces. Though the system can identify samples within 20 seconds, the samples must be manually fed into the device.

There is no single detection device/instrument that is capable of performing all TASENS 4 tasks. Mass spectrometers Viking SpectraTrak and HAPSITE are sophisticated capabilities, but they do not detect or identify in near-real time; consequently, they do not detect to warn and may be

unable to identify to treat high concentrations of fast-acting lethal agents. Current overall task deficiencies include the general inability to detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels; lack of real-time CWA identification and TIC detection/identification capabilities; lack of agent quantification capabilities; lack of a detector that also takes samples for future analysis; lack of standoff (or remote) detection capability for CWAs and TICs on surfaces; inability to detect adsorbed and absorbed chemical agents; and detector susceptibility to chemical interference.¹

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” In the near/mid-term future, more detectors will quantify and classify, if not identify, agents. Nevertheless, MS units and the JCSD will likely be the only detectors able to detect all CWAs. MS units Viking Spectratrak and HAPSITE will remain the main capabilities to detect TICs. They will detect many or all high-priority TICs.

The general inability to detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels; lack of real-time CWA identification and TIC detection/identification capabilities; lack of agent quantification capabilities; lack of a detector that also takes samples for future analysis; inability to detect adsorbed and absorbed chemical agents; lack of standoff (or remote) detection capability for CWAs and TICs on surfaces; and detector susceptibility to chemical interference are likely to remain deficiencies in the near-future.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “yellow.” In the far-term future, most fielded detectors will detect most, if not, all CWAs and some TICs. Most detectors will quantify and classify, if not identify, agents. MS units will likely remain the main capabilities to detect TICs. Many detectors will still not detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents at or below IDLH levels. Furthermore, there will still be a lack of a detector that also takes samples for future analysis, a lack of standoff (or remote) detection capability for CWAs and TICs on surfaces, and an inability to detect adsorbed and absorbed chemical agents. Chemical interference will remain an issue.

¹ Refer to the JRO *Operational Impact Assessment of Non-Traditional Agents* report, July 2003 (S/NF) for information on nontraditional agent detection.

Table 5.4-1. TASENS 4: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current – Near/Mid – Far														
APD2000	5 ¹	10 ²	0 ³	0 ⁴	10 ²	N/A ⁵	7 ⁶	N/A ⁷	N/A ⁸	5 ⁹	0 ¹⁰	N/A ¹⁰	N/A ⁸	Unk ¹¹
CAM/ICAM	6 ¹²	5 ¹³	5 ¹⁴	0 ¹⁵	N/A ¹⁶	N/A ⁵	2 ¹⁷	N/A ⁷	N/A ⁸	5 ¹⁸	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
HAZMATID	10 ²⁰	10 ²¹	Unk	9 ²²	10 ²¹	Unk	8 ²³	N/A ⁷	N/A ⁸	5 ²⁴	Unk	Unk	N/A ⁸	Unk ¹¹
HAPSITE (GC/MS) with HSS ²⁵	10 ²⁶	10 ²⁷	10 ²⁸	9 ²⁹	10 ²⁷	10 ²⁸	1 ³⁰	N/A ⁷	N/A ⁸	5 ³¹	0 ¹⁰	N/A ¹⁰	N/A ⁸	Unk ¹¹
M8 Paper	7 ³²	5 ³³	0 ³	0 ¹⁵	N/A ¹⁶	N/A ⁵	7 ¹⁷	N/A ⁷	N/A ⁸	5 ³⁴	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
M9 Paper	7 ³⁵	0 ³⁶	0 ³	0 ¹⁵	N/A ¹⁶	N/A ⁵	8 ³⁷	N/A ⁷	N/A ⁸	N/A ³⁸	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
M22 ACADA with XM279 probe ³⁹	6 ⁴⁰	7 ⁴¹	5 ⁴²	0 ¹⁵	N/A ¹⁶	N/A ⁵	7 ¹⁷	N/A ⁷	N/A ⁸	5 ⁴³	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
M256A1 Kit ⁴⁴	9 ⁴⁵	7 ⁴⁶	0 ³	1 ⁴⁷	10 ⁴⁸	N/A ⁵	1 ⁴⁹	N/A ⁷	N/A ⁸	5 ⁵⁰	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
MM-1 (GC/MS) integrated into M93A1 Fox	10 ⁵¹	10 ¹⁵	5 ⁵²	1 ⁵³	10 ¹⁵	5 ⁷⁵	4 ⁵⁴	N/A ⁷	N/A ⁸	5 ⁵⁵	10 ⁵⁶	10 ⁵⁷	N/A ⁸	10 ¹⁹
Viking SpectraTrak (GC/MS)	10 ⁵⁸	10 ⁵⁹	10 ⁴⁰	10 ⁶⁰	10 ⁹⁰	10 ⁴⁰	1 ⁴²	N/A ⁷	N/A ⁸	5 ⁴⁴	0 ¹⁰	N/A ¹⁰	N/A ⁸	10 ¹⁹
Near/Mid – Far														
CBMS II integrated into NBCRV Stryker or JNBCRS	10 ⁶¹	10 ⁶²	Unk	Unk	Unk	Unk	9 ⁶³	N/A ⁶⁴	N/A ⁸	10 ⁶⁵	10 ⁶⁶	10 ⁶⁷	N/A ⁸	N/A ⁶⁸
JCAD with XM279 probe ³⁹	9 ⁶⁹	5 ⁷⁰	10 ⁷¹	2 ⁷²	Unk	10 ¹⁰⁴	2 ⁷³	N/A ⁷⁴	N/A ⁸	5 ⁷⁵	0 ⁷⁶	N/A ⁷⁶	N/A ⁸	N/A ⁷⁷
JCSD	10 ⁷⁸	10 ⁷⁹	Unk	Unk ⁸⁰	10 ⁷⁹	Unk	10 ⁸¹	N/A ⁸²	N/A ⁸	10 ⁸³	0 ⁸⁴	N/A ⁷⁶	N/A ⁸	N/A ¹⁰¹
Far														
JMCBDS	9 ⁸⁵	5 ¹⁰³	10 ¹⁰⁴	4 ⁸⁶	10 ⁸⁷	10 ¹⁰⁴	1 ⁸⁸	N/A ⁷⁴	N/A ⁸	5 ⁸⁹	0 ⁷⁶	N/A ⁷⁶	N/A ⁸	N/A ¹⁰¹
Current Overall Capability	8	7	4	2	10	3	4	N/A	N/A	5	1	10	N/A	10
Near/Mid-Term Overall Capability	8	7	5	2	10	4	5	N/A	N/A	5	2	10	N/A	N/A ¹⁰¹
Far-Term Overall Capability	8	7	5	2	10	4	5	N/A	N/A	5	2	10	N/A	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized CWAs can be detected using fielded technologies/ equipment, regardless of agent physical properties, states, and concentrations?	Percentage of following 12 agents as described in FM 3-9 that are detected: nerve agents (GA; GB; GD; GF; VX), vesicants (H/HD; HN-1,2,3; L; CX), cyanides (AC; CK), pulmonary agent (CG)	Percentages standardized to 0–10 scale
M2	All CWAs can be identified?	Ability to classify or identify detected CWAs.	10: Identify detected CWAs 7: Identify some detected CWAs; classify others 5: Classify detected CWAs 0: Neither identify nor classify detected CWAs
M3	All of a potential adversary’s weaponized CWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected CWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TICs can be detected using fielded technologies/equipment?	Percentage of the 33 high-priority critical acutely toxic airborne TICs listed in <i>USACHPPM Report 47-EM-6154-03: ITF-40</i> . (FOUO) that are detected.	10: 100% 9: ≥90% 8: ≥80% 2: ≥20% 1: 1%–20% 0: 0%
M5	All TICs can be identified using fielded technologies/equipment?	Ability to classify or identify detected TICs.	10: Identify all detected TICs 7: Identify some detected TICs; classify others 5: Classify detected TICs 0: Neither classify nor identify detected TICs
M6	All TICs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TICs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect chemical hazards?	Time period from CWA/TIC sampling to analysis output. Linear scale 1–10.	10: ≤12 sec 7: ≤30 sec 2: ≤60 sec 1: > 60 sec
M8	Distance between chemical hazard and detector for accurate detection?	Linear scale 1–9. Applies to standoff detection only.	10: ≥9 km 9: ≤9 km 5: ≤5 km 2: ≤2 km 1: ≤1 km
M9	Chemical hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M10	Chemical hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary’s weaponized CWAs and for all TICs using fielded technologies/ equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	This measure is not relevant to this task.	N/A

	FAA Measure	Elaboration	Scale
M14	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Limited—Detects only GA, GB, GD (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 30 sec.); HD (2 mg/m³ – IDLH level within 15 sec.), and L (0.38 mg/m³ within 15 sec.). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

² Identifies detected agents and TICs.

³ Does not quantify amount of detected agents or TICs.

⁴ Detects pepper spray and mace (but these are not included in the ITF-40 33 high-priority critical acutely toxic airborne TICs.)

⁵ Does not quantify TIC concentrations because it does not detect any TICs.

⁶ Detects in less than 30 seconds.

⁷ Point detector, so no standoff distance.

⁸ Not relevant to this task (N/A).

⁹ Identifies hazards within 30 seconds.

¹⁰ Sampling collection for future analysis capability does not exist with this technology/equipment.

¹¹ COTS detector. Unknown if sufficient DOTLPF in place.

¹² Limited—Detects only GA, GB, GD, GF, VX, HD, and L (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF; 10X IDLH for VX; 1/20 IDLH for HD). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

¹³ Classifies agents as being nerve or blister agents.

¹⁴ Provides relative hazard indication (relative quantification).

¹⁵ No TICs detected.

¹⁶ Does not identify or classify any TICs because it does not detect any TICs.

¹⁷ Detects hazards in less than 1 minute. Note: Requires up to 8 hours to warm up after 30 days storage.

¹⁸ Classifies agents within 1 minute.

¹⁹ There is effective DOTLPF in place to conduct task with this system.

²⁰ Presumably detects all 12 CWAs of interest considering that it claims that it can detect nerve and blister agents; plus 25,000 unique ATR chemical spectra are available to be programmed into the system. Detects solids, powders, pastes, and liquids only.

²¹ Identifies detected agents and TICs (through IR spectrometry).

²² Presumably detects most TICs in ITF-40. Detects solids, powders, pastes, and liquids only.

²³ Detects and identifies within 20 seconds of sample submission.

²⁴ Detects and identifies within 20 seconds of sample submission, but samples must be manually fed into system.

²⁵ Headspace sampling system.

²⁶ Presumably detects all 12 CWAs of interest (claims low ppb to ppt detection limits; 1 ppb = 0.01 mg/m³ for VX – IDLH level; 0.006–0.007 mg/m³ for G-agents – ~1/10 IDLH levels; 0.007 mg/m³ for HD – 1/285 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Detects vapors only.

- ²⁷ Identifies detected agents and TICs (through MS).
- ²⁸ Provides absolute quantification capability for all detected agents and TICs (specifically provides composition intensities, e.g., ppm).
- ²⁹ Presumably detects most TICs in ITF-40. Detects vapors only.
- ³⁰ Detects within 10 minutes.
- ³¹ Hazards are not identified in time to treat, especially if lethal fast-acting agents at high concentrations are involved.
- ³² Detects GA, GB, GD, GF, VX, HD, HN and L liquid (>0.02 mL) droplets.
- ³³ Classifies as G-, H- (and L), and V-agents.
- ³⁴ Classifies agents within 30 seconds.
- ³⁵ Detects GA, GB, GD, GF, VX, HD, HN and L liquid (>100 µL) droplets.
- ³⁶ Does not identify or classify detected agents or TICs.
- ³⁷ Detects within 20 seconds.
- ³⁸ Does not identify or classify agents or TICs.
- ³⁹ Assuming probe does not affect system performance.
- ⁴⁰ Limited—Detects only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, and L (10 mg/m³ – 5X IDLH level for HD, unknown L). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).
- ⁴¹ Classifies detected G and V agents as nerve agents; identifies detected H and L agents.
- ⁴² Relative hazard level provided through three different sensitivity levels.
- ⁴³ Classifies or identifies agents within 30 seconds.
- ⁴⁴ M8 paper is also included in the kit.
- ⁴⁵ Detects GA, GB, GD, GF (0.005 mg/m³ – 1/20 IDLH for GA/GB, 1/10 IDLH for GD/GF), VX (0.02 mg/m³ – 2X IDLH level), HD (2mg/m³ – IDLH level), HN, L (9 mg/m³), CX (3 mg/m³), AC (9 mg/m³ – below IDLH), CK (8 mg/m³), and CX (3 mg/m³) in vapor form and is susceptible to chemical interference. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), and 7,000 (CK) mg-min/m³.
- ⁴⁶ Classifies G and V agents as nerve agents; identifies blood and blister agents.
- ⁴⁷ Detects TICs AC and CK.
- ⁴⁸ Identifies detected TICs.
- ⁴⁹ Detects within 15 minutes.
- ⁵⁰ Hazards are identified in time to treat when M8 paper is used for liquid detection. Hazards are not identified in time to treat when ampoules are used for vapor detection (delayed response; 15–20 minutes).
- ⁵¹ Detects 20–30 CWAs, precursors, and degradation products (including all 12 CWAs) in vapor (62 mg/m³ for GB – 620X IDLH; 46 mg/m³ for CK; 115 mg/m³ for CG) and liquid form, and is susceptible to chemical interference (false positives and negatives). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.
- ⁵² Provides relative intensities (concentrations) of detected agents and TICs.
- ⁵³ Detects phosgene, hydrogen cyanide, cyanogen chloride, phosphorus trichloride, and phosphorus oxychloride.
- ⁵⁴ Detects within 45 seconds.
- ⁵⁵ Identifies hazards within 45 seconds.
- ⁵⁶ A physical sample can be taken, but not through the MM-1. The M93A1 Fox has a protective glove attached to the body by which an occupant can safely collect physical samples.
- ⁵⁷ Sample integrity is maintained.
- ⁵⁸ Presumably detects all 12 agents of interest; detects all states (claims 5 ppb detection limit for air preconcentrator = 0.05 mg/m³ for VX – 5X IDLH level, 0.030–0.035 mg/m³ for G-agents: 1/3–2/3 IDLH levels, 0.035 mg/m³ for HD – 1/57 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Degraded performance: (P5, 9, 10) Not waterproof when operating; (M5) Negligible personnel experience.

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- ⁵⁹ Identifies sampled agents and TICs (through MS).
- ⁶⁰ Presumably detects all TICs in ITF-40; detects all states.
- ⁶¹ Presumably will detect all CWAs (0.4 mg/m² surface for nerve, blister, blood, and choking agents).
- ⁶² All detected CWAs will be identified.
- ⁶³ Will detect and identify within 15 seconds.
- ⁶⁴ Will be point detector, so no standoff distance.
- ⁶⁵ Will identify within 15 seconds, which provides complete capability.
- ⁶⁶ Liquid and vapor samples will be able to be taken.
- ⁶⁷ Sample integrity will be maintained.
- ⁶⁸ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.
- ⁶⁹ Will detect only GA, GB, GD, GF, and VX (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD/GF, 10X IDLH for VX, within 30 sec.); HD, HN3, and L (2.0 mg/m³ – IDLH level, within 120 sec.), AC (22 mg/m³ – below IDLH level, within 60 sec.), CK (20 mg/m³ within 60 sec.), and CG vapors only, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), and 7,000 (CK) mg-min/m³.
- ⁷⁰ Will classify agents as nerve, blister, blood, and choking agents.
- ⁷¹ Will provide absolute quantification capability for all detected agents and TICs.
- ⁷² Will detect Cl, HBr, HCl, AC, HF, HS, and CG as an objective.
- ⁷³ Will detect hazards within 1 minute.
- ⁷⁴ Will be point detector, so no standoff distance.
- ⁷⁵ Will classify hazards within 1 minute.
- ⁷⁶ This technology/equipment will not have sampling collection for future analysis capability.
- ⁷⁷ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.
- ⁷⁸ Will detect all 12 CWAs: GA, GB, GD, GF, VX, H/HD, HN-1,2,3, L, CX, AC, CK, and CG.
- ⁷⁹ All detected agents will be identified.
- ⁸⁰ Unknown—to detect TIMs, which include TICs.
- ⁸¹ Will detect chemical hazards in real time.
- ⁸² Though technically a standoff detector, the standoff distance will be minimal.
- ⁸³ Will identify chemical hazards in real time; therefore adequate for identify-to-treat.
- ⁸⁴ This technology/equipment will not have sampling collection for future analysis capability.
- ⁸⁵ Will detect only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, HN3, L (2.0 mg/m³ – IDLH level within 120 sec.); AC (22 mg/m³ – below IDLH level within 60 sec.); CK (20 mg/m³ within 60 sec.); and CG in vapor and aerosol forms, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.
- ⁸⁶ Will detect ammonia, arsine, chlorine, diborane, fluorine, hydrogen bromide, hydrogen cyanide, hydrogen fluoride, nitric acid, phosgene, phosphorus trichloride, sulphur dioxide, and sulphuric acid.
- ⁸⁷ Will identify all detected TICs as an objective.
- ⁸⁸ Will detect hazards within 2 minutes.
- ⁸⁹ Will classify or identify CWAs and TICs within 2 minutes.

5.4.3 Functional Solution Analysis

5.4.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of real-time or near-real-time TIC detection and identification capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on TIC recognizable effects on surfaces.
- 2. Deficiency:** General inability to detect deposited low-volatility agents and dusty agents.
Non-Materiel Solutions: None
- 3. Deficiency:** General inability to detect off-gassing nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 4. Deficiency:** Susceptibility to chemical interference.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 5. Deficiency:** Lack of real-time or near-real-time CWA identification capabilities.
Non-Materiel Solutions: None
- 6. Deficiency: Lack of agent quantification capabilities.**
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable mass spectrometers (e.g., Viking SpectraTrak and HAPSITE).
- 7. Deficiency:** Lack of standoff (or remote) detection capability for CWAs and TICs on surfaces.
Non-Materiel Solutions: None
- 8. Deficiency:** Inability to detect absorbed and adsorbed chemical agents.
Non-Materiel Solutions: None
- 9. Deficiency:** Lack of detector that also takes physical samples for future analysis capability.
Non-Materiel Solutions: None

5.4.3.2 IMA Assessment Summary

Table 5.4-2 identifies 12 ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting chemical hazards in the atmosphere. Advances in orthogonal technologies may be able to address all identified deficiencies.

Table 5.4-2: TASENS 4. IMA Assessment

TASENS 4: Sense surfaces for chemical hazards ¹												
Identified Gaps	Ideas for Material Approaches (IMA)											
	Mass Spectrometry ²	Infrared and Ultraviolet, and Microwave Spectroscopy ³	Ion Mobility Spectrometry ⁴	Photoacoustic Infrared Spectroscopy	Chemiluminescence Detection ⁵	Surface Acoustic Wave Technology ⁶	Colorimetric	Multiple, Complementary Technologies (Orthogonal) ⁷	Raman Spectroscopy ⁸	Photo-ionization Technology	Flame Photometry	Electrochemical (Chemiresistor) Sensor Technology
Lack of real-time TIC detection and identification capabilities. ⁹		X	X		X ¹⁰	X	X	X	X			
General inability to detect deposited low-volatility agents and dusty agents.	X	X				X	X	X	X		X	X
General inability to detect nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels. ¹¹	X	X	X			X		X ¹²	X		X	
Susceptibility to chemical interference.	X							X				
Lack of agent quantification capabilities. ¹³	X ¹⁴			X		X		X	X		X	
Lack of real-time CWA identification capabilities.		X	X			X		X	X			
Lack of standoff (or remote) detection capability for CWAs and TICs on surfaces. ¹⁵	X	X	X	X	X	X		X	X	X	X	X
Inability to detect absorbed and adsorbed chemical agents.												
Lack of detector that also takes samples for future	X	X	X	X	X	X	X	X	X	X	X	X

analysis capability. ¹⁶																			
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¹ Loerop, William. Chemical Biological Defense Science and Technology Chemical Standoff briefing. Edgewood Chemical Biological Center.

http://proceedings.ndia.org/dod_cb/Tuesday_PM/Zarzycki.pdf

² GC/MS, LC/MS.

³ Examples include Thermal Infrared Spectroscopy, FTIR, long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), LWIR Polarization, mid-wave IR (MWIR) DISC/DIAL, MWIR Polarization, Near-IR Scattering, NIR Laser-Induced Breakdown Spectroscopy (LIBS) UV Fluorescence, Multiband Brillouin Scattering, LWIR FTIR, LWIR Filtered Forward-Looking Infrared (FLIR), and Microwave (GHz and THz) spectroscopy.

⁴ May be coupled with GC; External Second Gate, Fourier Transform Ion Mobility Spectrometry approach can improve sensitivity and selectivity.

⁵ For example, PCD.

⁶ May be coupled with GC.

⁷ Examples include SAW/IMS.

⁸ NIR Raman, Visible Light (VIS) Surface-Enhanced Raman, VIS Raman, UV Raman, Multiband Resonance-Enhanced Raman, Multiband Surface-Enhanced Raman.

⁹ Increasing the number of TICs identified by JCAD and/or JMCBDS is a potential solution.

¹⁰ Classifies, but generally does not identify, agents

¹¹ Distributing more HAPSITES and Viking Spectratraks is a potential solution.

¹² MS and IMS.

¹³ JCAD and JMCBDS are expected to quantify agent and thus eliminate capability gap.

¹⁴ Distributing more HAPSITES and Viking Spectratraks is a potential solution.

¹⁵ In conjunction with robotics for MS, IMS, PIRS, Chemiluminescence Detection, SAW Technology, photoionization technology, Flame Photometry, and Electrochemical Sensor Technology IMAs. JCSD is expected to provide standoff detection capability for CWAs on the ground.

¹⁶ All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.5 Task TASENS 5: Sense surfaces for biological hazards

5.5.1 Functional Area Analysis

5.5.1.1 Definition

To sense the presence or absence of biological hazards (encompasses biological warfare agents and TIB material) on surfaces. Includes the functions of detection, identification, and quantification of the hazard. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known hazard locations, and collection of samples for further analysis. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures.

5.5.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.5.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.5.1.2.2 Lateral Task: N/A

5.5.1.2.3 Supporting Task: N/A

5.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. High sea state. (C1.2.1.3)
4. Tropical, arctic, and arid climates. (C1.3.1)
5. Summer, winter seasons. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot, very cold air temperature. (C1.3.1.3.1)
8. High surface-wind velocity. (C1.3.1.3.3)
9. High relative humidity. (C1.3.1.3.5)
10. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
11. Heavy precipitation intensity. (C1.3.1.3.6.2)
12. Extreme turbulence and wind shear. (C1.3.1.3.8)
13. Negligible light. (C1.3.2.1)
14. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)

2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. High health risk. (C3.3.1.5)
5. Significant refugee care responsibility. (C3.3.2.3)
6. Toxic Industrial Biological Material present in the civilian sector. (C3.3.7.5)

5.5.2 Functional Needs Analysis

5.5.2.1 Capability and Deficiency Assessment Summary

Table 5.5-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are three current capabilities used to accomplish this task and one projected capability to be added in the future (JBAIDS in the near/mid term). The individual capabilities differ in their abilities to meet the identified standards.

Overall Capability and Deficiency Summary

The overall current capability is assessed as “yellow.” Many, if not most, BWAs can be presumptively detected and identified by collecting surface samples through physical sampling, followed by manual sample preparation and the following laboratory and field-deployable analytical techniques: immunochromatographic HHAs, which are part of the BSK; ELISA; and RT-PCR, as used by the RAPID. Of the 25 BWAs described in the *Medical Management of Biological Casualties*, a complete set of HHAs can detect and identify all agents with the possible exception of the viral hemorrhagic fever agents; however, the BSK contains eight different HHAs and thus detects only eight BWAs per kit. The eight agents in the kit may be assembled to reflect the threat.¹ A comprehensive set of ELISAs, which are laboratory-based, can ostensibly detect and identify all 25 BWAs (as well as any TIB), assuming that an antigen or antibody has been isolated for each agent. RAPID, like all PCR-based technologies, can, with the appropriate reagents, detect and identify all BWA and TIB pathogens, but none of the toxins (since the toxins, unless contaminated with the source organisms, do not provide any genetic material). HHAs and RAPID can generically quantify detected agents (HHAs only through the aide of a reader), whereas some varieties of ELISAs provide absolute quantification capabilities.

Overall current task deficiencies include the lack of integrated sample collection, detection, identification, and quantification capability for BWAs on surfaces; real-time or near-real-time detection, identification, and quantification capability for sampled BWAs; standoff detection

capability for BWAs on surfaces; field analysis verification capabilities; and TIB detection capabilities.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” Near/Mid-term capability JBAIDS Block I will detect 11 BWA pathogens (as a threshold requirement), whereas Block II will detect the same 11 BWA pathogens plus the four toxins of interest (as a threshold requirement). JBAIDS will also quantify agent concentrations in the analyzed sample. It will require 25–40 minutes for analysis output following sample preparation and will thus provide a complete identify-to-treat capability. All of the overall current task deficiencies are likely to remain deficiencies in the near/mid term.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

¹ The collection of surface samples to use in HHA results in a sample for further analysis. Coolers/temperature-controlled equipment to hold and maintain the sample needs to be available if the sample is not immediately evacuated.

Table 5.5-1. TASENS 5: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Current – Near/Mid – Far															
Physical Sampling/BSK	3 ¹	10 ²	0 ³	0 ⁴	N/A ⁴	N/A ⁴	6 ⁵	N/A ⁶	N/A ⁷	10 ⁸	10 ⁹	10 ¹⁰	0 ¹¹	0 ¹²	5 ¹³
Physical Sampling/ELISA	10 ¹⁴	10 ²	10 ¹⁵	10 ¹⁶	10 ¹⁷	10 ¹⁵	1 ¹⁸	N/A ⁶	N/A ⁷	5 ¹⁸	0 ¹⁹	N/A ¹⁹	0 ¹¹	0 ¹¹	Unk
Physical Sampling/RAPID	8 ²⁰	10 ²	5 ²¹	5 ²²	10 ²³	5 ²¹	1 ²⁴	N/A ⁶	N/A ⁷	5 ²⁴	0 ¹⁹	N/A ¹⁹	0 ¹⁰	0 ¹¹	Unk
Near/Mid – Far															
Physical Sampling/JBAIDS Blocks I/II	4/6 ²⁵	10 ²⁶	10 ²⁷	0 ²⁸	N/A ²⁸	N/A ²⁸	4/5 ²⁹	N/A ³⁰	N/A ⁷	10 ³¹	10 ³²	10 ³³	0 ³⁴	5 ³⁵	N/A ³⁶
Current Overall Capability	6	10	5	4	10	8	5	N/A	N/A	10	3	10	0	0	5
Near/Mid-Term Overall Capability	6	10	6	3	10	8	5	N/A	N/A	10	5	10	0	3	N/A ¹⁰¹
Far-Term Overall Capability	6	10	6	3	10	8	5	N/A	N/A	10	5	10	0	3	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized BWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Number of the 25 biological agents described in the <i>Medical Management of Biological Casualties</i> that are detected. Fourteen of the twenty-five agents are as follows: Anthrax (<i>Bacillus Anthracis</i>); Brucellosis (<i>Brucellae</i>); Glanders (<i>Burkholderia mallei</i>); Meliodosis (<i>Burkholderia pseudomallei</i>); Q Fever (<i>Coxiella burnetii</i>); Plague (<i>Yersinia pestis</i>); Tularemia (<i>Francisella tularensis</i>); Botulinum toxin; Ricin; SEB; T-2 Mycotoxins; Smallpox (variola major and minor); Viral Equine Encephalities (e.g., VEE, WEE, and EEE); and Ebola and Marburg hemorrhagic fever viruses. Linear 2–10.	10: All 25 BWAs detected 8: ≥20 BWAs detected 6: ≥15 BWAs detected 4: ≥10 BWAs detected 2: ≥5 BWAs detected 1: ≥1 BWA detected 0: No BWAs detected
M2	All of a potential adversary’s weaponized BWAs can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected BWAs.	10: Identify detected BWAs 7: Identify some detected BWAs; classify others 5: Classify detected BWAs 3: Some detected BWAs are classified or identified 0: Neither identify nor classify detected BWAs
M3	All of a potential adversary’s weaponized BWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected BWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TIB material can be detected using fielded technologies/equipment?	TIB material includes medical waste, raw sewage, and vaccine-related biologics. Pathogens and toxins within TIB material are what are generally detected.	10: All pathogens and toxins within TIB material, including medical waste, raw sewage, and vaccine-related biologics can be detected 5: All TIB pathogens or toxins within one or more categories (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 3: Some TIB pathogens and toxins within one category (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 0: No TIB pathogens and toxins can be detected
M5	All TIB material can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected TIB material.	10: All pathogens and toxins within TIB material can be identified 7: Identify some TIB pathogens and toxins; classify others 5: Classify detected TIB pathogens and toxins 3: Some detected TIB pathogens and toxins can be classified or identified 0: Neither classify nor identify detected TIBs
M6	All TIB material can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TIBs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect biological hazards?	Time period from BWA/TIB sampling to analysis output. Linear scale 2–7. Applies to point detectors only.	10: ≤1 minute 9: ≤4 minutes 8: ≤7 minutes 7: ≤10 minutes 4: ≤40 minutes 2: ≤60 minutes 1: >60 minutes
M8	Distance between biological hazard and detector for accurate detection?	Linear scale 1–9. Applies to standoff detection only.	10: ≥9 km 9: ≥9 km 5: ≤5 km 2: ≤2 km 1: ≤1 km

	FAA Measure	Elaboration	Scale
M9	Biological hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M10	Biological hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards. Of all considered BWAs, ricin may require the most rapid response. Immunoglobulin therapy must be administered within 1 hour of ricin exposure to be effective.	10: Complete capability (<1 hour) 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary's weaponized BWAs and for all TIB material using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Time to validate the presence of biological hazards in the atmosphere?	Refers to confirmatory identification.	10: Rapidly—validation performed expeditiously by particular technology/equipment 5: Moderately delayed—mobile analysis tools can validate on site 0: Delayed—off-site laboratory analysis required for validation
M14	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	This measure is not relevant to this task.	N/A
M15	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of the task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is inadequate or does not exist for the task to be performed with this system.

¹ Current and near-future HHAs detect all BWAs with the possible exception of the viral hemorrhagic fevers; however, the BSK contains eight different HHAs and thus detects eight BWAs. The HHA sensitivity is 10⁵–10⁶ CFU/mL (*B. anthracis*) and 50–1200 ng/mL (*Botulinum* toxin A and *Botulinum* toxin F, respectively). Degraded performance: (C6)

TIB Material present in civilian sector. Susceptible to interference (false positives and negatives due to matrix effects, among others); (M3) Minimal time available. Requires sample preparation prior to applying sample to assay.

² All detected BWAs are identified.

³ Does not absolutely quantify agent. May provide relative indication of quantity, but only through the use of a reader. Soldiers will not likely have the reader.

⁴ According to specifications, does not detect any TIBs.

⁵ Detects within 15 minutes.

⁶ Point detector.

⁷ Not relevant to this task (N/A).

⁸ Immediately identifies all detected hazards (detection requires up to 15 minutes) and thus provides complete identify-to-treat capability.

⁹ Provides physical sample collection capability for future analysis.

¹⁰ Maintains integrity of sample.

¹¹ Requires samples to be confirmed off site in laboratory.

¹² Does not provide absolute quantification capability, so cumulative dose cannot be determined.

¹³ There is effective DOTLPF in place to conduct task, at least for bacillus bacteria (specifically anthrax). Procedures for other agents are probably similar.

¹⁴ Ostensibly all BWAs can be detected by ELISA. ELISA's sensitivity is 10^5 – 10^6 CFU/mL (*B. anthracis*); 10–100 PFU/mL of Venezuelan Equine Encephalitis virus; and 625 pg/mL of Staphylococcal Enterotoxin B (aerosol) and greater than 5 ng/mL of ricin.

¹⁵ Some varieties of ELISA can absolutely quantify the antigen or antibody concentration.

¹⁶ Theoretically, any agent (i.e., antigen or antibody) for which an ELISA has been designed can be detected through this method; however, only one particular pathogen or toxin antigen or antibody can be tested per ELISA model.

¹⁷ A particular TIB pathogen or toxin is identified if it is detected, since ELISA is highly specific and detects a particular agent.

¹⁸ Typically requires 1–2 hours (following sample collection and preparation) for detection, identification, and if applicable, quantification, primarily because of incubation time.

¹⁹ Not designed for sample collection for future analysis.

²⁰ RAPID may be able to detect all pathogens; PCR does not detect toxins, though the toxic material may be contaminated with source genetic material (In this assessment, it is assumed that this is not the case). Standard PCR has a sensitivity of 10–100 CFU/mL bacteria (*B. anthracis*); and 15 fg–1 pg or 100–1 million copies of the complementary DNA for viruses.

²¹ RAPID, through RT-PCR, may provide generic quantification.

²² Theoretically, any TIB pathogen can be detected with appropriate reagents; toxins cannot be detected unless contaminated with source genetic material.

²³ All detected TIBs are identified.

²⁴ Detects and identifies within 30 minutes following sample preparation, but sample preparation requires several hours.

²⁵ Block I will detect Anthrax; Brucella; Ebola VHF virus; Marburg VHF virus; Viral Encephalitis viruses (VEE/WW/EEE); Glanders; Melioidosis; Plague; Q Fever; Smallpox; and Tularemia [and Typhus] as a threshold requirement; and Crimean-Congo hemorrhagic virus; Dengue fever; Hantaviruses; and Rift Valley Fever Virus [and Cholera, Cryptosporidium; E. coli; Influenza; Salmonella; and Shigella] as an objective; Block II will add toxins Botulinum, microcystins, ricin, SEB, and T-2 Mycotoxins.

²⁶ Will identify all detected agents.

²⁷ Will quantify the concentration in the sample.

²⁸ Will not detect any TIBs.

²⁹ Will detect and identify within 40 minutes (25-minute objective) for Blocks I and II following sample preparation.

³⁰ Will be a point detector.

³¹ Will immediately identify all detected hazards (detection will require 25–40 minutes) and thus will provide complete identify-to-treat capability.

³² Will provide physical sample collection capability for future analysis.

³³ Will maintain integrity of physical sample.

³⁴ Will require samples to be confirmed off site at laboratory.

³⁵ Cumulative dose will be able to be estimated from data (minimal capability).

³⁶ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.

5.5.3 Functional Solution Analysis

5.5.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Lack of integrated sample collection, detection, identification, and quantification capability for BWAs on surfaces.

Non-Materiel Solutions: None

2. **Deficiency:** Lack of real-time or near-real-time detection, identification, and quantification capability for sampled BWAs.

Non-Materiel Solutions: None

3. **Deficiency:** Lack of standoff detection capability for BWAs on surfaces.

Non-Materiel Solutions: None

4. **Deficiency:** Lack of unit/team-level field validation/confirmation of positive identifications as laboratory confirmation is required.

Non-Materiel Solutions: *Doctrine:* Modify doctrine to permit validation by a reliable on-site detection/identification capability (e.g., portable PCR) as confirmatory detection/identification is ultimately dependent upon doctrine, not materiel capabilities.

5. **Deficiency:** Lack of TIB detection capability.

Non-Materiel Solutions: None

6. **Deficiency:** Lack of detector that also takes samples for future analysis capability.

Non-Materiel Solutions: None

5.5.3.2 IMA Assessment Summary

Table 5.5-2 identifies nine ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting biological hazards on surfaces. Advances in MS, immunoassays; flame photometry; tissue-based detection; Raman, IR, UV, or microwave spectroscopy; or orthogonal technologies may be able to address all identified deficiencies.

Table 5.5-2. TASENS 5: DOTMLPF Assessment

TASENS 5: Sense surfaces for biological hazards ¹									
Identified Gaps	Ideas for Material Approaches (IMA)								
	Mass Spectrometry ²	Immunoassay (Antibody-Based) ³	Genetic (Nucleic Acid-Based) ⁴	Tissue-Based	Flame Photometry ⁵	Colorimetric ⁶	Orthogonal ⁷ Technologies	Raman Spectroscopy ⁸	IR, UV, and Microwave Spectroscopy ⁹
Lack of integrated sample collection, detection, identification, and quantification capability for BWAs on surfaces. ¹⁰	X	X	X	X	X	X	X	X	X
Lack of real-time or near-real time detection, identification, and quantification capability for sampled BWAs. ¹¹	X	X		X	X	X	X	X	X
Lack of standoff (or remote) detection/identification capability for BWAs on surfaces. ¹²	X	X	X	X	X		X	X	X
Lack of TIB detection capability.	X	X	X	X	X	X	X	X	X
Lack of detector that also takes samples for future analysis. ¹³	X	X	X	X	X	X	X	X	X

¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.mii.edu/pubs/week/031124.htm>; Detection and Measurement of Biological Agents. <http://books.nap.edu/html/terrorism/ch6.html>; National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. <http://www.ojp.usdoj.gov/nij/pubs-sum/190747.htm>

² Includes GC/MS, LC/MS, GC-Ion Trap Tandem Mass Spec (GC-MS-MS), matrix-assisted laser desorption ionization (MALDI) MS.

³ Includes SAW technology.

⁴ Includes PCR and RT-PCR) amplification, DNA microchip technology, SAW technology.

⁵ Philippe, Adam, Damien Descroix, and Jean-Pierre Chiaroni. « Flame Photometry for Biological Detection.» Proceedings from the 6th CBW Protection Symposium. 1998.

⁶ ChemSensing Colorimetric Sensor

⁷ Includes nucleic acid/immunoassay technologies (e.g., PCR and immunological techniques), electrochemiluminescence/equilibrium immunoassay, Fluorescence correlation spectroscopy/PCR

⁸ NIR Raman, Visible Light (VIS) Surface-Enhanced Raman, VIS Raman, UV Raman, Multiband Resonance-Enhanced Raman, Multiband Surface-Enhanced Raman.

⁹ Thermoluminescence/FTIR, long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), LWIR Polarization, mid-wave IR (MWIR) DISC/DIAL, MWIR Polarization, Near-Infrared (NIR) Laser-Induced Breakdown Spectroscopy (LIBS) UV Fluorescence, Multiband Brillouin Scattering.

¹⁰ Sample collection, independent of the detector, is one of the main, if not the main, problem. Quantification cannot be achieved without efficient, standardized sample collection and preparation (if needed). JBAIDS is expected to detect, identify, and quantify all BWAs on surfaces, and thus eliminate capability gap.

¹¹ Reducing the sample preparation and response times for JBAIDS is a potential solution.

¹² In conjunction with robotics for Mass Spectrometry, Immunoassay, Genetic, Tissue-Based, and Flame Photometry IMAs.

¹³ All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.6 Task TASENS 6: Sense surfaces for radiological hazards

5.6.1 Functional Area Analysis

5.6.1.1 Definition

To sense the presence or absence of radiation hazards on surfaces. Includes the functions of detection, identification, and quantification of the radiological hazard. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known agent locations, and collection of samples for further analysis. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures.

5.6.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.6.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.6.1.2.2 Lateral Task: N/A

5.6.1.2.3 Supporting Task: N/A

5.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. High sea state. (C1.2.1.3)
4. Tropical, arctic, and arid climates. (C1.3.1)
5. Summer, winter seasons. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot, very cold air temperature. (C1.3.1.3.1)
8. High surface-wind velocity. (C1.3.1.3.3)
9. High relative humidity. (C1.3.1.3.5)
10. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
11. Heavy precipitation intensity. (C1.3.1.3.6.2)
12. Extreme turbulence and wind shear. (C1.3.1.3.8)
13. Negligible light. (C1.3.2.1)
14. Strong nuclear atmosphere weapons effects. (C1.3.3)
15. Moderate nuclear radiation effects. (C1.3.3.1.2)

Military

1. Stressful mission. (C2.1)

2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. Toxic industrial radiological materials present in the civilian sector. (C3.3.7.5)

5.6.2 Functional Needs Analysis

5.6.2.1 Capability and Deficiency Assessment Summary

Table 5.6-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 11 current capabilities used to accomplish this task. The capabilities include a range of portable RADIAC devices.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current RADIACS detect and identify beta radiation and detect, identify, and quantify gamma radiation. All RADIACs perform their functions in real time (though the level of confidence increases with increased sampling time) and thus provide a complete detect-to-warn capability. Many also automatically calculate the cumulative dose.

There is no single capability that can perform the task to all of the designated standards. ADM-300 detects most forms of radiation (alpha, beta, gamma and x-ray), but like all RADIACs, it detects, identifies, and quantifies only the radiation, not the radioisotope. Furthermore, like all RADIACs, the ADM-300 must be exposed to radiation to detect it. Current overall task deficiencies include the lack of radioisotope identification capabilities, reliable alpha detection capabilities, monitors that can detect all radiation types, detectors that take samples for future analysis¹, and the complete lack of true standoff detection capabilities.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

¹ Only the M34A1 sampling kit, which is not a detector, is capable of collecting and maintaining a radiological sample.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.6-1. TASENS 6: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current-Near/Mid-Far									
ADM-300	8 ¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ⁸	10 ⁹
AN/PDQ-1 MFR ¹⁰	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	10 ⁶	5 ⁷	Unk	10 ⁹
AN/PDR-27	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ⁹
AN/PDR-43	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ⁹
AN/PDR-56	2 ¹⁴	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	10 ¹⁶	5 ⁷	7 ¹³	10 ⁹
AN/PDR-63	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ⁹
AN/PDR-65	2 ¹⁷	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	10 ¹⁶	5 ⁷	10 ¹⁸	10 ⁹
AN/PDR-77	8 ¹⁹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ⁹
AN/UDR-13	4 ²⁰	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ¹⁸	10 ⁹
AN/VDR-2	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ¹⁸	10 ⁹
Berkeley SAM 935	4 ²¹	10 ²²	10 ³	10 ⁴	0 ⁵	10 ⁶	10 ²³	10 ¹⁸	10 ⁹
Current Overall Capability	5	5	9	10	0	10	5	8	10
Near/Mid-Term Overall Capability	5	5	9	10	0	10	5	8	10
Far-Term Overall Capability	5	5	9	10	0	10	5	8	10

	FAA Measure	Elaboration	Scale
M1	All radiological hazards (including TIR material) can be detected using fielded technologies/equipment?	Number of radiation types (i.e., alpha, beta, gamma, neutron, and x-ray) detected. Note: Fielded technologies/equipment detect radiological hazards by detecting the radiation emitted from these hazards. TIR material includes DU, a common battlefield hazard resulting from certain types of ammunition and damaged armor.	10: All five types 8: Four types 6: Three types 4: Two types 2: Single type 0: No radiological hazards detected
M2	All radiological hazards (including TIR material) can be identified using fielded technologies/equipment?	Ability to identify type of radiation detected or the radioisotope emitting the radiation. Note: Fielded technologies/equipment that identify radioisotope also identify the type(s) of radiation detected.	10: Identifies radioisotope emitting radiation 5: Identifies type of radiation detected 0: No identification capability
M3	All radiological hazards (including TIR material) can be quantified using fielded technologies/equipment?	Ability to quantify activity of radiological material (i.e., Cu or Bq), or the exposure (i.e., Roentgen or Coulomb/kg) or dose rate (rad, rem, Gy, or Sv) from emitted radiation.	10: Absolute quantification 5: Generic quantification (or absolute quantification of one radiation type and no quantification of another type) 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	Time to detect radiological hazard?	Time period from exposure to radiation to analysis output.	10: Near real time 0: Not near real time
M5	Distance between radiological hazard and detector for accurate detection?	Since fielded technologies/equipment detect the radiation emitted from radiological hazards, the distance depends on range of emitted radiation. All field technologies/equipment must be exposed to emitted radiation to detect the radiological hazard. If a radiological detector did not need to be exposed to radiation emitted from a radiological hazard to detect that hazard, then it would exhibit true standoff capability.	10: Exposure to emitted radiation not required to detect hazard. 0: Exposure to emitted radiation required to detect hazard.
M6	Radiological hazards are detected in time to warn forces and take appropriate protective measures?	Since appropriate protective measures depend on the radiation type(s) being emitted, complete capability requires real-time or near-real-time detection of emitted radiation and identification of that radiation by type.	10: Complete capability (real-time or near-real-time detection and identification of radiation type[s]) 5: Partial capability (delayed detection of the radiation without identification capability) 0: No capability
M7	Radiological hazards are identified in time to treat forces?	A complete capability requires both near real-time identification of the emitted radiation type(s) and radioisotope. Identification of the emitted radiation type(s) enables appropriate medical response to radiation exposure and identification of the radioisotope determines to appropriate medical course of action to radiological material internalization.	10: Complete capability (near-real-time identification of radioisotope and emitted radiation type[s]) 5: Partial capability (Delayed identification of emitted radiation type[s]) 0: No capability (no identification capability)
M8	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	If an absolute quantification capability is provided, then it is possible that the cumulative dose can be estimated (thus a minimal capability). If a monitoring capability is provided, then a more accurate cumulative dose can be calculated (moderate capability). If the cumulative dose is automatically calculated, then a complete capability is provided.	10: Complete capability 7: Moderate capability 5: Minimal capability 0: Cumulative dose cannot be determined
M9	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Detects most radiation types (alpha, beta, gamma, and x-ray) emitted from radiological materials.

² Identifies type of radiation, but not radioisotope.

³ Absolutely quantifies radiation level.

⁴ Real-time detection. Level of confidence increases with increased sampling time and radiation levels.

- ⁵ Requires exposure to emitted radiation to detect hazard.
- ⁶ Provides complete detect-to-warn capability since detects and identifies radiation in real time.
- ⁷ Provides partial identify-to-treat capability since immediately identifies detected radiation type, but not the radioisotope.
- ⁸ Automatically calculate cumulative dose since system capable of dose and dose rate alarms across entire measurement range; also predictive algorithm provides estimate of time in field before alarm; unknown whether cumulative dose is directly output.
- ⁹ There is effective DOTLPF in place to conduct task with this system.
- ¹⁰ In combination with OA-9449/PDQ probe. The MFR alone detects gamma radiation; with the probe, it measures gamma radiation and detects beta radiation.
- ¹¹ Detects beta/gamma radiation emitted from radiological materials.
- ¹² Absolutely quantifies gamma radiation level; detects, but does not quantify, beta radiation.
- ¹³ Absolutely quantifies radiation level and provides monitoring capability, thus provides moderate capability to determine cumulative dose.
- ¹⁴ Detects alpha radiation emitted from radiological materials (particularly plutonium).
- ¹⁵ Detects only one type of radiation, so identification capability is not applicable.
- ¹⁶ Provides complete detect-to-warn capability since detects one radiation type in real time.
- ¹⁷ Detects gamma radiation emitted from radiological materials (particularly plutonium).
- ¹⁸ System automatically calculates cumulative dose.
- ¹⁹ Detects alpha, beta, gamma, and x-radiation emitted from radiological materials.
- ²⁰ Detects gamma/neutron radiation emitted from radiological materials.
- ²¹ Detects gamma radiation and with optional neutron detector, neutron radiation as well.
- ²² Identifies the radioisotope.
- ²³ Provides complete identify-to-treat capability since immediately identifies radioisotope.

5.6.3 Functional Solution Analysis

5.6.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of reliable alpha detection capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300, AN/PDR-56, and AN/PDR-77.
- 2. Deficiency:** Lack of monitors that can detect all types of radiation.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300.
- 3. Deficiency:** Lack of true standoff detection capability.¹
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of radioisotope identification capabilities.
Non-Materiel Solutions: None
- 5. Deficiency:** Lack of detector that can also take samples for future analysis capability.²
Non-Materiel Solutions: None

5.6.3.2 IMA Assessment Summary

Table 5.6-2 identifies four ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting radiological hazards in the atmosphere. Advances in scintillation or semiconductor radiation detection technologies may be able to address all identified deficiencies.

¹ Current detectors must be exposed to radiation to detect the presence of a radiological source, so users of handheld radiation detectors may also be exposed to radiation. CRTI is currently developing a standoff radiological detection capability.

http://www.crti.drdc-rddc.gc.ca/projects/crti_0203rd_e.html

² Only the M34A1 sampling kit, which is not a detector, is capable of collecting and maintaining a radiological sample.

Table 5.6-2. TASENS 6: IMA Assessment

TASENS 6: Sense surfaces for radiological hazards ¹				
Identified Gaps	Ideas for Material Approaches (IMA)			
	Gas-Filled Radiation Detectors ²	Scintillation Radiation Detectors ³	Semiconductor Radiation Detectors ⁴	IR, UV, and Microwave Spectroscopy
Lack of reliable alpha detection capabilities. ⁵	X	X	X	
Lack of monitors that can detect all types of radiation. ⁶	X	X	X	
Lack of true standoff (or remote) detection capability. ⁷	X	X	X	X ⁸
Lack of radioisotope identification capabilities. ⁹		X	X	
Lack of detector that collects contamination for low-level detection and future analysis. ¹⁰	X	X	X	

¹ <http://hps.org/publicinformation/ate/q534.html>

² Includes Geiger-Mueller detectors, proportional gas detectors, and ionization chambers.

³ Includes ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), barium fluoride (BaF₂)-based detectors

⁴ Includes germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂)-based detectors.

⁵ Distributing more ADM-300 and AN/PDR-77 is a potential solution.

⁶ Distributing more ADM-300 is a potential solution.

⁷ In conjunction with robotics for gas-filled detector, scintillation detector, and semiconductor detector IMAs.

⁸ CRTI is developing a standoff radiation detector that may be technically based on electromagnetic spectroscopy of surrounding air molecules being ionized by the radiation.

http://www.crti.drdc-rddc.gc.ca/projects/crti_0203rd_e.html

⁹ Distributing gamma and/or alpha scintillation detectors with radioisotope identification capabilities is a potential solution.

¹⁰ All point detection IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.7 Task TASENS 7: Sense water for chemical hazards

5.7.1 Functional Area Analysis

5.7.1.1 Definition

To sense the presence or absence of chemical hazards (encompasses CWAs and TICs) in water (potable and nonpotable). Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen agent releases and monitoring of known hazard locations, as well as the requirement to determine the extent and physical properties of contamination. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures. The evaluation encompasses all chemical hazards of military and medical importance. Must occur in situ to assist with raw water site selection and identification of soldier contact hazards, in-line post reverse osmosis water purification unit (ROWPU) and permanent water distribution systems, and on-demand to spot-check potable water distribution sites and shower points.

5.7.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.7.1.2.1 Supported Tasks: OPSENS 1, OPSENS 4, OPSENS 7

5.7.1.2.2 Lateral Task: TASHA 14

5.7.1.2.3 Supporting Task: N/A

5.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Inaccessible subsurface water. (C1.1.2.3)
2. High sea state. (C1.2.1.3)
3. High shipping presence. (C1.2.6)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
8. Heavy precipitation intensity. (C1.3.1.3.6.2)
9. Negligible light. (C1.3.2.1)
10. Chemical effects. (C1.3.3.2)

Military

1. Stressful mission. (C2.1)

2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4),
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. Toxic Industrial Chemicals present in the civilian sector. (C3.3.7.5).

5.7.2 Functional Needs Analysis

5.7.2.1 Capability and Deficiency Assessment Summary

Table 5.7-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are four current capabilities used to accomplish this task and two projected capabilities to be added in the future (one each in the near/mid term and the far term). The capabilities include colorimetric kits and mass spectrometers with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” The M272 Kit, the primary current capability for detecting chemical hazards in water, detects the G-agents, VX, HD, Lewisite, and hydrogen cyanide (AC) and classifies/identifies a detected agent as a nerve agent, HD, Lewisite, or AC. The more sophisticated capabilities are MS-based and include the HAPSITE with headspace sampling system, MM-1 integrated into the M93A1 Fox, and Viking Spectratrak. The MSs detect all CWAs, identify detected agents, and typically quantify agent concentrations as composition intensities. The HAPSITE and Viking Spectratrak also detect, identify, and quantify most, if not all, TICs of interest.¹

There is no single capability that can perform the task to all of the designated standards. MS Viking SpectraTrak is a sophisticated current capability, but it does not detect or identify in near-real time; consequently, it may be unable to identify-to-treat fast-acting lethal agents in potable water that has since been ingested. Current overall task deficiencies include the general inability to detect down to hazard levels which meet tri-service drinking standards; general lack of detection, identification, and quantification capabilities for TICs in water; and complete lack of real-time detection, identification, and quantification capabilities for CWAs and TICs in water.

¹ Refer to the JRO *Operational Impact Assessment of Non-Traditional Agents* report, July 2003 (S/NF) for information on nontraditional agent detection.

Furthermore, there is no current detector that also takes a chemical sample from water for future analysis.²

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” In the near/mid-term future, the CBMS II will be deployed on the NBCRV Stryker and/or JNBCRS. It will detect, identify, and quantify chemical hazards in sampled water three times faster than the MM-1 on the M93A1 Fox. Nevertheless, the NBCRV Stryker and JNBCRS, like the M93A1 Fox, will be reconnaissance vehicles, and therefore, though they will be able to test potable water for chemical hazards, they will not likely be regularly employed for this purpose.

All current deficiencies will likely remain in the near/mid-term future. The NBCRV Stryker and/or JNBCRS (regardless of the inclusion of the CBMS II) are expected to be capable of taking and maintaining a physical sample for future analysis; however, there will still be no modular detection system that is capable of performing this task.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “green.” In the far-term future, the JCBAWM is expected to be fielded. It will be a significant improvement over the M292 Kit. Presumably it will detect, identify, and measure the concentration of all CWAs and TICs of interest (specifically, all agents listed in Defense Intelligence Agency [DIA] document “Threat Environment Projection: Chemical and Biological Warfare 2000–2025” as an objective). Unlike the M292 Kit, it will meet the tri-service long-term consumption standards (and as an objective, detect concentrations 20% lower than those established in the standards). However, its analysis time of 10 minutes will be similar to those of MS units and may be insufficient for identifying-to-treat agents that were present in recently ingested water. It is unknown whether the JCBAWM will be able to take and maintain a physical sample for future analysis.

In the far-term future, there will remain a complete lack of real-time detection, identification, and quantification capabilities for CWAs and TICs in water. Depending on the JCBAWM capabilities, the lack of a detector that can also take and maintain a physical sample for future analysis may remain a deficiency.

² The M34A1 sampling kit, which is not a detector, and the M93A1 Fox, regardless of the inclusion of the MM-1, are capable of collecting and maintaining a chemical sample.

Table 5.7-1. TASENS 7: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current – Near/Mid – Far														
HAPSITE (GC/MS) with HSS ¹	10 ²	10 ³	10 ⁴	9 ⁵	10 ³⁹	10 ⁴⁰	1 ⁶	N/A ⁷	N/A ⁷	5 ⁸	0 ⁹	N/A ¹¹	N/A ⁷	Unk ¹⁰
M272 Kit	7 ¹¹	7 ¹²	0 ¹³	1 ¹⁴	10 ¹⁴	0 ³	1 ¹⁵	N/A ⁷	N/A ⁷	5 ⁴⁴	Unk	Unk	N/A ⁷	10 ¹⁶
MM-1 (GC/MS) integrated into M93A1 Fox	10 ¹⁷	10 ³⁹	5 ¹⁸	1 ¹⁹	10 ³⁹	10 ⁷⁵	4 ²⁰	N/A ⁷	N/A ⁷	5 ²¹	10 ²²	10 ²³	N/A ⁷	10 ¹⁶
Viking SpectraTrak (GC/MS)	10 ²⁴	10 ²⁵	10 ⁴⁰	10 ²⁶	10 ⁹⁰	10 ⁴⁰	1 ⁴²	N/A ⁷	N/A ⁷	5 ⁴⁴	0 ¹¹	N/A ¹¹	N/A ⁷	10 ¹⁶
Near/Mid – Far														
CBMS II integrated into NBCRV Stryker or JNBCRS	10 ²⁷	10 ²⁸	Unk	Unk	Unk	Unk	9 ²⁹	N/A ⁷	N/A ⁷	10 ³⁰	10 ³¹	10 ³²	N/A ⁷	N/A ³³
Far														
JCBAWM	10 ³⁴	10 ³⁵	10 ³⁶	10 ³⁷	10 ³⁵	10 ³⁶	1 ³⁸	N/A ⁷	N/A ⁷	5 ³⁹	Unk	Unk	N/A ⁷	N/A ³³
Current Overall Capability	9	9	6	5	10	8	2	N/A ⁷	N/A ⁷	5	3	10	N/A ⁷	10
Near/Mid-Term Overall Capability	10	10	6	5	10	8	3	N/A ⁷	N/A ⁷	6	5	10	N/A ⁷	N/A ³³
Far-Term Overall Capability	10	10	7	6	10	8	3	N/A ⁷	N/A ⁷	6	5	10	N/A ⁷	N/A ³³

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized CWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Percentage of following 12 agents as described in FM 3-9 that are detected: nerve agents (GA; GB; GD; GF; VX), vesicants (H/HD; HN-1,2,3; L; CX), cyanides (AC; CK), pulmonary agent (CG)	Percentages standardized to 0–10 scale
M2	All CWAs can be identified?	Ability to classify or identify detected CWAs.	10: Identify detected CWAs 7: Identify some detected CWAs; classify others 5: Classify detected CWAs 0: Neither identify nor classify detected CWAs
M3	All of a potential adversary’s weaponized CWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected CWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TICs can be detected using fielded technologies/equipment?	Considering only TICs listed in <i>USACHPPM Report 47-EM-6154-03: ITF-40</i> . (FOUO)	10: All TICs listed in ITF-40 9: ≥90% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 8: ≥80% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 2: ≥20% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 1: 1%–20% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 0: none of 33 high-priority critical acutely toxic airborne TICs according to ITF-40
M5	All TICs can be identified using fielded technologies/equipment?	Ability to classify or identify detected TICs.	10: Identify all detected TICs 7: Identify some detected TICs; classify others 5: Classify detected TICs 0: Neither classify nor identify detected TICs
M6	All TICs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TICs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect chemical hazards?	Time period from CWA/TIC sampling to analysis output. Linear scale 1–10.	10: ≤12 sec 7: ≤30 sec 2: ≤60 sec 1: > 60 sec
M8	Distance between chemical hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M9	Chemical hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M10	Chemical hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary's weaponized CWAs and for all TICs using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability

	FAA Measure	Elaboration	Scale
M13	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	This measure is not relevant to this task.	N/A
M14	There is effective DOTLPP in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPP exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPP for the task to be performed with this system are addressed 0: DOTLPP is inadequate or does not exist for the task to be performed with this system

¹ Headspace sampling system

² Presumably detects all 12 CWA of interest by detecting vapors off-gassing from water (average detection limit: ~5 µg/L).

³ Identifies detected agents and TICs (through MS).

⁴ Provides absolute quantification capability for all detected agents and TICs (specifically provides composition intensities, e.g., ppm).

⁵ Presumably detects most TICs in ITF-40. Detects vapors off-gassing from water.

⁶ Detects within 10 minutes.

⁷ Not relevant to this task (N/A).

⁸ Hazards are not identified in time to treat, especially if lethal fast-acting agents at high concentrations are involved.

⁹ Sampling collection for future analysis capability does not exist with this technology/equipment.

¹⁰ COTS detector. Unknown if sufficient DOTLPP in place.

¹¹ Detects GA, GB, GD, GF and VX (0.02 mg/L ORD requirement); HD and L (2.0 mg/L ORD requirement); and AC (20.0 mg/L ORD requirement). Does not meet tri-service field drinking water consumption standards, which are the aforementioned detection limit requirements.

¹² Identifies/classifies as nerve agent, AC, HD, or Lewisite.

¹³ Does not quantify amount of detected agents or TICs.

¹⁴ Detects and identifies HCN (AC) only.

¹⁵ Each agent class test (blister, blood, and nerve) takes about 6–7 minutes. All tests can be completed in 20 minutes.

¹⁶ There is effective DOTLPP in place to conduct task with this system.

¹⁷ Detects 20–30 CWAs, precursors, and degradation products (including all 12 CWAs) in liquid form through use of 120°C probe that vaporizes liquid. Vapor detection limits: 62 mg/m³ for GB – 620X IDLH; 46 mg/m³ for CK; 115 mg/m³ for CG. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. It is susceptible to chemical interference (false positives and negatives).

¹⁸ Provides relative intensities (concentrations) of detected agents and TICs.

¹⁹ Detects phosgene, hydrogen cyanide, cyanogen chloride, phosphorus trichloride, and phosphorus oxychloride.

²⁰ Detects within 45 seconds.

²¹ Identifies hazards within 45 seconds.

²² A physical sample can be taken, but not through the MM-1. The M93A1 Fox has a protective glove attached to the body by which an occupant can safely collect physical samples.

²³ Sample integrity is maintained.

²⁴ Presumably detects all 12 agents of interest (5 µg/L detection limit); detects all states. Degraded performance: (P5, 9, 10) Not waterproof when operating; (M5) Negligible personnel experience.

²⁵ Identifies sampled agents and TICs (through mass spectrometry).

²⁶ Presumably detects all TICs in ITF-40; detects all states.

- ²⁷ Presumably will detect all CWAs.
- ²⁸ All detected CWAs will be identified.
- ²⁹ Will detect and identify within 15 seconds.
- ³⁰ Will identify within 15 seconds, which provides complete capability.
- ³¹ Liquid and vapor samples will be able to be taken.
- ³² Sample integrity will be maintained.
- ³³ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.
- ³⁴ Will detect all agents listed in DIA document “Threat Environment Projection: Chemical and Biological Warfare 2000–2025” (objective). Will meet tri-service long-term consumption standards (objective is to detect 20% lower than tri-service consumption standards).
- ³⁵ Will identify detected CWAs and TICs.
- ³⁶ Will absolutely quantify hazard (concentration).
- ³⁷ Will detect all TICs of interest as an objective.
- ³⁸ Will detect within 10 minutes.
- ³⁹ Hazards will not be identified in time to treat, especially if lethal fast-acting agents at high concentrations are involved.

5.7.3 Functional Solution Analysis

5.7.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of detection, identification, and quantification capability for TICs in water.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on Viking SpectraTraks and HAPSITEs with Headspace Sampling System.
- 2. Deficiency:** Lack of detectors that meet tri-service drinking standards.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on Viking SpectraTraks and HAPSITEs with Headspace Sampling System.
- 3. Deficiency:** Lack of real-time or near-real time detection, identification, and quantification capability for CWAs and TICs in water.
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of detector that can also take samples for future analysis capability.
Non-Materiel Solutions: None

5.7.3.2 IMA Assessment Summary

Table 5.7-2 identifies eight ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting chemical hazards in water. Advances in MS, electromagnetic spectroscopy, Raman spectroscopy, PIRS, or orthogonal technologies may be able to address all identified deficiencies.

Table 5.7-2. TASENS 7: IMA Assessment

TASENS 7: Sense water for chemical hazards								
Identified Gaps	Ideas for Materiel Approaches (IMA)							
	Mass Spectrometry ¹	IR, UV, and Microwave Spectroscopy ²	Photoacoustic Infrared Spectroscopy	Chemiluminescence Detection ³	SAW Technology	Colorimetric	Multiple, Complementary Technologies (Orthogonal) ⁴	Raman Spectroscopy ⁵
General lack of detection, identification, and quantification capability for TICs in water. ⁶	X	X	X	X	X	X	X	X
General lack of detectors that meet tri-service drinking standards. ⁷	X	X	X	X	X		X	X
Lack of real-time or near-real-time detection, identification, and quantification capability for CWAs and TICs in water. ⁸	X	X	X				X ⁹	X
Lack of detector that also takes samples for future analysis capability. ¹⁰	X	X	X	X	X	X	X	X

¹ Includes GC/MS, LC/MS.

² Examples include CO₂ long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), CO₂ conv mid-wave IR (MWIR) DISC/DIAL, solid-state (SS) conv MWIR DISC/DIAL, FTIR, Hyperspectral LWIR, Passive MWIR, SS conv LWIR DISC/DIAL, SS conv short-wave IR (SWIR) – LWIR, SS conv UV-LW IR, Active LWIR Polarization, Active MWIR Polarization, Passive LWIR Polarization, Filtered Forward-Looking IR (FLIR), UV Laser-Induced Fluorescence (LIF)/FTIR, and Microwave (GHz and THz) Spectroscopy.

³ Can take place in either solution or vapor phase and thus can be used for detecting chemicals in water.

⁴ Examples include SAW/IMS.

⁵ Chemical agent detection by surface-enhanced Raman spectroscopy. <http://bookstore.spie.org/index.cfm?fuseaction=DetailPaper&ProductId=511940&coden>

⁶ Distributing more Viking SpectraTraks and HAPSITEs with Headspace Sampling System is a potential solution. JCBAWM is expected to eliminate capability gap.

⁷ Distributing more Viking SpectraTraks is a potential solution. JCBAWM is expected to eliminate capability gap.

⁸ Reducing the response time of JCBAWM, Viking SpectraTrak, and/or HAPSITE with Headspace Sampling System is a potential solution.

⁹ Photoionization/QitToF MS; “Automated, Real-Time Screening of CWs in Water by Photoionization/QitToF MS.” Jack Syage, Syagen Technology, Inc

¹⁰ All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.8 Task TASENS 8: Sense water for biological hazards

5.8.1 Functional Area Analysis

5.8.1.1 Definition

To sense the presence or absence of biological hazards (includes BWAs and TIB material) in water (potable and nonpotable). Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen hazard releases and monitoring of known hazard locations, as well as the requirement to determine the extent and physical properties of contamination. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures. Must occur in situ to assist with raw water site selection and identification of soldier contact hazards, in-line post ROWPU and permanent water distribution systems, and on-demand to spot-check potable water distribution sites and shower points.

5.8.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.8.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.8.1.2.2 Lateral Task: TASHA 14

5.8.1.2.3 Supporting Task: N/A

5.8.1.3 Conditions

Perform this task under conditions of:

Physical

1. Inaccessible subsurface water. (C1.1.2.3)
2. High sea state. (C1.2.1.3)
3. High shipping presence. (C1.2.6)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
8. Heavy precipitation intensity. (C1.3.1.3.6.2)
9. Negligible light. (C1.3.2.1)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)

3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4),
5. Negligible personnel experience. (C2.2.4.5)
6. Deployment movement and maneuver—including logistical requirements such as lift, supply, and transportation. (C2.5)
7. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. High health risk. (C3.3.1.5)
5. Significant refugee care responsibility. (C3.3.2.3)
6. TIB material present in the civilian sector. (C3.3.7.5)

5.8.2 Functional Needs Analysis

5.8.2.1 Capability and Deficiency Assessment Summary

Table 5.8-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are three current capabilities used to accomplish this task and two projected capabilities to be added in the future (JBAIDS in the near/mid term and JCBAWM in the far term). The individual capabilities differ in their abilities to meet the identified standards.

Overall Capability and Deficiency Summary

The overall current capability is assessed as “yellow.” Many, if not most, BWAs can be presumptively detected and identified by collecting water samples through physical sampling, followed by manual sample preparation and the following laboratory and field-deployable analytical techniques: immunochromatographic HHAs, which are part of the BSK; ELISA; and RT-PCR, as used by the RAPID. Of the 25 BWAs described in the *Medical Management of Biological Casualties*, a complete set of HHAs can detect and identify all agents with the possible exception of the viral hemorrhagic fever agents; however, the BSK contains eight different HHAs and thus detects only eight BWAs per kit. The eight agents in the kit may be assembled to reflect the threat.¹ A comprehensive set of ELISAs, which are laboratory-based, can ostensibly detect and identify all 25 BWAs (as well as any TIB), assuming that an antigen or antibody has been isolated for each agent. Like all PCR-based technologies, RAPID can, with the appropriate reagents, detect and identify all BWA and TIB pathogens but none of the toxins (since the toxins, unless contaminated with the source organisms, do not provide any genetic material). HHAs and RAPID can generically quantify detected agents (HHAs only through the aide of a reader), whereas some varieties of ELISAs provide absolute quantification capabilities.

Overall current task deficiencies include the lack of integrated sample collection, detection, identification, and quantification capability for BWAs in water; real-time or near-real-time

detection, identification, and quantification capability for sampled BWAs; field analysis verification capabilities; a detector that also takes samples for future analysis²; and TIB detection capabilities.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” Near/mid-term capability JBAIDS Block I will detect 11 BWA pathogens (as a threshold requirement), whereas Block II will detect the same 11 BWA pathogens plus the four toxins of interest (as a threshold requirement). JBAIDS will also quantify agent concentrations in the analyzed sample. It will require 25–40 minutes for analysis output following sample preparation, and will thus provide a complete identify-to-treat capability.

All of the overall current task deficiencies are likely to remain deficiencies in the near/mid term.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “yellow.” As an objective, far-term capability JCBAWM will detect, identify, and absolutely quantify all BWAs of interest (presumably, since requirement is all agents listed in DIA document “Threat Environment Projection: Chemical and Biological Warfare 2000–2025”) as well as TIBs of interest within 10 minutes. It will thus provide a complete identify-to-treat capability.

The lack of real-time or near-real-time detection, identification, and quantification capability for sampled BWAs; field analysis verification capabilities; and a detector that also takes samples for future analysis are likely to remain deficiencies in the far term.

¹ The collection of surface samples to use in HHA results in a sample for further analysis. Coolers/temperature-controlled equipment to hold and maintain the sample needs to be available if the sample is not immediately evacuated.

² The M34A1 sampling kit, which is not a detector, is capable of collecting and maintaining a biological sample.

Table 5.8-1. TASENS 8: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Current – Near/Mid – Far															
Physical Sampling/BSK	3 ¹	10 ²	0 ³	0 ⁴	N/A ⁴	N/A ⁴	6 ⁵	N/A ⁶	N/A ⁷	10 ⁷	0 ⁸	N/A ⁸	0 ⁹	N/A ⁷	5 ¹⁰
Physical Sampling/ELISA	10 ¹¹	10 ²	10 ¹²	10 ¹³	10 ¹⁴	10 ¹⁴	1 ¹⁵	N/A ⁷	N/A ⁷	10 ¹⁷	0 ¹⁶	N/A ¹⁹	0 ¹¹	N/A ⁷	Unk
Physical Sampling/RAPID	8 ¹⁷	10 ²	5 ¹⁸	5 ¹⁹	10 ²⁰	5 ²⁰	1 ²¹	N/A ⁷	N/A ⁷	10 ²³	0 ¹⁹	N/A ¹⁹	0 ¹⁰	N/A ⁷	Unk
Near/Mid – Far															
Physical Sampling/JBAIDS Blocks I/II	4/6 ²²	10 ²³	10 ²⁴	0 ²⁵	N/A ²⁵	N/A ²⁵	4/5 ²⁶	N/A ⁷	N/A ⁷	10 ²⁷	10 ²⁸	10 ²⁹	0 ³⁰	N/A ⁷	N/A ³¹
Far															
JCBAWM	10 ³²	10 ³³	10 ³⁴	10 ³⁵	10 ³³	10 ³⁴	7 ³⁶	N/A ⁷	N/A ⁷	5 ³⁷	Unk	Unk	0 ³⁰	N/A ⁷	N/A ³¹
Current Overall Capability	6	10	5	4	10	8	5	N/A ⁷	N/A ⁷	10	3	10	0	N/A ⁷	8
Near/Mid-Term Overall Capability	6	10	6	4	10	8	5	N/A ⁷	N/A ⁷	10	4	10	0	N/A ⁷	N/A ³¹
Far-Term Overall Capability	6	10	7	4	10	8	5	N/A ⁷	N/A ⁷	9	4	10	0	N/A ⁷	N/A ³¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized BWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Number of the 25 biological agents described in the <i>Medical Management of Biological Casualties</i> that are detected. Fourteen of the 25 agents are as follows: Anthrax (<i>Bacillus Anthracis</i>); Brucellosis (<i>Brucellae</i>); Glanders (<i>Burkholderia mallei</i>); Meliodosis (<i>Burkholderia pseudomallei</i>); Q Fever (<i>Coxiella burnetii</i>); Plague (<i>Yersinia pestis</i>); Tularemia (<i>Francisella tularensis</i>); Botulinum toxin; Ricin; SEB; T-2 Mycotoxins; Smallpox (variola major and minor); Viral Equine Encephalities (e.g., VEE, WEE, and EEE); and Ebola and Marburg hemorrhagic fever viruses. Linear 2–10.	10: All 25 BWAs detected 8: ≥20 BWAs detected 6: ≥15 BWAs detected 4: ≥10 BWAs detected 2: ≥5 BWAs detected 1: ≥1 BWA detected 0: No BWAs detected
M2	All of a potential adversary’s weaponized BWAs can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected BWAs.	10: Identify detected BWAs 7: Identify some detected BWAs; classify others 5: Classify detected BWAs 3: Some detected BWAs are classified or identified 0: Neither identify nor classify detected BWAs
M3	All of a potential adversary’s weaponized BWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected BWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TIB material can be detected using fielded technologies/equipment?	TIB material includes medical waste, raw sewage, and vaccine-related biologics. Pathogens and toxins within TIB material are what are generally detected.	10: All pathogens and toxins within TIB material, including medical waste, raw sewage, and vaccine-related biologics can be detected 5: All TIB pathogens or toxins within one or more categories (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 3: Some TIB pathogens and toxins within one category (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 0: No TIB pathogens and toxins can be detected
M5	All TIB material can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected TIB material.	10: All pathogens and toxins within TIB material can be identified 7: Identify some TIB pathogens and toxins; classify others 5: Classify detected TIB pathogens and toxins 3: Some detected TIB pathogens and toxins can be classified or identified 0: Neither classify nor identify detected TICs
M6	All TIB material can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TIBs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect biological hazards?	Time period from BWA/TIB sampling to analysis output. Linear scale 2–7. Applies to point detectors only.	10: ≤1 minute 9: ≤4 minutes 8: ≤7 minutes 7: ≤10 minutes 4: ≤40 minutes 2: ≤60 minutes 1: >60 minutes
M8	Distance between biological hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M9	Biological hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A

	FAA Measure	Elaboration	Scale
M10	Biological hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards. Of all considered BWAs, ricin may require the most rapid response. Immunoglobulin therapy must be administered within 1 hour of ricin exposure to be effective.	10: Complete capability (<1 hour) 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary's weaponized biological warfare agents and for all TIB material using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Time to validate the presence of biological hazards in sample?	Refers to confirmatory identification.	10: Rapidly—validation performed expeditiously by particular technology/equipment 5: Moderately delayed—mobile analysis tools can validate on site 0: Delayed—off-site laboratory analysis required for validation
M14	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	This measure is not relevant to this task.	N/A
M15	There is effective DOTLPP in place to conduct task?	Refers to non-materiel elements associated with the execution of the task with the system.	10: DOTLPP exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPP for the task to be performed with this system are addressed 0: DOTLPP is inadequate or does not exist for the task to be performed with this system

¹ Current and near-future HHAs detect all BWAs with the possible exception of the viral hemorrhagic fevers; however, the BSK contains eight different HHAs and thus detects eight BWAs. The HHA sensitivity is 10⁵–10⁶ CFU/mL (*B. anthracis*) and 50–1200 ng/mL (*Botulinum* toxin A and *Botulinum* toxin F, respectively). Degraded performance: (C6) TIB material present in civilian sector. Susceptible to interference (false positives and negatives due to matrix effects, among others); (M3) Minimal time available. Requires sample preparation prior to applying sample to assay.

² All detected BWAs are identified.

³ Does not absolutely quantify agent. However, may provide relative indication of quantity, but only through the use of a reader. Soldiers will not likely have the reader.

⁴ According to specifications, does not detect any TIBs.

⁵ Detects within 15 minutes.

⁶ Not relevant to this task (N/A).

⁷ Immediately identifies all detected hazards (detection requires up to 15 minutes) and thus provides complete identify-to-treat capability.

⁸ Does not collect a sample for future analysis.

⁹ Requires samples to be confirmed off site in laboratory.

¹⁰ There is effective DOTLPF in place to conduct task, at least for bacillus bacteria (specifically anthrax). Procedures for other agents are probably similar.

¹¹ Ostensibly all BWAs can be detected by ELISA. ELISA's sensitivity is 10^5 – 10^6 CFU/mL (*B. anthracis*); 10–100 PFU/mL of Venezuelan Equine Encephalitis virus; and 625 pg/mL of Staphylococcal Enterotoxin B (aerosol) and greater than 5 ng/mL of ricin.

¹² Some varieties of ELISA can absolutely quantify the antigen or antibody concentration.

¹³ Theoretically, any agent (i.e., antigen or antibody) for which an ELISA has been designed can be detected through this method; however, only one particular pathogen or toxin antigen or antibody can be tested per ELISA model.

¹⁴ A particular TIB pathogen or toxin is identified if it is detected, since ELISA is highly specific and detects a particular agent.

¹⁵ Typically requires 1–2 hours (following sample collection and preparation) for detection, identification, and if applicable, quantification, primarily because of incubation time.

¹⁶ Not designed for sample collection for future analysis.

¹⁷ RAPID may be able to detect all pathogens; PCR does not detect toxins, though the toxic material may be contaminated with source genetic material (In this assessment, it is assumed that this is not the case). Standard PCR has a sensitivity of 10–100 CFU/mL bacteria (*B. anthracis*); and 15 fg–1 pg or 100–1 million copies of the complementary DNA for viruses.

¹⁸ RAPID, through RT-PCR, may provide generic quantification.

¹⁹ Theoretically, any TIB pathogen can be detected with appropriate reagents; toxins cannot be detected unless contaminated with source genetic material.

²⁰ All detected TIBs are identified.

²¹ Detects and identifies within 30 minutes following sample preparation, but requires several hours for sample preparation.

²² Block I will detect Anthrax; Brucella; Ebola VHF virus; Marburg VHF virus; Viral Encephalitis viruses (VEE/WWW/EEE); Glanders; Melioidosis; Plague; Q Fever; Smallpox; and Tularemia (and Typhus) as a threshold requirement; and Crimean-Congo hemorrhagic virus; Dengue fever; Hantaviruses; and Rift Valley Fever Virus (and Cholera, Cryptosporidium; E. coli; Influenza; Salmonella; and Shigella) as an objective; Block II will add toxins Botulinum, microcystins, ricin, SEB, and T-2 Mycotoxins.

²³ Will identify all detected agents.

²⁴ Will quantify the concentration in the sample.

²⁵ Will not detect any TIBs.

²⁶ Will detect and identify within 40 minutes (25-minute objective) for Blocks I and II following sample preparation.

²⁷ Will immediately identify all detected hazards (detection will require 25–40 minutes) and thus will provide complete identify-to-treat capability.

²⁸ Will provide physical sample collection capability for future analysis.

²⁹ Will maintain integrity of physical sample.

³⁰ Will require samples to be confirmed off site at laboratory.

³¹ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.

³² Will detect all agents listed in DIA document "Threat Environment Projection: Chemical and Biological Warfare 2000–2025" (objective).

³³ Will identify detected BWAs and TIBs.

³⁴ Will absolutely quantify hazard.

³⁵ Will detect all TIBs of interest as an objective.

³⁶ Will detect within 10 minutes.

³⁷ Will immediately identify all detected hazards (detection will require up to 10 minutes) and thus will provide complete identify-to-treat capability.

5.8.3 Functional Solution Analysis

5.8.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of TIB detection capability.
Non-Materiel Solutions: None
- 2. Deficiency:** Lack of real-time or near-real time detection, identification, and quantification capability for BWAs in water.
Non-Materiel Solutions: None
- 3. Deficiency:** Lack of integrated sample collection, detection, identification, and quantification capability for BWAs in water.
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of detector that can also take samples for future analysis capability.
Non-Materiel Solutions: None
- 5. Deficiency:** Validation of findings requires laboratory testing.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to permit validation by a reliable on-site detection/identification capability (e.g., portable PCR) as confirmatory detection/identification is ultimately dependent upon doctrine, not materiel capabilities.
Training (partial): Train personnel in analytical techniques to ensure accuracy.

5.8.3.2 IMA Assessment Summary

Table 5.8-2 identifies seven ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting biological hazards in water. Advances in MS, electromagnetic spectroscopy, Raman spectroscopy, or orthogonal technologies may be able to address all identified deficiencies.

Table 5.8-2. TASENS 8: IMA Assessment

TASENS 8: Sense water for biological hazards							
Identified Gaps	Mass Spectrometry ¹	IR, UV, and Microwave Spectroscopy	Immunoassay (Antibody-Based) ²	Genetic (Nucleic Acid-Based) ³	Tissue-Based	Orthogonal ⁴ (Immunoassay/ Nucleic Acid-Based)	Raman Spectroscopy
Lack of real-time or near-real-time detection, identification, and quantification capability for sampled BWAs. ⁵	X ⁶	X			X ⁷	X	X
Lack of current detection, identification, and quantification capability for TIBs in water. ⁸	X	X	X	X		X	X
Lack of integrated sample collection, detection, identification, and quantification capability for BWAs in water.	X	X	X	X	X	X	X
Lack of detector that also takes samples for future analysis capability.	X	X	X	X	X	X	X

¹ Includes GC/MS, LC/MS.

² Includes Immunological/SAW technology

³ Includes PCR and RT-PCR amplification, DNA microchip technology, SAW technology

⁴ Includes nucleic acid/immunoassay technologies (e.g., PCR and immunological techniques), electrochemiluminescence/equilibrium immunoassay, Fluorescence correlation spectroscopy/PCR.

⁵ Reducing the sample preparation (if applicable) and response time of JCBAWM and JBAIDS is a potential solution.

⁶ Possibly through rapid separation processes (e.g., capillary zone electrophoresis).

⁷ Near real-time detection, identification, and quantification of pathogens (and possibly toxins as well) is feasible. NATIBO, *Biological Detection System Technologies Technology and Industrial Base Study*, February 2001, pp. 4-12 to 4-13; Harper, James, "Automated CANARY Testbed for Fast Bioaerosol Identification," MIT Lincoln Laboratory, Presented at 2004 Biological-Chemical Detection Symposium, Washington, D.C.

⁸ JCBAWM is expected to detect, identify, and quantify all TIBs in water and thus eliminate capability gap.

5.9 Task TASENS 9: Sense water for radiological hazards

5.9.1 Functional Area Analysis

5.9.1.1 Definition

To sense the presence of radiological hazards in water (potable and nonpotable). Includes the functions of detection, identification, and quantification of the hazard. Also includes collection of samples for further analysis, along with early-warning surveillance of unforeseen radiological releases and monitoring of known radiological locations, as well as the requirement to determine the extent and physical properties of radiological contamination. Encompasses both “detect to warn” and “detect to treat” situations to enable appropriate protective measures. Must occur in-situ to assist with raw water site selection and identification of soldier contact hazards, in-line post ROWPU and permanent water distribution systems, and on-demand to spot-check potable water distribution sites and shower points.

5.9.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.9.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.9.1.2.2 Lateral Task: TASHA 14

5.9.1.2.3 Supporting Task: N/A

5.9.1.3 Conditions

Perform this task under conditions of:

Physical

1. Inaccessible subsurface water. (C1.1.2.3)
2. High sea state. (C1.2.1.3)
3. High shipping presence. (C1.2.6)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
8. Heavy precipitation intensity. (C1.3.1.3.6.2)
9. Negligible light. (C1.3.2.1)
10. Moderate nuclear radiation hazards. (C1.3.3.1.2)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)

3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4),
5. Negligible personnel experience. (C2.2.4.5)
6. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. TIR materials present in the civilian sector. (C3.3.7.5)

5.9.2 Functional Needs Analysis

5.9.2.1 Capability and Deficiency Assessment Summary

Table 5.9-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 10 current capabilities used to accomplish this task. The capabilities include a range of portable RADIAC devices and dosimeters.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current RADIACs detect and identify beta radiation and detect, identify, and quantify gamma radiation. All RADIACS perform their functions in real time (though the level of confidence increases with increased sampling time) and thus provide a complete detect-to-warn capability. Many also automatically calculate the cumulative dose.

There is no single capability that can perform the task to all of the designated standards. RADIACs detect and quantify only the radiation, not the isotope. Furthermore, all RADIACs and dosimeters must be exposed to radiation to detect it. Current overall task deficiencies include the lack of detection capability for low-level radiological contamination in water, detection capability for alpha-emitting contaminants in water¹, radioisotope identification capabilities, monitors that can detect all radiation types, and detectors that take samples for future analysis².

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

¹ Water shields alpha radiation, and thus only alpha-emitting contaminants at the water surface are likely to be detected.

² Only the M34A1 sampling kit, which is not a detector, is capable of collecting and maintaining a radiological sample.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.9-1. TASENS 9: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current – Near/Mid – Far									
ADM-300	8 ¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ⁸	10 ⁹
AN/PDQ-1 MFR ¹⁰	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	10 ⁶	5 ⁷	Unk	10 ¹³
AN/PDR-27	4 ¹¹	5 ²	5 ¹²	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-43	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-56	2 ¹⁴	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	10 ¹⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-63	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/PDR-65	2 ¹⁷	N/A ¹⁵	10 ³	10 ⁴	0 ⁵	10 ¹⁶	5 ⁷	10 ¹⁸	10 ¹³
AN/PDR-77	8 ¹⁹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	7 ¹³	10 ¹³
AN/UDR-13	4 ²⁰	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ¹⁷	10 ¹³
AN/VDR-2	4 ¹¹	5 ²	10 ³	10 ⁴	0 ⁵	10 ⁶	5 ⁷	10 ¹⁷	10 ¹³
Current Overall Capability	5	5	9	10	0	10	5	8	10
Near/Mid-Term Overall Capability	5	5	9	10	0	10	5	8	10
Far-Term Overall Capability	5	5	9	10	0	10	5	8	10

	FAA Measure	Elaboration	Scale
M1	All radiological hazards (including TIR material) can be detected using fielded technologies/equipment?	Number of radiation types (i.e., alpha, beta, gamma, neutron, and x-radiation) detected. Note: Fielded technologies/equipment detect radiological hazards by detecting the radiation emitted from these hazards. TIR material includes DU, a common battlefield hazard resulting from certain types of ammunition and damaged armor.	10: All five types 8: Four types 6: Three types 4: Two types 2: Single type 0: No radiological hazards detected
M2	All radiological hazards (including TIR material) can be identified using fielded technologies/equipment?	Ability to identify type of radiation detected or the radioisotope emitting the radiation. Note: Fielded technologies/equipment that identify radioisotope also identify the type(s) of radiation detected.	10: Identifies radioisotope emitting radiation 5: Identifies type of radiation detected 0: No identification capability
M3	All radiological hazards (including TIR material) can be quantified using fielded technologies/equipment?	Ability to quantify activity of radiological material (i.e., Cu or Bq), or the exposure (i.e., Roentgen or Coulomb/kg) or dose rate (rad, rem, Gy, or Sv) from emitted radiation.	10: Absolute quantification 5: Generic quantification (or absolute quantification of one radiation type and no quantification of another type) 0: No quantification capability
M4	Time to detect radiological hazard?	Time period from exposure to radiation to analysis output.	10: Near-real time 0: Not near-real time

	FAA Measure	Elaboration	Scale
M5	Distance between radiological hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M6	Radiological hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M7	Radiological hazards are identified in time to treat forces?	A complete capability requires both near-real-time identification of the emitted radiation type(s) and radioisotope. Identification of the emitted radiation type(s) enables appropriate medical response to radiation exposure and identification of the radioisotope determines to appropriate medical course of action to radiological material internalization.	10: Complete capability (near-real-time identification of radioisotope and emitted radiation type[s]) 5: Partial capability (near-real-time identification of emitted radiation type[s]) 0: No capability (no identification capability)
M8	Cumulative dose can be determined and presented using data from currently fielded sensors/equipment?	This measure is not relevant to this task.	N/A
M9	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Detects most radiation types (alpha, beta, gamma, and x-radiation) emitted from radiological materials.

² Identifies type of radiation, but not radioisotope.

³ Absolutely quantifies radiation level.

⁴ Real-time detection. Level of confidence increases with increased sampling time and radiation levels.

⁵ Requires exposure to emitted radiation to detect hazard.

⁶ Provides complete detect-to-warn capability since detects and identifies radiation in real time.

⁷ Provides partial identify-to-treat capability since immediately identifies detected radiation type, but not the radioisotope.

⁸ Automatically calculate cumulative dose since system capable of dose and dose rate alarms across entire measurement range; also predictive algorithm provides estimate of time in field before alarm; unknown whether cumulative dose is directly outputted.

⁹ There is effective DOTLPF in place to conduct task with this system.

¹⁰ In combination with OA-9449/PDQ probe. The MFR alone detects gamma radiation; with the probe, it measures gamma radiation and detects beta radiation.

¹¹ Detects beta/gamma radiation emitted from radiological materials.

¹² Absolutely quantifies gamma radiation level; detects, but does not quantify, beta radiation.

¹³ Absolutely quantifies radiation level and provides monitoring capability, thus provides moderate capability to determine cumulative dose.

¹⁴ Detects alpha radiation emitted from radiological materials (particularly plutonium).

- ¹⁵ Detects only one type of radiation, so identification capability is not applicable.
- ¹⁶ Provides complete detect-to-warn capability since detects one radiation type in real time.
- ¹⁷ Detects gamma radiation emitted from radiological materials (particularly plutonium).
- ¹⁸ System automatically calculates cumulative dose.
- ¹⁹ Detects alpha, beta, gamma, and x-radiation emitted from radiological materials.
- ²⁰ Detects gamma/neutron radiation emitted from radiological materials.

5.9.3 Functional Solution Analysis

5.9.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Lack of detection capability for low-level radiological contamination in water.
Non-Materiel Solutions: None
2. **Deficiency:** Lack of monitors that can detect most or all types of radiation.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300.
3. **Deficiency:** Lack of detection capability for alpha-emitting contaminants in water.¹
Non-Materiel Solutions: None
4. **Deficiency:** Lack of radioisotope identification capabilities.
Non-Materiel Solutions: None
5. **Deficiency:** Lack of detector that can also take samples for future analysis capability.²
Non-Materiel Solutions: None

5.9.3.2 IMA Assessment Summary

Table 5.9-2 identifies three ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting radiological hazards in water. Advances in scintillation or semiconductor radiation detection technologies may be able to address all identified deficiencies.

¹ Water shields alpha radiation, and thus only alpha-emitting contaminants at the water surface are likely to be detected.

² Only the M34A1 sampling kit, which is not a detector, is capable of collecting and maintaining a radiological sample.

Table 5.9-2. TASENS 9: IMA Assessment

TASENS 9: Sense water for radiological hazards ¹			
Identified Gaps	Ideas for Material Approaches (IMA)		
	Gas-Filled Detectors ²	Scintillation Radiation Detectors ³	Semiconductor Radiation Detectors ⁴
Lack of detection capability for low-level radiological contamination in water.	X	X	X
Lack of detection capability for alpha-emitting contaminants in water. ⁵	X	X	X
Lack of monitors that can detect all types of radiation. ⁶	X	X	X
Lack of radioisotope identification capabilities. ⁷		X	X
Lack of detector that also takes samples for future analysis. ⁸	X	X	X

¹ <http://hps.org/publicinformation/ate/q534.html>

² Includes Geiger-Mueller detectors, proportional gas detectors, and ionization chambers.

³ Includes ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), barium fluoride (BaF₂)-based detectors.

⁴ Includes germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂)-based detectors.

⁵ Distributing more ADM-300 and AN/PDR-77 is a potential solution.

⁶ Distributing more ADM-300 is a potential solution.

⁷ Distributing gamma and/or alpha scintillation detectors with radioisotope identification capabilities is a potential solution.

⁸ All point detection IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.10 Task TASENS 10: Sense the presence of chemical hazards on humans, MWAs and remains**5.10.1 Functional Area Analysis****5.10.1.1 Definition**

To sense the presence or absence of chemical hazards (includes CWAs and TICs) on humans, MWAs, and remains. Includes the external detection of contamination prior to the manifestation of symptoms. Diagnosis of internal exposure is not part of this task as it is addressed in a separate Sustain task. Includes the functions of detection, identification, and quantification of the hazard. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known hazard locations, and collection of samples for further analysis. Encompasses “detect to warn” and “detect to treat” situations. The evaluation encompasses all chemical hazards of military and medical importance.

5.10.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.10.1.2.1 Supported Tasks: OPSENS 1, OPSENS 4, OPSENS 7

5.10.1.2.2 Lateral Tasks: TASHA 11, TASHA 13

5.10.1.2.3 Supporting Task: N/A

5.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, arctic, and arid climates. (C1.3.1)
2. Summer, winter seasons. (C1.3.1.1)
3. Stormy weather. (C1.3.1.3)
4. Hot, very cold air temperature. (C1.3.1.3.1)
5. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
6. Heavy precipitation intensity. (C1.3.1.3.6.2)
7. Negligible light. (C1.3.2.1)
8. Chemical effects. (C1.3.3.2)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)

5. Poor personnel morale. (C2.2.4.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Poor multinational integration. (C2.3.1.2)
8. Limited or no host nation support. (C2.8.5)
9. Ambiguous threat existence. (C2.9.3)

Civil

- High mission priority. (C3.1.3.2)
- Negligible language translators. (C3.2.1.2)
- Significant refugee care responsibility. (C3.3.2.3)
- TICs present in the civilian sector. (C3.3.7.5)

5.10.2 Functional Needs Analysis

5.10.2.1 Capability and Deficiency Assessment Summary

Table 5.10-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are eight current capabilities used to accomplish this task and two projected capabilities to be added in the future (one each in the near/mid term and one in the far term). The individual capabilities include a range of colorimetric paper and kits, IMS detectors, and MSs with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current detectors do not directly detect chemical agents on personnel and MWAs, but rather detect vapors off-gassing from the deposited agent. The APD2000, CAM/ICAM, HAPSITE with the headspace sampling system, and M22 ACADA with XM279 probe all work through this method. Consequently, these detectors’ capabilities for sensing chemical agents on surfaces are generally equivalent to their capabilities for sensing chemical agents in the atmosphere, assuming that the agent is sufficiently volatile for a detectable amount of chemical vapor to accumulate above the contaminated personnel or MWA.

M8 and M9 papers are the primary current capabilities for directly detecting liquid chemical warfare agents (i.e., nerve and blister agents) deposited on personnel. M8 paper indicates exposure to liquid agent by changing its color from tan to yellow, red, and green for G-agents, H-agents and Lewisite, and V-agents, respectively. M9 paper does not classify or identify detected agents, but turns pink, red, reddish-brown, or red-purple when exposed to liquid G-agents, H-agents, V-agents, and Lewisite.

There is no single capability that can perform the task to all of the designated standards. MSs Viking SpectraTrak and HAPSITE are sophisticated current capabilities, but they do not detect or identify in near-real time; consequently, they may be unable to identify-to-treat high concentrations of fast-acting lethal agents. Current overall task deficiencies include the general

inability to detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels; lack of real-time CWA identification and TIC detection/identification capabilities; lack of agent quantification capabilities; lack of a detector that also takes samples for future analysis; and detector susceptibility to chemical interference.¹

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” In the near/mid-term future, more detectors will quantify and classify, if not identify, agents. Nevertheless, MS units and the JCSD will likely be the only detectors able to detect all CWAs. MS units Viking Spectratrak and HAPSITE will remain the main capabilities to detect TICs. They will detect many or all high-priority TICs.

The general inability to detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents (i.e., VX and, to a lesser extent, GD and GF) at or below IDLH levels; lack of real-time CWA identification and TIC detection/identification capabilities; lack of agent quantification capabilities; lack of a detector that also takes samples for future analysis; and detector susceptibility to chemical interference are likely to remain deficiencies in the near-future.

Projected Far-Term Capabilities and Deficiencies

The overall projected far-term capability is assessed as “yellow.” In the far-term future, many fielded detectors will detect most, if not, all CWAs and some TICs. Many detectors will quantify and classify, if not identify, agents. MS units will likely remain the main capabilities to detect TICs. Many detectors will still not detect deposited low-volatility agents, dusty agents, and off-gassing nerve agents at or below IDLH levels. Furthermore, there will still be a lack of a detector that also takes samples for future analysis. Chemical interference will remain an issue.

¹ Refer to the JRO *Operational Impact Assessment of Non-Traditional Agents* report, July 2003 (S/NF) for information on nontraditional agent detection.

Table 5.10-1. TASENS 10: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current – Near/Mid – Far													
APD2000	5 ¹	10 ²	0 ³	0 ⁴	10 ¹⁵	N/A ⁵	7 ⁶	N/A ⁷	N/A ⁷	5 ⁸	0 ⁹	N/A ¹¹	Unk ¹⁰
CAM/ICAM	6 ¹¹	5 ¹²	5 ¹³	0 ¹⁴	N/A ¹⁵	N/A ⁶	2 ¹⁶	N/A ⁷	N/A ⁷	5 ¹⁷	0 ¹¹	N/A ¹¹	10 ¹⁸
HAPSITE (GC/MS) with HSS ¹⁹	10 ²⁰	10 ²¹	10 ²²	9 ²³	10 ³⁹	10 ⁴⁰	1 ²⁴	N/A ⁷	N/A ⁷	0 ²⁵	0 ¹¹	N/A ¹¹	Unk ¹¹
M8 Paper	7 ²⁶	5 ²⁷	0 ³	0 ⁴	N/A ⁵	N/A ⁶	7 ¹⁷	N/A ⁷	N/A ⁷	5 ²⁸	0 ¹¹	N/A ¹¹	10 ¹⁹
M9 Paper	7 ²⁹	0 ³⁰	0 ³	0 ⁴	N/A ⁵	N/A ⁶	8 ³¹	N/A ⁷	N/A ⁷	N/A ³²	0 ¹¹	N/A ¹¹	10 ¹⁹
M22 ACADA with XM279 probe ³³	6 ³⁴	7 ³⁵	5 ³⁶	0 ⁴	N/A ⁵	N/A ⁶	7 ¹⁷	N/A ⁷	N/A ⁷	5 ³⁷	0 ¹¹	N/A ¹¹	10 ¹⁹
M256A1 Kit	9 ³⁸	7 ³⁹	0 ³	1 ⁴⁰	10 ⁴¹	N/A ⁶	1 ⁴²	N/A ⁷	N/A ⁷	5 ⁴³	0 ¹¹	N/A ¹¹	10 ¹⁹
Viking SpectraTrak (GC/MS)	10 ⁴⁴	10 ⁴⁵	10 ⁴⁰	10 ⁴⁶	10 ⁹⁰	10 ⁴⁰	1 ⁴²	N/A ⁷	N/A ⁷	5 ⁴⁴	0 ¹¹	N/A ¹¹	10 ¹⁹
Near/Mid – Far													
JCAD with XM279 probe ³⁹	9 ⁴⁷	5 ⁴⁸	10 ⁴⁹	2 ⁵⁰	Unk	10 ¹⁰⁴	2 ⁵¹	N/A ⁷	N/A ⁷	5 ⁵²	0 ⁵³	N/A ⁷⁶	N/A ⁵⁴
Far													
JMCBDS	9 ⁵⁵	5 ¹⁰³	10 ¹⁰⁴	4 ⁵⁶	10 ⁵⁷	10 ¹⁰⁴	1 ⁵⁸	N/A ⁷	N/A ⁷	5 ⁵⁹	0 ⁷⁶	N/A ⁷⁶	N/A ¹⁰¹
Current Overall Capability	8	7	4	3	10	10	4	N/A	N/A	4	0	N/A	10
Near/Mid-Term Overall Capability	8	7	4	2	10	10	4	N/A	N/A	4	0	N/A	N/A ¹⁰¹
Far-Term Overall Capability	8	6	5	3	10	10	4	N/A	N/A	4	0	N/A	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary’s weaponized CWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Percentage of following 12 agents as described in FM 3-9 that are detected: nerve agents (GA; GB; GD; GF; VX), vesicants (H/HD; HN-1,2,3; L; CX), cyanides (AC; CK), pulmonary agent (CG)	Percentages standardized to 0–10 scale
M2	All CWAs can be identified?	Ability to classify or identify detected CWAs.	10: Identify detected CWAs 7: Identify some detected CWAs; classify others 5: Classify detected CWAs 0: Neither identify nor classify detected CWAs
M3	All of a potential adversary’s weaponized CWAs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected CWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TICs can be detected using fielded technologies/equipment?	Considering only TICs listed in <i>USACHPPM Report 47-EM-6154-03: ITF-40</i> . (FOUO)	10: All TICs listed in ITF-40 9: ≥90% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 8: ≥80% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 2: ≥20% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 1: 1%–20% of 33 high-priority critical acutely toxic airborne TICs according to ITF-40 0: None of 33 high-priority critical acutely toxic airborne TICs according to ITF-40
M5	All TICs can be identified using fielded technologies/equipment?	Ability to classify or identify detected TICs.	10: Identify all detected TICs 7: Identify some detected TICs; classify others 5: Classify detected TICs 0: Neither classify nor identify detected TICs
M6	All TICs can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TICs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect chemical hazards?	Time period from CWA/TIC sampling to analysis output. Linear scale 1–10.	10: ≤12 sec 7: ≤30 sec 2: ≤60 sec 1: >60 sec
M8	Distance between chemical hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M9	Chemical hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M10	Chemical hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards.	10: Complete capability 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary’s weaponized CWAs and for all TICs using fielded technologies/equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability

	FAA Measure	Elaboration	Scale
M13	There is effective DOTLPPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPPF for the task to be performed with this system are addressed 0: DOTLPPF is inadequate or does not exist for the task to be performed with this system

¹ Limited—Detects only GA, GB, GD (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 30 sec.); HD (2 mg/m³ – IDLH level within 15 sec.), and L (0.38 mg/m³ within 15 sec.). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

² Identifies detected agents and TICs.

³ Does not quantify amount of detected agents or TICs.

⁴ Detects pepper spray and mace (but these are not included in the *ITF-40* 33 high-priority critical acutely toxic airborne toxic industrial chemicals.)

⁵ Does not quantify TIC concentrations because it does not detect any TICs.

⁶ Detects in less than 30 seconds.

⁷ Not relevant to this task (N/A).

⁸ Identifies hazards within 30 seconds.

⁹ Sampling collection for future analysis capability does not exist with this technology/equipment.

¹⁰ COTS detector. Unknown if sufficient DOTLPPF in place.

¹¹ Limited—Detects only GA, GB, GD, GF, VX, HD, and L (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF; 10X IDLH for VX; 1/20 IDLH for HD). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

¹² Classifies agents as being nerve or blister agents.

¹³ Provides relative hazard indication (relative quantification).

¹⁴ No TICs detected.

¹⁵ Does not identify or classify any TICs because it does not detect any TICs

¹⁶ Detects hazards in less than 1 minute. Note: Requires up to 8 hours to warm up after 30 days storage.

¹⁷ Classifies agents within one minute.

¹⁸ There is effective DOTLPPF in place to conduct task with this system.

¹⁹ Headspace sampling system.

²⁰ Presumably detects all 12 CWA of interest (claims low ppb to ppt detection limits; 1 ppb = 0.01 mg/m³ for VX – IDLH level; 0.006–0.007 mg/m³ for G-agents – ~1/10 IDLH levels; 0.007 mg/m³ for HD – 1/285 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Detects vapors only.

²¹ Identifies detected agents and TICs (through MS).

²² Provides absolute quantification capability for all detected agents and TICs (specifically provides composition intensities, e.g., ppm).

²³ Presumably detects most TICs in ITF-40. Detects vapors only.

²⁴ Detects within 10 minutes.

²⁵ Hazards are not identified in time to treat, especially if lethal fast-acting agents at high concentrations are involved.

²⁶ Detects GA, GB, GD, GF, VX, HD, HN and L liquid (>0.02 mL) droplets.

²⁷ Classifies as G-, H- (and L), and V- agents.

²⁸ Classifies agents within 30 seconds.

²⁹ Detects GA, GB, GD, GF, VX, HD, HN and L liquid (>100 µL) droplets.

³⁰ Does not identify or classify detected agents or TICs.

³¹ Detects within 20 seconds.

³² Does not identify or classify agents or TICs.

³³ Assuming probe does not affect system performance.

³⁴ Limited—Detects only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, and L (10 mg/m³ – 5X IDLH level for HD, unknown L). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), and <300 (L for eye) mg-min/m³. Does not detect concentrations which can cause low-level (e.g., ocular) effects; detects vapors only; and is susceptible to chemical interference (false positives and negatives).

³⁵ Classifies detected G and V agents as nerve agents; identifies detected H and L agents.

³⁶ Relative hazard level provided through three different sensitivity levels.

³⁷ Classifies or identifies agents within 30 seconds.

³⁸ Detects GA, GB, GD, GF (0.005 mg/m³ – 1/20 IDLH for GA/GB, 1/10 IDLH for GD/GF), VX (0.02 mg/m³ – 2X IDLH level), HD (2mg/m³ – IDLH level), HN, L (9 mg/m³), CX (3 mg/m³), AC (9 mg/m³ – below IDLH), and CK (8 mg/m³) in vapor form and is susceptible to chemical interference. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), and 7,000 (CK) mg-min/m³.

³⁹ Classifies G and V agents as nerve agents; identifies blood and blister agents.

⁴⁰ Detects TICs AC and CK.

⁴¹ Identifies detected TICs.

⁴² Detects within 15 minutes.

⁴³ Hazards are identified in time to treat when M8 paper is used for liquid detection. Hazards are not identified in time to treat when ampoules are used for vapor detection (delayed response; 15–20 minutes).

⁴⁴ Presumably detects all 12 agents of interest; detects all states (claims 5 ppb detection limit for air preconcentrator = 0.05 mg/m³ for VX – 5X IDLH level, 0.030–0.035 mg/m³ for G-agents: 1/3–2/3 IDLH levels, 0.035 mg/m³ for HD – 1/57 IDLH level). According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³. Degraded performance: (P5, 9, 10) Not waterproof when operating; (M5) Negligible personnel experience

⁴⁵ Identifies sampled agents and TICs (through mass spectrometry)

⁴⁶ Presumably detects all TICs in ITF-40; detects all states.

⁴⁷ Will detect only GA, GB, GD, GF, and VX (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD/GF, 10X IDLH for VX, within 30 sec.); HD, HN3, and L (2.0 mg/m³ – IDLH level – within 120 sec.), AC (22 mg/m³ – below IDLH level, within 60 sec.), CK (20 mg/m³ within 60 sec.), and CG vapors only, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.

⁴⁸ Will classify agents as nerve, blister, blood, and choking agents.

⁴⁹ Will provide absolute quantification capability for all detected agents and TICs.

⁵⁰ Will detect Cl, HBr, HCl, AC, HF, HS, and CG as an objective.

⁵¹ Will detect hazards within 1 minute.

⁵² Will classify hazards within 1 minute.

⁵³ This technology/equipment will not have sampling collection for future analysis capability.

⁵⁴ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.

⁵⁵ Will detect only GA, GB, GD, GF (0.1 mg/m³ – IDLH level for GA/GB, 2X IDLH level for GD/GF within 30 sec.); VX (0.04 mg/m³ – 4X IDLH level within 90 sec.); HD, HN3, L (2.0 mg/m³ – IDLH level within 120 sec.); AC (22 mg/m³ – below IDLH level within 60 sec.); CK (20 mg/m³ within 60 sec.); and CG in vapor and aerosol forms, and will not detect concentrations which can cause low-level (e.g., ocular) effects. According to FM 3-11.9, incapacitating doses are 300 (GA for resting person), 75 (GB for resting person), 75–300 (GD), 50 (VX), 150 (inhaled HD), <300 (L for eye), 7,000 (CK), and 1,6000 (CG) mg-min/m³.

⁵⁶ Will detect ammonia, arsine, chlorine, diborane, fluorine, hydrogen bromide, hydrogen cyanide, hydrogen fluoride, nitric acid, phosgene, phosphorus trichloride, sulphur dioxide, and sulphuric acid.

- ⁵⁷ Will identify all detected TICs as an objective.
- ⁵⁸ Will detect hazards within 2 minutes.
- ⁵⁹ Will classify or identify CWAs and TICs within 2 minutes.

5.10.3 Functional Solution Analysis

5.10.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of real-time or near-real-time TIC detection and identification capabilities.
Non-Materiel Solutions: None
- 2. Deficiency:** General inability to detect deposited low-volatility agents and dusty agents.
Non-Materiel Solutions: None
- 3. Deficiency:** General inability to detect low-volatility CWAs (e.g., VX and, to a lesser extent, HD) at or below IDLH levels.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable MS units (e.g., Viking SpectraTrak and HAPSITE).
- 4. Deficiency:** Susceptibility to chemical interference.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable MS units (e.g., Viking SpectraTrak and HAPSITE).
- 5. Deficiency:** Lack of real-time or near-real-time CWA identification capabilities.
Non-Materiel Solutions: None
- 6. Deficiency:** Lack of agent quantification capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on portable MS units (e.g., Viking SpectraTrak and HAPSITE).
- 7. Deficiency:** Lack of detector that also takes physical samples for future analysis capability.
Non-Materiel Solutions: None

5.10.3.2 IMA Assessment Summary

Table 5.10-2 identifies 12 ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting chemical hazards in the atmosphere. Advances in orthogonal technologies may be able to address all identified deficiencies.

Table 5.10-2. TASENS 10. IMA Assessment

TASENS 10. Sense the presence of chemical hazards on humans, MWAs and remains ¹												
Ideas for Material Approaches (IMA)	Mass Spectrometry ²	IR, UV, and Microwave Spectroscopy ³	Ion Mobility Spectrometry (IMS) ⁴	Photoacoustic Infrared Spectroscopy	Chemiluminescence Detection ⁵	Surface Acoustic Wave Technology ⁶	Colorimetric	Multiple, Complementary Technologies (Orthogonal) ⁷	Raman Spectroscopy	Photo-ionization Technology	Flame Photometry ⁸	Electrochemical (Chemiresistor) Sensor Technology
Lack of real-time or near-real-time TIC detection and identification capabilities. ⁹		X	X		X ¹⁰	X	X	X	X			
General inability to detect deposited low-volatility agents and dusty agents.	X	X				X	X	X	X		X	X
General inability to detect low-volatility CWAs (e.g., VX and, to a lesser extent, HD) at or below IDLH levels. ¹¹	X	X	X			X		X ¹²	X		X	
Susceptibility to chemical interference.	X							X				
General lack of agent quantification capabilities. ¹³	X			X		X		X	X		X	
Lack of real-time or near-real-time CWA identification capabilities.		X	X			X		X	X			
Lack of detector that also takes samples for future analysis capability. ¹⁴	X	X	X	X	X	X	X	X	X	X	X	X

¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.miiis.edu/pubs/week/031124.htm>; Detection and Measurement of Chemical Agents, <http://books.nap.edu/html/terrorism/ch4.html>; Conventional analytical methods for chemical warfare agents, <http://www.iupac.org/publications/pac/2002/pdf/7412x2281.pdf>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>

² Includes GC/MS, LC/MS, Matrix-Assisted Laser Desorption Ionization with Time-of-Flight Mass Spectrometry (MALDI-TOF MS)

³ Examples include Thermal Infrared Spectroscopy, FTIR, long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), LWIR Polarization, mid-wave IR (MWIR) DISC/DIAL, MWIR Polarization, Near-IR Scattering, NIR Laser-Induced Breakdown Spectroscopy (LIBS) UV Fluorescence, Multiband Brillouin Scattering, LWIR FTIR, LWIR Filtered Forward-Looking IR (FLIR), and Microwave (GHz and THz) Spectroscopy.

⁴ May be coupled with GC; External Second Gate, Fourier Transform Ion Mobility Spectrometry approach can improve sensitivity and selectivity.

⁵ For example, PCD.

⁶ May be coupled with GC.

⁷ Examples include SAW/IMS, IMC/SAW/Electrochemical/SCCell (S-CAD).

⁸ May be coupled with GC or reversed-phase liquid chromatography (RPLC).

⁹ Increasing the number of TICs identified by JCAD and/or JMCBDS is a potential solution.

¹⁰ Classifies, but generally does not identify, agents.

¹¹ Distributing more HAPSITES and Viking Spectratraks is a potential solution.

¹² MS and IMS.

¹³ Distributing more HAPSITES and Viking Spectratraks is a potential solution. JCAD and/or JMCBDS are expected to eliminate capability gap.

¹⁴ All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.11 Task TASENS 11: Sense the presence of biological hazards on humans, MWAs, and remains

5.11.1 Functional Area Analysis

5.11.1.1 Definition

To sense the presence or absence of biological hazards (includes biological warfare agents and TIB material) on humans, MWAs, and remains. Includes external detection of contamination prior to the manifestation of symptoms. Diagnosis of internal exposure is not part of this task as it is addressed in a separate Sustain task. Includes the functions of detection, identification, and quantification of the hazard. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known hazard locations, and collection of samples for further analysis. Encompasses “detect to warn” and “detect to treat” situations. The evaluation encompasses all biological hazards of military and medical importance.

5.11.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.11.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.11.1.2.2 Lateral Task: N/A

5.11.1.2.3 Supporting Task: N/A

5.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, arctic, and arid climates. (C1.3.1)
2. Summer, winter seasons. (C1.3.1.1)
3. Stormy weather. (C1.3.1.3)
4. Hot, very cold air temperature. (C1.3.1.3.1)
5. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
6. Heavy precipitation intensity. (C1.3.1.3.6.2)
7. Negligible light. (C1.3.2.1)
8. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)

5. Poor personnel morale. (C2.2.4.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Poor multinational integration. (C2.3.1.2)
8. Deployment movement and maneuver—includes logistical requirements such as lift, supply, and transportation. (C2.5)
9. Limited or no host nation support. (C2.8.5)
10. Ambiguous threat existence. (C2.9.3)

Civil

1. High mission priority. (C3.1.3.2)
2. Negligible language translators. (C3.2.1.2)
3. High health risk. (C3.3.1.5)
4. Significant refugee care responsibility. (C3.3.2.3)
5. TIB materials present in the civilian sector. (C3.3.7.5)

5.11.2 Functional Needs Analysis

5.11.2.1 Capability and Deficiency Assessment Summary

Table 5.11-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are three current capabilities used to accomplish this task and one projected capabilities to be added in the future (JBAIDS in the near/mid term). The individual capabilities differ in their abilities to meet the identified standards.

Overall Capability and Deficiency Summary

The overall current capability is assessed as “yellow.” Many, if not most, BWAs can be presumptively detected and identified by collecting samples from personnel, MWAs, and remains through physical sampling, followed by manual sample preparation and the following laboratory and field-deployable analytical techniques: immunochromatographic HHAs, which are part of the BSK; ELISA; and RT-PCR, as used by RAPID. Of the 25 BWAs described in the *Medical Management of Biological Casualties*, a complete set of HHAs can detect and identify all agents with the possible exception of the viral hemorrhagic fever agents; however, the BSK contains eight different HHAs and thus detects only eight BWAs per kit. The eight agents in the kit may be assembled to reflect the threat.¹ A comprehensive set of ELISAs, which are laboratory-based, can ostensibly detect and identify all 25 BWAs (as well as any TIB), assuming that an antigen or antibody has been isolated for each agent. Like all PCR-based technologies, RAPID can, with the appropriate reagents, detect and identify all BWA and TIB pathogens, but none of the toxins (since the toxins, unless contaminated with the source organisms, do not provide any genetic material). HHAs and RAPID can generically quantify detected agents

¹ The collection of surface samples to use in HHA results in a sample for further analysis. Coolers/temperature-controlled equipment to hold and maintain the sample needs to be available if the sample is not immediately evacuated.

(HHAs only through the aide of a reader), whereas some varieties of ELISAs provide absolute quantification capabilities.

Overall current task deficiencies include the lack of integrated sample collection, detection, identification, and quantification capability for BWAs on personnel, MWAs, and remains; real-time or near-real-time detection, identification, and quantification capability for sampled BWAs; field analysis verification capabilities; as well as TIB detection capabilities.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” Near/mid-term capability JBAIDS Block I will detect 11 BWA pathogens (as a threshold requirement), whereas Block II will detect the same 11 BWA pathogens plus the four toxins of interest (as a threshold requirement). JBAIDS will also quantify agent concentrations in the analyzed sample. It will require 25–40 minutes for analysis output following sample preparation, and will thus provide a complete identify-to-treat capability.

All of the overall current task deficiencies are likely to remain deficiencies in the near/mid term.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.11-1. TASENS 11: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current – Near/Mid – Far														
BSK	3 ¹	10 ²	0 ³	0 ⁴	N/A ⁴	N/A ⁴	6 ⁵	N/A ⁶	N/A ⁷	10 ⁷	0 ⁸	N/A ⁸	0 ⁹	5 ¹⁰
Physical Sampling/ELISA	10 ¹¹	10 ²	10 ¹²	10 ¹³	10 ¹⁴	10 ¹⁴	1 ¹⁵	N/A ⁷	N/A ⁷	5 ¹⁵	0 ¹⁶	N/A ¹⁶	0 ¹¹	Unk
Physical Sampling/RAPID	8 ¹⁷	10 ²	5 ¹⁸	5 ¹⁹	10 ²⁰	5 ²⁰	1 ²¹	N/A ⁷	N/A ⁷	5 ²¹	0 ¹⁶	N/A ¹⁶	0 ¹⁰	Unk
Near/Mid – Far														
JBAIDS Blocks I/II	4/6 ²²	10 ²³	10 ²⁴	0 ²⁵	N/A ²⁸	N/A ²⁸	0 ²⁶	N/A ⁷	N/A ⁷	10 ²⁷	10 ²⁸	10 ²⁹	0 ³⁰	N/A ³¹
Current Overall Capability	6	10	5	4	10	8	5	N/A	N/A	10	3	10	0	5
Near/Mid-Term Overall Capability	6	10	6	3	10	8	5	N/A	N/A	10	5	10	0	N/A ¹⁰¹
Far-Term Overall Capability	6	10	6	3	10	8	5	N/A	N/A	10	5	10	0	N/A ¹⁰¹

	FAA Measure	Elaboration	Scale
M1	All of a potential adversary's weaponized BWAs can be detected using fielded technologies/equipment, regardless of agent physical properties, states, and concentrations?	Number of the 25 biological agents described in the <i>Medical Management of Biological Casualties</i> that are detected. Fourteen of the 25 agents are as follows: Anthrax (<i>Bacillus Anthracis</i>); Brucellosis (<i>Brucellae</i>); Glanders (<i>Burkholderia mallei</i>); Melioidosis (<i>Burkholderia pseudomallei</i>); Q Fever (<i>Coxiella burnetii</i>); Plague (<i>Yersinia pestis</i>); Tularemia (<i>Francisella tularensis</i>); Botulinum toxin; Ricin; SEB; T-2 Mycotoxins; Smallpox (variola major and minor); Viral Equine Encephalities (e.g., VEE, WEE, and EEE); and Ebola and Marburg hemorrhagic fever viruses. Linear from 2–10.	10: All 25 BWAs detected 8: ≥20 BWAs detected 6: ≥15 BWAs detected 4: ≥10 BWAs detected 2: ≥5 BWAs detected 1: ≥1 BWA detected 0: No BWAs detected
M2	All of a potential adversary's weaponized BWAs can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected BWAs.	10: Identify detected BWAs 7: Identify some detected BWAs; classify others 5: Classify detected BWAs 3: Some detected BWAs are classified or identified 0: Neither identify nor classify detected BWAs
M3	All of a potential adversary's weaponized BWAs can be quantified using fielded technologies/ equipment?	Ability to provide snapshot concentration of detected BWAs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability

	FAA Measure	Elaboration	Scale
M4	All TIB material can be detected using fielded technologies/equipment?	TIB material includes medical waste, raw sewage, and vaccine-related biologics. Pathogens and toxins within TIB material are what are generally detected.	10: All pathogens and toxins within TIB material, including medical waste, raw sewage, and vaccine-related biologics can be detected 5: All TIB pathogens or toxins within one or more categories (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 3: Some TIB pathogens and toxins within one category (i.e., medical waste, raw sewage and vaccine-related biologics) can be detected 0: No TIB pathogens and toxins can be detected
M5	All TIB material can be identified using fielded technologies/equipment?	Ability to identify or classify (e.g., as bacteria, toxin, or virus) detected TIB material.	10: All pathogens and toxins within TIB material can be identified 7: Identify some TIB pathogens and toxins; classify others 5: Classify detected TIB pathogens and toxins 3: Some detected TIB pathogens and toxins can be classified or identified 0: Neither classify nor identify detected TICs
M6	All TIB material can be quantified using fielded technologies/equipment?	Ability to provide snapshot concentration of detected TIBs.	10: Absolute quantification 5: Generic quantification 0: No quantification capability
M7	Time to detect biological hazards?	Time period from BWA/TIB sampling to analysis output. Linear scale 2–9. Applies to point detectors only.	10: ≤1 minute 9: ≤4 minutes 8: ≤7 minutes 7: ≤10 minutes 4: ≤40 minutes 2: ≤60 minutes 1: >60 minutes
M8	Distance between biological hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M9	Biological hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A

	FAA Measure	Elaboration	Scale
M10	Biological hazards are identified in time to treat forces?	Based on capability and time required to identify or classify hazards, as well as rate-of-action of those hazards. Of all considered BWAs, ricin may require the most rapid response. Immunoglobulin therapy must be administered within 1 hour of ricin exposure to be effective.	10: Complete capability (<1 hour) 5: Partial capability 0: No capability
M11	Sampling collection procedures available for all of a potential adversary’s weaponized BWAs and for all TIB material using fielded technologies/ equipment?	Refers to physical sampling for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M12	Procedures maintain integrity of sample?	Refers to a physical sample for future analysis.	10: Complete capability 5: Partial capability 0: No capability
M13	Time to validate the presence of biological hazards in the atmosphere?	Refers to confirmatory identification.	10: Rapidly—validation performed expeditiously by particular technology/equipment 5: Moderately delayed—mobile analysis tools can validate onsite 0: Delayed—off-site laboratory analysis required for validation
M14	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of the task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Current and near-future HHAs detect all BWAs with the possible exception of the viral hemorrhagic fevers. The HHA sensitivity is 10⁵–10⁶ CFU/mL (*B. anthracis*) and 50–1200 ng/mL (Botulinum toxin A and Botulinum toxin F, respectively). Degraded performance: (C6) TIB material present in civilian sector. Susceptible to interference (false positives and negatives); (M3) Minimal time available. Requires sample preparation prior to applying sample to assay.

² All detected BWAs are identified.

³ Does not absolutely quantify agent. However, may provide relative indication of quantity, but only through the use of a reader. Soldiers will not likely have the reader.

⁴ According to specifications, does not detect any TIBs.

⁵ Detects within 15 minutes.

⁶ Not relevant to this task (N/A).

⁷ Immediately identifies all detected hazards (detection requires up to 15 minutes) and thus provides complete identify-to-treat capability.

⁸ Does not collect a sample for future analysis.

⁹ Requires samples to be confirmed off site in laboratory.

¹⁰ There is effective DOTLPF in place to conduct task, at least for bacillus bacteria (specifically anthrax). Procedures for other agents are probably similar.

-
- ¹¹ Ostensibly all BWAs can be detected by ELISA. ELISA's sensitivity is 10^5 – 10^6 CFU/mL (*B. anthracis*); 10–100 PFU/mL of Venezuelan Equine Encephalitis virus; and 625 pg/mL of Staphylococcal Enterotoxin B (aerosol) and greater than 5 ng/mL of ricin.
- ¹² Some varieties of ELISA can absolutely quantify the antigen or antibody concentration.
- ¹³ Theoretically, any agent (i.e., antigen or antibody) for which an ELISA has been designed can be detected through this method; however, only one particular pathogen or toxin antigen or antibody can be tested per ELISA model.
- ¹⁴ A particular TIB pathogen or toxin is identified if it is detected, since ELISA is highly specific and detects a particular agent.
- ¹⁵ Typically requires 1–2 hours (following sample collection and preparation) for detection, identification, and if applicable, quantification, primarily because of incubation time.
- ¹⁶ Not designed for sample collection for future analysis.
- ¹⁷ RAPID may be able to detect all pathogens; PCR does not detect toxins, though the toxic material may be contaminated with source genetic material (In this assessment, it is assumed that this is not the case). Standard PCR has a sensitivity of 10–100 CFU/mL bacteria (*B. anthracis*); and 15 fg–1 pg or 100–1 million copies of the complementary DNA for viruses.
- ¹⁸ RAPID, through RT-PCR, may provide generic quantification.
- ¹⁹ Theoretically, any TIB pathogen can be detected with appropriate reagents; toxins cannot be detected unless contaminated with source genetic material.
- ²⁰ All detected TIBs are identified.
- ²¹ Detects and identifies within 30 minutes following sample preparation, but sample preparation requires several hours.
- ²² Block I will detect Anthrax; Brucella; Ebola VHF virus; Marburg VHF virus; Viral Encephalitis viruses (VEE/WW/EEE); Glanders; Melioidosis; Plague; Q Fever; Smallpox; and Tularemia (and Typhus) as a threshold requirement; and Crimean-Congo hemorrhagic virus; Dengue fever; Hantaviruses; and Rift Valley Fever Virus (and Cholera, Cryptosporidium; E. coli; Influenza; Salmonella; and Shigella) as an objective; Block II will add toxins Botulinum, microcystins, ricin, SEB, and T-2 Mycotoxins.
- ²³ Will identify all detected agents.
- ²⁴ Will quantify the concentration in the sample.
- ²⁵ Will not detect any TIBs.
- ²⁶ Will detect and identify within 40 minutes (25-minute objective) for Blocks I and II following sample preparation.
- ²⁷ Will immediately identify all detected hazards (detection will require 25–40 minutes) and thus will provide complete identify-to-treat capability.
- ²⁸ Will provide physical sample collection capability for future analysis.
- ²⁹ Will maintain integrity of physical sample.
- ³⁰ Will require samples to be confirmed off site at laboratory.
- ³¹ Future system(s). Thus, DOTLPF is also future and cannot be evaluated.

5.11.3 Functional Solution Analysis

5.11.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Lack of integrated detection, identification, and quantification capability for BWAs on personnel and MWAs.
Non-Materiel Solutions: None
2. **Deficiency:** Lack of real-time or near-real-time detection, identification, and quantification capability for BWAs on personnel and MWAs.
Non-Materiel Solutions: None
3. **Deficiency:** Validation of findings requires laboratory testing.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to permit validation by a reliable on-site detection/identification capability (e.g., portable PCR) as confirmatory detection/identification is ultimately dependent upon doctrine, not materiel capabilities.
Training (partial): Train personnel in analytical techniques to ensure accuracy.
4. **Deficiency:** Lack of TIB detection capability.
Non-Materiel Solutions: None
5. **Deficiency:** Lack of detector that also takes samples for future analysis capability.
Non-Materiel Solutions: None

5.11.3.2 IMA Assessment Summary

Table 5.11-2 identifies nine ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting biological hazards on personnel and MWAs. Advances in MS; immunoassays; flame photometry; tissue-based detection; Raman, IR, UV, or microwave spectroscopy; or orthogonal technologies may be able to address all identified deficiencies.

Table 5.11-2. TASENS 11: IMA Assessment

TASENS 11: Sense personnel and MWAs for biological hazards ¹									
Identified Gaps	Ideas for Material Approaches (IMA)								
	Mass	Immunoassay (Antibody-Based) ³	Genetic (Nucleic Acid-Based) ⁴	Tissue-Based	Flame Photometry ⁵	Orthogonal ⁶ (Immunoassay/Nucleic Acid-Based)	Colorimetric ⁷	Raman Spectroscopy ⁸	IR, UV, and Microwave Spectroscopy ⁹
Lack of integrated detection, identification, and quantification capability for BWAs on personnel and MWAs. ¹⁰	X	X	X	X	X	X	X	X	X
Lack of real-time or near-real-time detection, identification, and quantification capability for BWAs on personnel and MWAs. ¹¹	X	X		X	X	X	X	X	X
Lack of TIB detection capability.	X	X	X	X	X	X	X	X	X
Lack of detector that also takes samples for future analysis capability. ¹²	X	X	X	X	X	X	X	X	X

¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.miis.edu/pubs/week/031124.htm>; Detection and Measurement of Biological Agents. <http://books.nap.edu/html/terrorism/ch6.html>; National Institute of Justice. *An Introduction to Biological Agent Detection Equipment for Emergency First Responders*. 2001. <http://www.ojp.usdoj.gov/nij/pubs-sum/190747.htm>

² Includes GC/MS, LC/MS, Gas Chromatography-Ion Trap Tandem Mass Spec (GC-MS-MS), Matrix-Assisted Laser Desorption Ionization (MALDI) MS.

³ Includes SAW technology.

⁴ Includes PCR and RT-PCR amplification, DNA microchip technology, SAW technology.

⁵ Philippe, Adam, Damien Descroix and Jean-Pierre Chiaroni. "Flame Photometry for Biological Detection." Proceedings from the 6th CBW Protection Symposium. 1998.

⁶ Includes nucleic acid/immunoassay technologies (e.g., PCR and immunological techniques), electrochemiluminescence/equilibrium immunoassay, Fluorescence correlation spectroscopy/PCR.

⁷ ChemSensing Colorimetric Sensor.

⁸ NIR Raman, Visible Light (VIS) Surface-Enhanced Raman, VIS Raman, UV Raman, Multiband Resonance-Enhanced Raman, Multiband Surface-Enhanced Raman.

⁹ Thermoluminescence/FTIR, long-wave IR Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), LWIR Polarization, mid-wave IR (MWIR) DISC/DIAL, MWIR Polarization, near-IR (NIR) Laser-Induced Breakdown Spectroscopy (LIBS) UV Fluorescence, Multiband Brillouin Scattering.

¹⁰ Sample collection, independent of the detector, is one of the main, if not the main, problem. Quantification cannot be achieved without efficient, standardized sample collection and preparation (if needed). JBAIDS is expected to detect, identify, and quantify all BWAs on personnel and MWAs, and thus eliminate capability gap.

¹¹ Reducing the sample preparation and response times for JBAIDS is a potential solution.

¹² All IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.12 Task TASENS 12: Sense the presence of radiological hazards on humans, MWAs, and remains

5.12.1 Functional Area Analysis

5.12.1.1 Definition

To sense the presence or absence of radiological substances on humans, MWAs, and remains. Includes external detection of contamination prior to the manifestation of symptoms. Diagnosis of internal exposure is not part of this task as it is addressed in a separate Sustain task. Includes the functions of detection, identification, and quantification of the substance. Also includes the requirement to determine the extent and physical properties of contamination, monitoring of known radiological locations, and collection of samples for further analysis. Encompasses “detect to warn” and “detect to treat” situations.

5.12.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.12.1.2.1 Supported Tasks: OPSSENS 1, OPSSENS 4, OPSSENS 7

5.12.1.2.2 Lateral Task: N/A

5.12.1.2.3 Supporting Task: N/A

5.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, arctic, and arid climates. (C1.3.1)
2. Summer, winter seasons. (C1.3.1.1)
3. Stormy weather. (C1.3.1.3)
4. Hot, very cold air temperature. (C1.3.1.3.1)
5. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
6. Heavy precipitation intensity. (C1.3.1.3.6.2)
7. Negligible light. (C1.3.2.1)
8. Strong nuclear atmosphere weapons effects. (C1.3.3)
9. Moderate nuclear radiation effects. (C1.3.3.1.2)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)

5. Poor personnel morale. (C2.2.4.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Poor multinational integration. (C2.3.1.2)
8. Deployment movement and maneuver—includes logistical requirements such as lift, supply, and transportation. (C2.5)
9. Limited or no host nation support. (C2.8.5)
10. Ambiguous threat existence. (C2.9.3)

Civil

1. High mission priority. (C3.1.3.2)
2. Negligible language translators. (C3.2.1.2)
3. Significant refugee care responsibility. (C3.3.2.3)
4. TIR materials present in the civilian sector. (C3.3.7.5)

5.12.2 Functional Needs Analysis

5.12.2.1 Capability and Deficiency Assessment Summary

Table 5.12-1 presents individual and overall current, near/mid-term, and far-term capabilities to perform the task to the designated standards. There are 13 current capabilities used to accomplish this task. The capabilities include a range of portable RADIAC devices and dosimeters.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Most current RADIACS detect and identify beta radiation and detect, identify, and quantify gamma radiation. All RADIACs perform their functions in real time (though the level of confidence increases with increased sampling time) and thus provide a complete detect-to-warn capability. Many also automatically calculate the cumulative dose. Dosimeters generally measure the total dose from gamma radiation exposure. Most are not self-indicating and need to be placed within a reader to retrieve the dose information.

There is no single capability that can perform the task to all of the designated standards. ADM 300 detects alpha, beta, gamma, and x-radiation, but like all RADIACs, it detects, identifies, and quantifies only the radiation, not the radioisotope. Furthermore, like all RADIACs and dosimeters, the ADM-300, must be exposed to radiation to detect it. Overall task deficiencies include the lack of radioisotope identification capabilities, reliable alpha detection capabilities, monitors that can detect all types of radiation, and detectors that take sample for future analysis.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.12-1. TASENS 12: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8
Current – Near/Mid – Far								
ADM-300	8 ¹	5 ²	10 ³	10 ⁴	N/A ⁵	N/A ⁸	5 ⁶	10 ⁷
AN/PDQ-1 MFR ⁸	4 ⁹	5 ²	5 ¹⁰	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-27	4 ⁹	5 ²	5 ¹²	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-43	4 ⁹	5 ²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-56	2 ¹¹	N/A ¹²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-63	4 ⁹	5 ²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-65	2 ¹³	N/A ¹²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/PDR-75	4 ¹⁴	0 ¹⁵	10 ¹⁶	0 ¹⁷	N/A ⁸	N/A ⁸	5 ¹⁸	10 ⁷
AN/PDR-77	8 ¹⁹	5 ²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/UDR-13	4 ²⁰	5 ²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
AN/VDR-2	4 ⁹	5 ²	10 ³	10 ⁴	N/A ⁸	N/A ⁸	5 ⁶	10 ⁷
CP-95/DT-60	2 ²¹	N/A ¹²	10 ²²	0 ²¹	N/A ⁸	N/A ⁸	5 ²³	10 ⁷
IM-143/ IM-93	2 ³³	N/A ¹²	10 ³⁴	10 ²⁴	N/A ⁸	N/A ⁸	5 ³⁵	10 ⁷
Current Overall Capability	5	5	9	10	N/A ⁸	N/A ⁸	5	10
Near/Mid-Term Overall Capability	5	5	9	10	N/A ⁸	N/A ⁸	5	10
Far-Term Overall Capability	5	5	9	10	N/A ⁸	N/A ⁸	5	10

	FAA Measure	Elaboration	Scale
M1	All radiological hazards (including TIR material) can be detected using fielded technologies/equipment?	Number of radiation types (i.e., alpha, beta, gamma, neutron, and x-radiation) detected. Note: Fielded technologies/equipment detect radiological hazards by detecting the radiation emitted from these hazards. TIR material includes DU, a common battlefield hazard resulting from certain types of ammunition and damaged armor.	10: All five types 8: Four types 6: Three types 4: Two types 2: Single type 0: No radiological hazards detected
M2	All radiological hazards (including TIR material) can be identified using fielded technologies/ equipment?	Ability to identify type of radiation detected or the radioisotope emitting the radiation. Note: Fielded technologies/equipment that identify radioisotope also identify the type(s) of radiation detected.	10: Identifies radioisotope emitting radiation 5: Identifies type of radiation detected 0: No identification capability

	FAA Measure	Elaboration	Scale
M3	All radiological hazards (including TIR material) can be quantified using fielded technologies/ equipment?	Ability to quantify activity of radiological material (i.e., Cu or Bq), or the exposure (i.e., Roentgen or Coulomb/kg) or dose rate (rad, rem, Gy, or Sv) from emitted radiation.	10: Absolute quantification 5: Generic quantification (or absolute quantification of one radiation type and no quantification of another type) 0: No quantification capability
M4	Time to detect radiological hazard?	Time period from exposure to radiation to analysis output.	10: Near real time 0: Not near-real time
M5	Distance between radiological hazard and detector for accurate detection?	This measure is not relevant to this task.	N/A
M6	Radiological hazards are detected in time to warn forces and take appropriate protective measures?	This measure is not relevant to this task.	N/A
M7	Radiological hazards are identified in time to treat forces?	A complete capability requires both near-real-time identification of the emitted radiation type(s) and radioisotope. Identification of the emitted radiation type(s) enables appropriate medical response to radiation exposure and identification of the radioisotope determines to appropriate medical course of action to radiological material internalization.	10: Complete capability (near-real-time identification of radioisotope and emitted radiation type[s]) 5: Partial capability (Delayed identification of emitted radiation type[s]) 0: No capability (no identification capability)
M8	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operation 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Detects alpha, beta, gamma, and x-radiation emitted from radiological materials.

² Identifies type of radiation, but not radioisotope.

³ Absolutely quantifies radiation level.

⁴ Real-time detection. Level of confidence increases with increased sampling time and radiation levels.

⁵ Not relevant to this task (N/A)

⁶ Provides partial identify-to-treat capability since immediately identifies detected radiation type, but not the radioisotope.

⁷ There is effective DOTLPF in place to conduct task with this system.

⁸ In combination with OA-9449/PDQ probe. The MFR alone detects gamma radiation; with the probe, it measures gamma radiation and detects beta radiation.

⁹ Detects beta/gamma radiation emitted from radiological materials.

- ¹⁰ Absolutely quantifies gamma radiation level; detects, but does not quantify, beta radiation.
- ¹¹ Detects alpha radiation emitted from radiological materials (particularly plutonium).
- ¹² Detects only one type of radiation, so identification capability is not applicable.
- ¹³ Detects gamma radiation emitted from radiological materials (particularly plutonium).
- ¹⁴ The DT-236 dosimeter records the total dose to gamma and neutron radiation. The CP-696 reader is required to retrieve the dose information.
- ¹⁵ Does not differentiate between dose received from gamma radiation and dose received from neutron radiation.
- ¹⁶ Absolutely quantifies total gamma and neutron dose absorbed by dosimeter.
- ¹⁷ Dose can be viewed only when dosimeter is placed within reader; therefore, radiation exposure cannot be detected in near-real time.
- ¹⁸ Through reader, displays total dose to penetrating (i.e., gamma and neutron) radiation, which allows for partial identify-to-treat capability.
- ¹⁹ Detects alpha, beta, gamma, and x-radiation emitted from radiological materials.
- ²⁰ Detects gamma/neutron radiation emitted from radiological materials.
- ²¹ Dosimeter indicates total dose to gamma radiation only.
- ²² Absolutely quantifies total gamma radiation dose absorbed by dosimeter.
- ²³ Provides partial identify-to-treat capability. As dosimeter only detects gamma radiation, an indication of a significant dose could suggest and help treat acute radiation syndrome, e.g.
- ²⁴ As a self-indicating pocket dosimeter, possibly allows for near-real-time detection of gamma radiation; however, dose rate must be high for increase in dose to be noticeable during a short period.

5.12.3 Functional Solution Analysis

5.12.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Lack of reliable alpha-detection capabilities.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300, AN/PDR-56, and AN/PDR-77.
2. **Deficiency:** Lack of monitors that can detect most or all types of radiation.
Non-Materiel Solutions: *Training (partial):* Increase training of personnel on ADM-300.
3. **Deficiency:** Lack of radioisotope identification capabilities.
Non-Materiel Solutions: None
4. **Deficiency:** Lack of detector that can also take samples for future analysis capability.
Non-Materiel Solutions: None

5.12.3.2 IMA Assessment Summary

Table 5.12-2 identifies three ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with detecting radiological hazards in the atmosphere. Advances in scintillation or semiconductor radiation detection technologies may be able to address all identified deficiencies.

Table 5.12-2. TASENS 12: IMA Assessment

Identified Gaps	Gas-filled Radiation Detectors ¹	Scintillation Radiation Detectors ²	Semiconductor Radiation Detectors ³
Lack of reliable alpha-detection capabilities. ⁴	X	X	X
Lack of monitors that can detect all types of radiation. ⁵	X	X	X
Lack of radioisotope identification capabilities. ⁶		X	X
Lack of detector that collects contamination for low-level detection and future analysis. ⁷	X	X	X

¹ Includes Geiger-Mueller detectors, proportional gas detectors, and ionization chambers

² Includes ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), barium fluoride (BaF₂)-based detectors.

³ Includes germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂)-based detectors.

⁴ Distributing more ADM-300 and AN/PDR-77 is a potential solution.

⁵ Distributing more ADM-300 is a potential solution.

⁶ Distributing gamma and/or alpha scintillation detectors with radioisotope identification capabilities is a potential solution.

⁷ All point-detection IMAs could be designed to eliminate this capability gap. The collection equipment would be better maintained as an independent capability. The solution could involve a module connected to the detector that notifies the operator to take samples or triggers an automated process to begin sampling.

5.13 Task TASENS 13: Mark CBR contaminated air, surfaces, and water

5.13.1 Functional Area Analysis

5.13.1.1 Definition

To mark contaminated air, surfaces, and water includes exterior and interior atmospheres, food, terrain, personnel, equipment, facilities, supplies, and bodies of water. Objective is to identify hazards to allies while providing no advantage to enemy forces. Marking methods could include visual, audible, and electronic indicators depending on the requirement.

5.13.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.13.1.2.1 Supported Task: N/A

5.13.1.2.2 Lateral Task: TASHA 24

5.13.1.2.3 Supporting Task: N/A

5.13.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. High sea state. (C1.2.1.3)
4. Stormy weather. (C1.3.1.3)
5. High surface-wind velocity. (C1.3.1.3.3)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Heavy precipitation intensity. (C1.3.1.3.6.2)
8. Extreme turbulence and wind shear. (C1.3.1.3.8)
9. Very low visibility. (C1.3.2)
10. Negligible light. (C1.3.2.1)
11. Dense obscurants. (C1.3.2.2)
12. Severely degraded radio frequency spectrum. (C1.3.5)

Military

1. Minimal time available. (C2.1.5)
2. Some or no interoperability. (C2.2.6)
3. Highly restricted information exchange. (C2.3.1.8)
4. Extreme threat. (C2.9.1)

Civil

1. Aggressively opposed foreign public opinion. (C3.1.2.4)
2. High mission priority. (C3.1.3.2)
3. TIMs present in the civilian sector. (C3.3.7.5)

5.13.2 Functional Needs Analysis**5.13.2.1 Capability and Deficiency Assessment Summary**

Table 5.13-1 discusses the individual capability of the current M274 NBC Marking Kit to perform the task to the designated standards. No near-future capabilities have been identified for this task.

Current Capability and Deficiency

The overall current capability is assessed as “green.” Under ideal conditions, the M274 NBC Marking Kit is able to perform the task to all of the designated standards. However, its performance may be degraded under low light or if surrounded by obscurants since it does not provide any audible or electronic indicators of contamination. Consequently, overall task deficiencies include the lack of audible or electronic indicators of contamination. These deficiencies are likely to remain in the near future.

Projected Near/Mid-Term Capability and Deficiency

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “green.”

Projected Far-Term Capability and Deficiency

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “green.”

Table 5.13-1. TASENS 13: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4
Current – Near/Mid - Far				
M274 NBC Marking Set	10 ¹	5 ²	5 ³	10 ⁴
Current Overall Capability	10	5	5	10
Near/Mid-Term Overall Capability	10	5	5	10
Far-Term Overall Capability	10	5	5	10

	FAA Measure	Scale
M1	Markings are standardized among coalition forces?	10: Complete capability 5: Partial capability 0: No capability
M2	Markings facilitate effective contamination avoidance?	10: Complete capability 5: Partial capability 0: No capability
M3	Markings are monitored and changed in near-real time to reflect changes in hazards?	10: Complete capability 5: Partial capability 0: No capability
M4	There is effective DOTLPF in place to conduct task?	10: DOTLPF exists and is adequate for the task to be performed with this system without limitations that cause significant impact upon operations 5: Most critical aspects of DOTLPF for the task to be performed with this system are addressed 0: DOTLPF is inadequate or does not exist for the task to be performed with this system

¹ Markings are standardized among US and NATO forces.

² M274 markings may not be visible under low light or if surrounded by obscurants.

³ Markings are unlikely to be monitored and changed in near-real time. Markings would likely be monitored and changed as time permits.

⁴ There is effective DOTLPF in place to conduct task with this system.

5.13.3 Functional Solution Analysis

5.13.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of audible and electromagnetic indicators of contamination.
Non-Materiel Solutions: None

5.13.3.2 IMA Assessment Summary

The materiel solution to a lack of audible and electromagnetic indicators of contamination involves developing beacons that audibly and/or electronically notifies forces of contamination. This technology would be especially valuable in contaminated urban environments and on contaminated airfields.

5.14 Task TASENS 14: Observe the indigenous population for indicators of CBRN/TIM attack

5.14.1 Functional Area Analysis

5.14.1.1 Definition

To collect data from indigenous population that may indicate potential CBRN/TIM attack. Indigenous population includes individuals, animals, and plants. Includes indicators such as human illness and environmental abnormalities such as an unexplained absence or elevated illness of wildlife or plants. Methods include observations as well as data obtained from local sources or organizations.

5.14.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

5.14.1.2.1 Supported Task: OPSENS 3

5.14.1.2.2 Lateral Tasks: TASHA 1, TASHA 9

5.14.1.2.3 Supporting Task: N/A

5.14.1.3 Condition

Perform this task under conditions of:

Physical

1. Significant urbanization. (C1.1.3.1)
2. Nuclear radiation effects. (C1.3.3.1.2)
3. Chemical effects. (C1.3.3.2)
4. Biological effects. (C1.3.3.3)

Military

1. Location—ashore, afloat, airborne. (C2.1.4.1)
2. Minimal time available. (C2.1.5)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Highly restricted information exchange. (2.3.1.8)
6. Negligible theater intelligence access. (C2.4.4)
7. Little or no intelligence dissemination and receipt. (C2.4.7)
8. Extreme threat. (C2.9.1)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. High mission priority. (C3.1.3.2)

5.14.2 Functional Needs Analysis**5.14.2.1 Capability and Deficiency Assessment Summary**

Medical units, in the course of routine medical procedure, conduct medical surveillance to determine whether biological warfare attacks have taken place. The task includes employing epidemiological methods for biological attack assessment. This process is accomplished now as part of standard medical process. They also support all types of restoration operations by tracking the biological reactions to substances in the environment whether endemic or induced. Coordination of medical services promotes, improves, conserves, and restores the mental or physical well-being and performance of individuals or groups, and is performed in support of all Services (and other nations as required). This deployment process is accomplished now as part of standard medical processes.

Current Capability and Deficiency

The overall current capability is assessed as “yellow.” While Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3113.01a provides guidance concerning general Theater Engagement Plan (TEP) considerations that can be modified to include restoration operation considerations, there is no definitive guidance for executing theater engagement restoration operation activities at this level. Training of restoration operation country assistance teams is not conducted as part of joint training. All Standing Joint Task Forces are proficient at restoration operation TEP. Inclusion or restoration operation TEP is standard in all pertinent schools/courses.

Projected Near/Mid-Term Capability and Deficiency

Significant DOTLPP changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will improve to “green.”

Projected Far-Term Capability and Deficiency

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “green.”

Table 5.14-1. TASENS 14: Capability and Deficiency Assessment

Capability: Observation of Indigenous Population for CBRN/TIM Attack Indicators	M1	M2	M3	M4
Current Overall Capability	5 ¹	5 ²	10 ³	5 ⁴
Near/Mid-Term Overall Capability	5	10	10	10
Far-Term Overall Capability	5	10	10	10

	FAA Measure	Scale
M1	Troops have been trained to recognize abnormal events in the indigenous population?	10: Complete capability 5: Partial capability 0: No capability
M2	Procedures exist to gather and monitor available indigenous population information from local sources and organizations?	10: Complete capability 5: Partial capability 0: No capability
M3	Medical personnel have been trained to recognize the early indicators of a CBRN/TIM attack in the indigenous population?	10: Complete capability 5: Partial capability 0: No capability
M4	There is effective DOTLPF in place to conduct task?	10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operation 5: Most critical aspects of DOTLPF for this task are addressed; task can be performed with limitations requiring work-arounds 0: DOTLPF is inadequate or does not exist for this task; task can not be effectively accomplished

¹Nonmedical personnel (e.g., military patrols) have been trained to recognize abnormal events or indicators of abnormal activity in the indigenous population. However, they typically have limited CBRN-awareness training. According to JP 3-40, locating, characterizing, and tracking indicators and incidents of actual proliferation, employment, and/or use of WMD is required for joint force counterproliferation operations, and this capability is required restoration operations as well. While CJCSM 3113.01a provides guidance concerning general TEP considerations that can be modified to include restoration operation considerations, there is no definitive guidance for executing theater engagement restoration operation activities at this level. Training of restoration operation country assistance teams is not conducted as part of joint training. All Standing Joint Task Forces are proficient at restoration operation TEP. Inclusion or restoration operation TEP is standard in all pertinent schools/courses.

²Procedures do exist to gather and monitor available indigenous population information from local sources and organizations. However, these liaisons must establish relationships with these organizations to solicit the appropriate information, which requires an adequate communications infrastructure. This infrastructure does not exist in all cases.

³In the course of routine medical procedure, medical units conduct medical surveillance to determine whether biological warfare attacks have taken place. They also support all types of restoration operations by tracking the biological reactions to substances in the environment whether endemic or induced. Medical personnel review medical intelligence data and report observations via disease reports and after action reports.

⁴Most critical aspects of DOTLPF for this task are addressed. There are deficiencies related to gathering, identifying, interpreting and disseminating (reporting) medically relevant intelligence information.

5.14.3 Functional Solution Analysis

5.14.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Nonmedical personnel have limited CBRN awareness training.
Non-Materiel Solutions: *Leadership:* Inclusion of Joint Professional Military Education (JPME) leader-learning areas for biological warfare considerations of medical surveillance.
- 2. Deficiency:** Lack of definitive guidance for executing theater engagement restoration operation activities.
Non-Materiel Solutions: *Training:* Integration of tactics, techniques, and procedures (TTP) for testing a Joint Task Force (JTF) Headquarters' ability to correctly correlate medical and BW information into training center plans as plans are made for the establishment of a Joint National Training Center (Quadrennial Defense Review Report—September 2001).

5.14.3.2 IMA Assessment Summary

N/A

5.15 Task TASENS 15: Sense the tactical deployment of CBRN weapons on the battlefield

5.15.1 Functional Area Analysis

5.15.1.1 Definition

To obtain tactical information and data from all sources that determine when a threat force is preparing to conduct or is conducting a tactical deployment of CBRN/TIM weapons. Includes information on civil and military plans related to deployment, training conducted by military forces and civilians, and the overall CBRN/TIM defensive preparedness of threat forces.

5.15.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.15.1.2.1 Supported Task: OPSSENS 2

5.15.1.2.2 Lateral Task: N/A

5.15.1.2.3 Supporting Task: N/A

5.15.1.3 Condition

Perform this task under conditions of:

Physical. NA

Military

1. Minimal time available (C2.1.5)
2. Negligible to marginal intelligence database (C2.4.2)
3. Negligible to difficult theater intelligence access (C2.4.4)
4. Little or no certitude of data (C2.4.6)
5. Nuclear, chemical, and biological threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. No international organization support. (C3.1.2.5)

5.15.2 Functional Needs Analysis

5.15.2.1 Capability and Deficiency Assessment Summary

Table 5.15-1 discusses the capability of intelligence gathering and specialized detection systems to perform the task to the designated standards. There is no single capability that can independently perform the task. Different intelligence-gathering methods (e.g., imagery intelligence [IMINT] and communication intelligence [COMINT]) may be used in collaboration with specialized detection systems (e.g., Swept Frequency Acoustic Interferometry detector) to detect and identify tactical deployment of CBRN weapons on the battlefield.

Current Capability and Deficiency

The overall current capability is assessed as “yellow.” Currently, detection and identification of deployment is typically presumptive (indicators suggest, but do not confirm, deployment) and not in near-real time (analysis of intelligence is required and is frequently performed by personnel).

Projected Near/Mid-Term Capability and Deficiency

The overall projected near/mid-term capability is assessed as “yellow.” The fielding of the Joint Warning and Reporting Network (JWARN) should eliminate some deficiencies, such as the current inability to provide CBRN weapons deployment warnings to forces in near-real time. However, in the future, detection and identification of deployment will likely remain presumptive, and it will not likely occur in near-real time (due to analysis time).

Projected Far-Term Capability and Deficiency

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 5.15-1. TASENS 15: Capability and Deficiency Assessment

Intelligence Gathering and Specialized Detection Systems	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	5 ¹	5 ²	5 ³	0 ⁴	0 ⁵	5 ⁶	5 ⁷
Near/Mid Term Overall Capability	5	5 ⁸	5	0	0 ⁹	10 ¹⁰	5
Far Term Overall Capability	5	5	5	0	0	10 ¹⁰	5

	FAA Measure	Scale
M1	Detection: Deploying CBRN weapons/units on the battlefield can be detected?	10: Complete capability 5: Partial capability 0: No capability
M2	Detection: Deploying CBRN weapons/units on the battlefield is detected in near-real time?	10: Complete capability 5: Partial capability 0: No capability
M3	Identification: Deploying CBRN weapons/units on the battlefield can be identified?	10: Complete capability 5: Partial capability 0: No capability
M4	Identification: Deploying CBRN weapons/units on the battlefield is identified in near-real time?	10: Complete capability 5: Partial capability 0: No capability
M5	All data are correlated in near-real time?	10: Complete capability 5: Partial capability 0: No capability
M6	CBRN weapons deployment warning to forces is provided in near-real time?	10: Complete capability 5: Partial capability 0: No capability
M7	There is effective DOTLPP in place to conduct task?	10: DOTLPP exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations 5: Most critical aspects of DOTLPP for this task are addressed; task can be performed with limitations requiring work-arounds 0: DOTLPP is inadequate or does not exist for this task; task can not be effectively accomplished

¹Detection of CBRN weapon/unit deployment is primarily based on the gathering and analysis of intelligence (signals intelligence, IMINT, measurement and signature intelligence, and human intelligence) which suggests CBRN weapon/unit deployment. Intelligence could be obtained through COMINT and/or IMINT. Imagery could be obtained through UAV photography or IR imaging.

² Since detection is primarily based on intelligence, it would not likely occur in near-real time. Indicators of deployment must be detected, and compiled data must be analyzed before deployment can be concluded. Detection of CBRN weapon/unit deployment generally takes hours, days, if not weeks. Nevertheless, it is possible that unequivocal evidence of deployment could be obtained during deployment, which may lead to near-real time detection of deployment.

³Identification of deployed CBRN weapons/units is mainly based on visual recognition of the munitions, ancillary equipment (e.g., decontamination teams), and/or individual protective equipment (IPE). Classification is actually more likely. Presumptive identification of deployed chemical weapons can be achieved nonintrusively through the use of the Swept Frequency Acoustic Interferometry (SFAI) detector (a handheld, nonintrusive instrument) that can rapidly (~20 seconds) identify CW agents within proximal munitions, railcars, ton containers. Portable isotopic neutron spectroscopy (PINS) can also nonintrusively identify CW agents; however, the equipment is much larger and identification takes ~1000 seconds. Biological weapon identification or classification may be achieved through recognition of the munitions or munitions markings. Radiological and nuclear weapons/units may be identified (and possibly confirmed) by radiation signature intelligence.

⁴ Identification is not likely to occur in near-real time. Ostensibly, presumptive identification can be achieved through IMINT once weapons/units have been located and if the munitions can be immediately identified. Nevertheless, classification of deployed weapons/units is more likely, though, it too will not likely occur in near-real time. Indicators of a deployed CBRN weapon/unit through equipment and associated activities must be recognized and analyzed before identification or classification can occur. Analysis may not even fall under tactical operations. Though the Swept Frequency Acoustic Interferometry detector

can identify CW agents in near-real-time (~20 seconds), it must be positioned next to the container of interest. The time it takes to position the detector must be considered.

⁵ Data is not typically correlated in near-real time. Though theoretically computer data correlation could occur in near-real time, analysis depends on a variety of factors. Even after a sufficient amount of data has been collected, it must be processed, which generally involves human analysis. Human analysis can take hours, days, even weeks.

⁶ Currently warnings are not usually provided to all forces in near-real time.

⁷ Additional training and personnel are required to conduct task.

⁸ Detection of CBRN weapon/unit deployment will still generally take hours, days, if not weeks.

⁹ In the near future computer data correlation might occur in near-real time. If data correlation includes human analysis, this will take hours, days, even weeks.

¹⁰ JWARN will provide near-real-time dissemination of CBRN weapons deployment warnings to forces.

5.15.3 Functional Solution Analysis

5.15.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of near-real time, confirmatory detection of CBRN weapon deployment.
Non-Materiel Solutions: *Training:* Additional training of personnel in recognizing and analyzing indicators of CBRN weapons may decrease detection time, though it will not likely provide confirmatory detection. *Personnel:* Increasing the number of reconnaissance or intelligence personnel may decrease detection time, though it will not likely provide confirmatory detection
- 2. Deficiency:** Lack of near-real-time confirmatory identification of deployed CBRN weapons.
Non-Materiel Solutions: *Training:* Additional training of personnel in classifying and identifying CBRN weapons and their indicators may decrease identification time, though it will not likely provide confirmatory identification. *Personnel:* Increasing the number of reconnaissance or intelligence personnel may decrease identification time, though it will not likely provide confirmatory identification.

5.15.3.2 IMA Assessment Summary

N/A

5.16 Task TASENS 16: Sense the employment of tactical CBRN weapons on the battlefield

5.16.1 Functional Area Analysis

5.16.1.1 Definition

To obtain information and data from all sources that determine when a military force or transnational organization is preparing to or is employing CBRN/TIM weapons on the battlefield. Areas of interest include when the weapons will be employed, joint operations area targets selected, weapons systems involved, locations of weapons systems, and forces/personnel involved in the employment. Extracts information from the medical, operational, intelligence, and environmental communities to identify potential biological warfare activities.

5.16.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.16.1.2.1 Supported Task: OPSENS 3

5.16.1.2.2 Lateral Task: N/A

5.16.1.2.3 Supporting Task: N/A

5.16.1.3 Condition

Perform this task under conditions of:

Physical

1. Atmospheric CBRN effects (C1.3.3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)

5.16.2 Functional Needs Analysis

5.16.2.1 Capability and Deficiency Assessment Summary

Table 5.16-1 discusses the capability of intelligence gathering systems to perform the task to the designated standards. There is no single capability that can independently perform the task. Different intelligence gathering methods (e.g., IMINT and COMINT) may be collaboratively used to detect and identify tactical employment of CBRN weapons on the battlefield.

Current Capability and Deficiency

The overall current capability is assessed as “red.” Currently, detection and identification of CBRN weapon employment depends on timely collection and analysis of pertinent information. Findings are typically presumptive (indicators suggest, but do not confirm, deployment) and not provided in near-real time (analysis of intelligence is required and is frequently performed by personnel). In the near future, findings will likely remain presumptive and not be provided in near-real time.

Projected Near/Mid-Term Capability and Deficiency

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “red.”

Projected Far-Term Capability and Deficiency

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “red.”

Table 5.16-1. TASENS 16: Capability and Deficiency Assessment

Intelligence Gathering	M1	M2	M3	M4	M5
Current Overall Capability	5 ¹	0 ²	0 ³	0 ⁴	5 ⁵
Near/Mid-Term Overall Capability	5	0	0	0	5
Far-Term Overall Capability	5	0	0	0	5

	FAA Measure	Scale
M1	CBRN attacks can be detected.	10: Complete capability 5: Partial capability 0: No capability
M2	CBRN attacks can be identified.	10: Complete capability 5: Partial capability 0: No capability
M3	Unambiguous attack warning can be provided in near-real time.	10: Complete capability 5: Partial capability 0: No capability
M4	Accurate attack assessments can be provided in near-real time.	10: Complete capability 5: Partial capability 0: No capability
M5	There is effective DOTLPF in place to conduct task.	10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations 5: Most critical aspects of DOTLPF for this task are addressed; task can be performed with limitations requiring work-arounds 0: DOTLPF is inadequate or does not exist for this task; task cannot be effectively accomplished

¹ Detection of CBRN weapon/unit attacks is primarily based on the gathering and analysis of intelligence which suggests CBRN weapon/unit employment. COMINT may intercept a command for a CBRN attack, or IMINT may identify final preparations typically made before an attack. Pertinent and credible information must be collected and analyzed for detection to be achieved. Data collection methods and analysis capabilities for tactical commands are limited.

² Identification of a CBRN attack is more difficult than detecting it. For example, the presence of RADIACs may indicate that the weapon is radiological or nuclear. IPE may indicate the type of attack, though the choice of IPE suggests only a particular type of attack, as it may be simply improvised. Classification is more likely than identification. Classification and identification are primarily based on the gathering and analysis of intelligence which suggests employment of a particular CBRN agent or class of agents. Identifying the attack will likely require nontactical intelligence about the capabilities and intentions of the enemy. Like detection, identification or classification requires the capability to collect and analyze pertinent information. This capability is probably less developed than the detection capability.

³ Unambiguous attack warnings are unlikely to be provided in near-real time since data analysis by human(s) is typically involved before issuance of a warning. Furthermore, these warnings would be presumptive, not confirmatory, since, in most cases, they will be based on indicators which suggest a particular attack.

⁴ Attack assessments are based on the processing of gathered intelligence. The accuracy of the assessment is based on the credibility of the gathered data and aptitude of the processor. Accurate attack assessments are unlikely to be provided in near-real time since proper analysis typically requires a considerable amount of time.

⁵ Additional training and personnel are required to conduct task.

5.16.3 Functional Solution Analysis

5.16.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

- 1. Deficiency:** Lack of near-real-time confirmatory detection of CBRN weapon employment.
Non-Materiel Solutions: *Training:* Additional training of personnel in recognizing and analyzing indicators of CBRN weapons may decrease detection time, though it will not likely provide confirmatory detection. *Personnel:* Increasing the number of reconnaissance or intelligence personnel may decrease detection time, though it will not likely provide confirmatory detection.
- 2. Deficiency:** Lack of near-real-time confirmatory identification of employed CBRN weapons.
Non-Materiel Solutions: *Training:* Additional training of personnel in classifying and identifying CBRN weapons and their indicators may decrease identification time, though it will not likely provide confirmatory identification. *Personnel:* Increasing the number of reconnaissance or intelligence personnel may decrease identification time, though it will not likely provide confirmatory identification.

5.16.3.2 IMA Assessment Summary

Satellite imagery and area monitoring capabilities are in development and may prove useful in determining whether a CBRN attack has taken place.

5.17 Task TASENS 17: Verify completeness of decontamination operations**5.17.1 Functional Area Analysis****5.17.1.1 Definition**

To confirm completeness of decontamination operations by sensing the presence or absence of remaining CBRN/TIM hazards on humans, MWAs, and surfaces, as well as in water, following decontamination. Involves sensing low-level CBRN/TIM hazards to ensure completion of thorough decontamination operations.

5.17.1.2 Derivation

UJTL TA 7, UJTL TA 7.1, Protection Joint Functional Concept.

5.17.1.2.1 Supported Task: N/A

5.17.1.2.2 Lateral Tasks: TASHA 24, TASHA 31

5.17.1.2.3 Supporting Task: N/A

5.17.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, and arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Tropical, arctic, and arid climates. (C1.3.1)
4. Summer, winter seasons. (C1.3.1.1)
5. Stormy weather. (C1.3.1.3)
6. Hot, very cold air temperature. (C1.3.1.3.1)
7. High surface-wind velocity. (C1.3.1.3.3)
8. High/low relative humidity. (C1.3.1.3.5)
9. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
10. Heavy precipitation intensity. (C1.3.1.3.6.2)
11. Extreme turbulence and wind shear. (C1.3.1.3.8)
12. Negligible light. (C1.3.2.1)

Military

1. Stressful mission. (C2.1)
2. Location—ashore, afloat, airborne. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Low personnel capability. (C2.2.4)
5. Poor personnel morale. (C2.2.4.4)

6. Negligible personnel experience. (C2.2.4.5)

Civil

1. Limited or no host nation support. (C2.8.5)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Ambiguous threat existence. (C2.9.3)
4. High mission priority. (C3.1.3.2)

5.17.2 Functional Needs Analysis

5.17.2.1 Capability and Deficiency Assessment Summary

Table 5.17-1 discusses the capability of detection, identification, and quantification systems to verify completeness of decontamination operations. Though it is possible that a single capability could be used to confirm decontamination thoroughness for each of chemical radiological/nuclear contamination (sensitive mass spectrometers for chemical and a sensitive multiradiation RADIAC for radiological/nuclear), there is no single capability for all biological contamination. Furthermore, one or more separate detectors may be used to substantiate findings.

Current Capability and Deficiency

The overall current capability is assessed as “yellow.” Though there are capabilities to detect, identify, and quantify CBRN agents on surfaces, personnel, MWAs, and in water, there are multiple deficiencies. Most detectors, especially chemical and possibly biological as well, do not detect low-level contamination. The lack of efficient and reliable sampling techniques contributes to this deficiency. In addition, many detectors, particularly chemical detectors, are susceptible to chemical interference, which may result in false positives and negatives. The completeness of chemical and biological decontamination cannot be confirmed in near-real time. Also, the inability to detect low-level residual contamination on and in airlift aircraft and their cargo is a significant deficiency, due to global nature of airlift operations. Finally, there is little or no doctrine on when thorough decontamination is complete.

Projected Near/Mid-Term Capability and Deficiency

The overall projected near/mid-term capability is assessed as “yellow.” The deployment of JCBAWM and JBAIDS is expected to reduce deficiencies in low-level chemical and biological contamination detection. Furthermore, the question “How clean is clean?” is expected to be answered in a thorough study to be released in the near/mid term. However, in the near future, reliable sampling techniques are still expected to be lacking, chemical detectors will remain susceptible to interference, and verifying completeness of decontamination operations will still not occur in near-real time.

Projected Far-Term Capability and Deficiency

The overall projected far-term capability is assessed as “yellow.” The deployment of JMCBDS may reduce deficiencies in low-level chemical and biological contamination detection. However, in the far-term future, reliable sampling techniques are still expected to be lacking, chemical detectors will remain susceptible to interference, and verifying completeness of decontamination operations will still not occur in near-real time.

Table 5.17-1. TASENS 17: Capability and Deficiency Assessment

Detection, Identification, and Quantification Systems	M1	M2	M3	M4	M5
Current Overall Capability	3 ¹	5 ²	5 ³	5 ⁴	5 ⁵
Near/Mid-Term Overall Capability	5 ⁶	5 ⁷	5 ⁸	5 ⁹	10 ¹⁰
Far-Term Overall Capability	5 ¹¹	5 ¹²	5 ¹³	5 ¹⁴	10

	FAA Measure	Scale
M1	Residual CBRN hazards can be detected at low-effect levels?	10: Complete capability 5: Partial capability 0: No capability
M2	Residual CBRN hazards can be identified?	10: Complete capability 5: Partial capability 0: No capability
M3	Residual CBRN hazards can be quantified?	10: Complete capability 5: Partial capability 0: No capability
M4	Residual CBRN hazards can be detected, identified, and/or quantified in near-real time?	10: Complete capability 5: Partial capability 0: No capability
M5	There is effective DOTLPF in place to conduct task?	10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations 5: Most critical aspects of DOTLPF for this task are addressed 0: DOTLPF is inadequate or does not exist for this task; task cannot be effectively accomplished

¹ Chemical hazards: Most detectors cannot detect CWA at low levels (e.g., at Military air guideline, 1–14 days), which is required to verify thorough decontamination. MSs (e.g., Viking SpectraTrak, HAPSITE) can detect low levels, but efficient, reliable sampling is difficult. M8 and M9 paper can be used to detect liquid agent on surfaces. The M256A1 kit is a sensitive detection system used before demasking and thus may be used to verify decontamination completeness. MSs and M272 kit can detect chemical hazards in water. Adsorbed and absorbed chemical agents are extremely difficult to detect. Detection of agent vapor alone is insufficient in determining whether a surface is a potential contact hazard. Most detectors are susceptible to interference (false positives and negatives).

Biological hazards: Biological agents are extremely potent and for decontamination to be verified there must be an ability to detect very small amounts of agent. HHAs can detect most BWAs. There are not currently HHAs for all BWAs (particularly all viral-hemorrhagic fever agents), and there are few or no HHAs for TIBs. In addition, sampling is not sufficiently efficient or reliable. Ostensibly, all BWAs and TIBs can be detected at low levels by ELISA if an antigen or antibody for that hazard has been identified and replicated. PCR is even more sensitive than ELISA; however, it can detect nucleic acids only. Culturing and ELISA are typically the gold standards for pathogens and toxins, respectively. Sampling is a problem for these capabilities as well.

Radiological and Nuclear hazards: RADIACs can be extremely sensitive, and for the most part, low-level contamination can be detected (with the exception of contamination in water since water considerably attenuates the emitted radiation. Alpha-emitting contaminants are of primary concern since alpha particles have short ranges and are easily shielded. Most RADIACs detect beta/gamma radiation, but not alpha radiation.

² Chemical hazards: Detected residual chemical hazards are typically classified by detectors, though mass spectrometers can identify the specific agent.

Biological hazards: Most detection systems are highly specific for a particular agent; therefore, identification can usually be achieved.

Radiological and nuclear hazards: RADIACs identify the type of radiation detected, but not the specific radioisotope. For gamma emitters, a gamma spectroscopy system can identify the radioisotope.

³ Chemical hazards: At low levels, only MSs are able to quantify agent (in ppm or ppb). Sampling is insufficiently efficient and reliable.

Biological hazards: HHAs provide only a generic indication of the hazard through the use of a reader. RT-PCR can provide a generic quantification capability as well. Some varieties of ELISA can absolutely quantify the antigen or antibody concentration. Sampling is insufficiently efficient and reliable.

Radiological and nuclear hazards: RADIACs quantify the amount of radiation being emitted from the contamination, not the amount of radioactive material.

⁴ Chemical hazards: MSs take approximately 10 minutes to detect, identify, and quantify agent.

Biological hazards: HHAs take up to 15 minutes to detect, identify, and generically quantify agent. RAPID RT-PCR requires up to 30 minutes (following sample collection and preparation) to detect, identify, and generically quantify agent. ELISA requires 1–2 hours (following sample collection and preparation) for detection, identification, and if applicable, quantification, primarily because of incubation time.

Radiological and nuclear hazards: RADIACs and gamma spectrometers generally can detect, identify (if applicable), and quantify in near-real time.

⁵ Doctrine exists for when decontamination is required. It is typically based on the amount of contamination, which is expected to incapacitate a certain percentage of personnel (FM 3-5); though, in some cases, it is an actual contamination density. There is little to no doctrine on when decontamination is complete. Currently it is operationally, not scientifically driven, since the question “How clean is clean?” has not yet been answered.

⁶ Chemical hazards: JCBAWM will detect low-level hazards in water. MSs (e.g., Viking SpectraTrak, HAPSITE) will continue as capabilities to detect low levels, but efficient, reliable sampling will continue to be an issue. Nevertheless, many detectors will not be able to detect CWA at low levels (e.g., at Military air guideline, 1–14 days), which is required in order to verify thorough decontamination. Many detectors will detect few or no TICs at any level. Adsorbed and absorbed chemical agents will remain extremely difficult to detect. Most detectors will still be susceptible to interference (false positives and negatives).

Biological hazards: JBAIDS is expected to detect all low-level BWA hazards in water, and on surfaces, personnel, and MWAs. JBAIDS is not expected to detect any TIBs. Some TIBs may be detectable by particular HHAs. JCBAWM is expected to detect low-level biological hazards in water. Sampling will likely remain an issue.

Radiological and nuclear hazards: RADIACs will continue to be sensitive, and thus, for the most part, low-level contamination will be detected. More ADM-300s (which detect most forms of radiation) are likely to be deployed. Alpha-emitting contaminants will remain a concern since alpha particles have short ranges and are easily shielded. Many RADIACs will detect beta/gamma radiation, but not alpha radiation.

⁷ Chemical hazards: JCBAWM is expected to identify the chemical hazard. Mass spectrometers will continue to be hazard-identifying capabilities.

Biological hazards: JBAIDS is expected to identify all detected agents. Since HHAs, PCR, and ELISA are highly specific for a particular agent, they will continue to identify the detected agent.

Radiological and nuclear hazards: RADIACs will continue to identify the type of radiation detected, but not the specific radioisotope. Thus, most detectors will not be able to identify the radioisotope. For gamma emitters, gamma spectroscopy systems will remain radioisotope-identifying capabilities.

⁸ Chemical hazards: JCBAWM is expected to quantify low-level CWA/TIC hazards in water. Mass spectrometers will continue as capabilities to quantify CWA/TIC agent at ppm and ppb levels. Sampling will likely remain an issue.

Biological hazards: JBAIDS and JCBAWM are expected to quantify all detected agents in a sample. Sampling will likely remain an issue.

Radiological and nuclear hazards: RADIACs will continue as capabilities to quantify radiation being emitted from the contamination. In general, the amount of radiation, not the amount of radioactive material will be quantifiable.

⁹ Chemical hazards: JCBAWM is expected to detect, identify, and quantify chemical hazards within 10 minutes.

Biological hazards: JBAIDS is expected to detect, identify, and quantify BWA hazards within 25–40 minutes. JCBAWM is expected to detect, identify, and quantify biological hazards within 10 minutes.

Radiological and nuclear hazards: RADIACs and gamma spectrometers are expected to generally detect, identify (if applicable), and quantify in near-real time.

¹⁰ The question “How clean is clean?” is expected to be answered in the near/mid term. Once answered, it is predicted that doctrine will change accordingly. Doctrine will then be scientifically, not operationally, driven.

¹¹ Chemical hazards: JCBAWM will detect low-level hazards in water. JMCBDS may be able to detect low-level hazards on surfaces, personnel, and MWAs.

MSs (e.g., Viking SpectraTrak, HAPSITE) will continue as capabilities to detect low levels, but efficient, reliable sampling will continue to be an issue. Nevertheless, many detectors will not be able to detect CWA at low levels (e.g., at Military air guideline, 1–14 days), which is required to verify thorough decontamination. Many detectors will detect few or no TICs at any level. Adsorbed and absorbed chemical agents will remain extremely difficult to detect. Most detectors will still be susceptible to interference (false positives and negatives).

Biological hazards: JBAIDS is expected to detect all low-level BWA hazards in water, and on surfaces, personnel, and MWAs. JBAIDS is not expected to detect any TIBs. Some TIBs may be detectable by ELISA, PCR, and particular HHAs. JCBAWM is expected to detect low-level biological hazards in water. Sampling will likely remain an issue.

Radiological and nuclear hazards: RADIACs will continue to be sensitive, and thus, for the most part, low-level contamination will be detected. More ADM-300s (which detect most forms of radiation) are likely to be deployed. Alpha-emitting contaminants will remain a concern since alpha particles have short ranges and are easily shielded. Many RADIACs will detect beta/gamma radiation, but not alpha radiation.

¹² Chemical hazards: JCBAWM and JMCBDS are expected to identify the chemical hazard. Mass spectrometers will continue to be hazard-identifying capabilities.

Biological hazards: JBAIDS is expected to identify all detected agents. Since HHAs, PCR, and ELISA are highly specific for a particular agent, they will remain capabilities to identify detected agents.

Radiological and nuclear hazards: RADIACs will continue to identify the type of radiation detected, but not the specific radioisotope. Thus, most detectors will not be able to identify the radioisotope. For gamma emitters, gamma spectroscopy systems will remain radioisotope-identifying capabilities.

¹³ Chemical hazards: JCBAWM is expected to quantify low-level CWA/TIC hazards in water. JMCBDS may be able to quantify low-level hazards on surfaces, personnel, and MWAs. Mass spectrometers will continue as capabilities to quantify CWA/TIC agent at ppm and ppb levels. Sampling will likely remain an issue.

Biological hazards: JBAIDS and JCBAWM are expected to quantify all detected agent in a sample. Sampling will likely remain an issue.

Radiological and nuclear hazards: RADIACs will continue as capabilities to quantify radiation being emitted from the contamination. In general, the amount of radiation, not the amount of radioactive material will be quantifiable.

¹⁴ Chemical hazards: JMCBDS is expected to detect, identify, and quantify chemical hazards within 2 minutes. JCBAWM is expected to detect, identify, and quantify chemical hazards within 10 minutes.

Biological hazards: JBAIDS is expected to detect, identify, and quantify BWA hazards within 25–40 minutes. JCBAWM is expected to detect, identify, and quantify biological hazards within 10 minutes.

Radiological and nuclear hazards: RADIACs and gamma spectrometers are expected to generally detect, identify (if applicable), and quantify in near-real time.

5.17.3 Functional Solution Analysis

5.17.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMAs section.

1. **Deficiency:** Inability of most chemical detectors to detect low-level contamination.
Non-Materiel Solutions: None
2. **Deficiency:** Susceptibility of most chemical detectors to chemical interference.
Non-Materiel Solutions: None
3. **Deficiency:** Inability to detect absorbed and adsorbed chemical agents.
Non-Materiel Solutions: None
4. **Deficiency:** Efficiency and reliability of chemical sampling insufficient for absolute quantification.
Non-Materiel Solutions: None
5. **Deficiency:** Efficiency and reliability of biological sampling insufficient for absolute quantification.
Non-Materiel Solutions: None
6. **Deficiency:** Detection, identification, and quantification of chemical hazards not in real time or near-real time.
Non-Materiel Solutions: None
7. **Deficiency:** Detection, identification, and quantification of biological hazards not in real time or near-real time.
Non-Materiel Solutions: None
8. **Deficiency:** Limited ability to detect alpha-emitting radiological contamination.
Non-Materiel Solutions: None
9. **Deficiency:** Inability of most RADIACs to detect alpha radiation.
Non-Materiel Solutions: None
10. **Deficiency:** Inability of most RADIACs to detect neutron radiation.
Non-Materiel Solutions: None
11. **Deficiency:** Lack of doctrine on when decontamination is complete.
Non-Materiel Solutions: *Doctrine:* Develop scientifically based decontamination standards that account for low-level effects of contamination.

5.17.3.2 IMA Assessment Summary

Table 5.17-2 identifies 14 ideas for materiel approaches that, if developed, may reduce or eliminate the deficiencies associated with verifying completeness of decontamination operations. Advances in a single technology cannot address all identified deficiencies.

Table 5.17-2. TASENS 17: IMA Assessment

TASENS 17. Verify completeness of decontamination operations ¹														
Identified Gap	Idea for Materiel Approach (IMA)													
	Mass Spectrometry ²	IR, UV, and Microwave Spectroscopy ³	Ion Mobility Spectrometry ⁴	Chemiluminescence Detection ⁵	Surface Acoustic Wave Technology ⁶	Multiple, Complementary Technologies (Orthogonal) ⁷	Raman Spectroscopy	Flame Photometry ⁸	Immunoassay (Antibody-Based) ⁹	Genetic (Nucleic Acid-Based) ¹⁰	Tissue-Based	Gas-filled Radiation Detectors ¹¹	Scintillation Radiation Detectors ¹²	Semiconductor Radiation Detectors ¹³
Inability of most chemical detectors to detect low-level contamination.	X ¹⁴	X				X	X	X						
Susceptibility of most chemical detectors to chemical interference.	X		X		X	X								
Inability to detect absorbed and adsorbed chemical agents.														
Efficiency and reliability of chemical sampling insufficient for absolute quantification.														
Efficiency and reliability of biological sampling insufficient for absolute quantification.														
Detection, identification, and quantification of chemical hazards not in real time or near-real time.	X	X	X	X ¹⁵	X	X	X							
Detection, identification, and quantification of biological hazards not in real time or near-real time.	X	X				X	X	X	X	X	X			
Limited ability to detect alpha-emitting radiological contamination.														
Inability of most RADIACs to detect alpha radiation.		X										X	X	X
Inability of most RADIACs to detect neutron radiation.												X	X	

-
- ¹ McKone, Thomas E., Beverly M. Huey, et al. (eds.) *Strategies to Protect the Health of Deployed U.S. Forces: Detecting, Characterizing and Documenting Exposures*. National Academy Press. 2000. <http://books.nap.edu/books/0309068754/html/>; Kosal, Margaret E. "The Basics of Chemical and Biological Detectors." 24 November 2003. <http://cns.miiis.edu/pubs/week/031124.htm>; Detection and Measurement of Chemical Agents, <http://books.nap.edu/html/terrorism/ch4.html>; Conventional analytical methods for chemical warfare agents, <http://www.iupac.org/publications/pac/2002/pdf/7412x2281.pdf>; National Institute of Justice. *Guide for the Selection of Chemical Agent and Toxic Industrial Material Detection Equipment for Emergency First Responders*. 2000. <http://www.ojp.usdoj.gov/nij/pubs-sum/184449.htm>; Loerop, William. Chemical Biological Defense Science and Technology Chemical Standoff Briefing. Edgewood Chemical Biological Center. http://proceedings.ndia.org/dod_cb/Tuesday_PM/Zarzycki.pdf
- ² Includes GC/MS, LC/MS, Matrix-Assisted Laser Desorption Ionization with Time-of-Flight Mass Spectrometry (MALDI-TOF MS).
- ³ Examples include CO₂ long-wave IR (LWIR) Differential Scattering/Differential Absorption of Light (DISC)/Differential Absorption LIDAR (DIAL), CO₂ conv mid-wave IR (MWIR) DISC/DIAL, solid-state (SS) conv MWIR DISC/DIAL, FTIR, Hyperspectral LWIR, Passive MWIR, SS conv LWIR DISC/DIAL, SS conv short-wave IR (SWIR) – LWIR, SS conv UV-LW IR, Active LWIR Polarization, Active MWIR Polarization, Passive LWIR Polarization, Filtered Forward-Looking IR (FLIR), UV Laser-Induced Fluorescence (LIF)/FTIR, and Microwave (GHz and THz) Spectroscopy.
- ⁴ May be coupled with GC; External Second Gate, Fourier Transform Ion Mobility Spectrometry approach can improve sensitivity and selectivity.
- ⁵ For example, PCD.
- ⁶ May be coupled with GC.
- ⁷ Examples include SAW/IMS, IMC/SAW/Electrochemical/SCCell (S-CAD), GC/IMS.
- ⁸ May be coupled with GC or reversed-phase liquid chromatography (RPLC).
- ⁹ Includes SAW technology.
- ¹⁰ Includes PCR and RT-PCR amplification, DNA microchip technology, SAW technology, and DNA-recognition enzymes.
- ¹¹ Includes Geiger-Mueller detectors, proportional gas detectors, and ionization chambers.
- ¹² Includes ZnS(Ag), anthracene, trans-stilbene, para-terphenyl, phenyl oxazole, NaI(Tl), CsI(Tl), bismuth germinate (Bi₄Ge₃O₁₂), barium fluoride (BaF₂)-based detectors.
- ¹³ Includes germanium, silicon, cadmium telluride (CdTe), and mercuric iodide (HgI₂)-based detectors.
- ¹⁴ Distributing more Viking SpectraTraks and HAPSITES is a potential solution.
- ¹⁵ Classifies, but generally does not identify, agents.

CHAPTER 6. STRATEGIC NATIONAL SHAPE TASKS

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6.0 Strategic National Shape

6.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives; sequence initiatives; define limits and assess risks for the use of military and other instruments of national power; develop global plans or theater war plans to achieve these objectives; and provide military forces and other capabilities in accordance with strategic plans. The strategic national sublevel encompasses U.S. Department of Defense (DoD), service, and interagency tasks. Fourteen Strategic National (SN) Shape (SHA) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA).

This chapter, which details the strategic national Shape area, restates relevant information from the CBRN FAA, including a description of each of the 14 SNSHA tasks, derivation of the task, an indication of other linked-tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis, and a brief description of potential near-, mid-, and far-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA and categorizes them into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near-, mid-, or far-term resolution to identified deficiencies within the individual capabilities.

Most of the SNSHA tasks involve required capabilities of major staffs or staff sections within DoD. In those areas where a DoD staff or agency needed to interact within the interagency, the task focused on DoD capabilities required to facilitate the interaction.

6.0.2 FNA Summary

Table 6.0-1 below summarizes the overall current and projected capability to perform the SNSHA tasks identified in the CBRN FAA. The overall capability to conduct SNSHA tasks in the current time frame is assessed as “yellow.” The Joint Staff Directorate for Command, Control, Communications, and Computer Systems, J-6, leads the C4 community and leads in identifying and resolving military aspects of information-based issues of national importance, to include CBRN Defense (CBRND) Shape issues. Because of documented training, education, and experience issues, however, J-6 personnel may not have a full grasp of what needs to be resolved. As the Chairman of the Joint Chiefs of Staff’s single source of expertise in addressing CBRN defense issues involving the warfighter, the Joint Requirements Office for Chemical,

Biological, Radiological, and Nuclear Defense (JRO-CBRND) must proactively engage the J-6 to determine the adequacy of current and projected global CBRN information systems and processes to allow joint forces to effectively conduct operations in a CBRN environment. There are key deficiencies in DoD’s ability provide shared CBRN/toxic industrial material (TIM) situational awareness and understanding to commanders at all levels. As an example, although a National Intelligence Support Team’s (NIST) mission is to provide national-level, all-source intelligence support from throughout the intelligence community (IC) to commanders during crisis or contingency operations, there are deficiencies associated with NIST’S ability to characterize the global CBRN/TIM threat and situation. At issue is the task of providing the NIST with current and accurate CBRN/TIM threat intelligence. The recent realignment of the IC under the National Intelligence Director, along with new intelligence analysis techniques that neither overstate or understate adversary CBRN/TIM capabilities, will assist in the process of correcting recently identified deficiencies which prevent timely, current, and reliable actionable CBRN/TIM threat intelligence/information. Other deficient areas include the CBRN/TIM education and experience of the NIST and CBRND experts who are assigned. The pattern of deficiencies of CBRND education, experience, training, exercises, and experimentation holds true for all of the capabilities selected for assessment. Whether the NIST, the National Military Joint Intelligence Center (NMJIC), the CJCS J-3 Operations Directorate, or Joint Director of Military Support (JDOMS), the fundamental capability of the organization/staff is not in question; rather, their ability to fuse CBRND considerations with their basic mission is inadequate. Cooperative linkages between various global systems capabilities, although proposed, have not yet been coordinated. Since no linkages currently exist between various detection technologies (e.g., Biological Integrated Detection System [BIDS], phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with Global Positioning System [GPS] linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.), no cooperative CBRN/TIM-detection policies are required. It is projected that improvements due to coordination/ doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) enhancements will dramatically improve DoD’s ability to articulate and assess Shape requirements, but the overall status will remain “yellow” due to the long lead time required for training and education to be matched by experience in CBRND issues and the current lack of detection networks.

Table 6.0-1. Strategic National Shape Summary FNA Findings

CBRN Strategic National Shape Task Number	CBRN Strategic National Shape Task Title	Capability		
		Current	Near/Mid	Far
SNSHA 1	Characterize the global CBRN/TIM threat and situation.	●	●	●
SNSHA 2	Conduct global CBRN/TIM vulnerability analysis.	●	●	●
SNSHA 3.	Coordinate international CBRND protocols, standards, and agreements.	●	●	●
SNSHA 4	Coordinate CBRND within the interagency process.	●	●	●

SNSHA 5	Determine joint CBRND capability to meet the global CBRN/TIM situation.	●	●	●
SNSHA 6	Ensure joint CBRND readiness.	●	●	●
SNSHA 7	Coordinate global CBRN information systems and processes.	●	●	●
SNSHA 8	Establish national CBRND strategy, plans, and policy.	●	●	●
SNSHA 9	Coordinate CBRND aspects of global medical operations.	●	●	●
SNSHA 10	Coordinate global CBRND operations.	●	●	●
SNSHA 11	Provide Shape “Global Family of Engagement Plan” policies and guidelines to combatant commanders.	●	●	●
SNSHA 12	Establish global cooperative CBRN/TIM-detection policies, procedures, and networks.	●	●	●
SNSHA 13	Coordinate internationally accepted standards and procedures for determining employment of CBRN/TIM weapons.	●	●	●
SNSHA 14	Sense the exportation of CBRN/TIM weapons or components.	●	●	●
OVERALL		●	●	●

6.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The materiel approaches focus primarily the need for automated tools to assist analysis and the need for an integrated detection and information network for automated warning and reporting of the CBRN hazard.

6.0.3.1 DOTLFP

The DOTLFP solutions identified in this chapter are associated primarily with staff education and training issues. It is recommended that changes be made to the CJCSI 1800.01B, Officer Military Education Policy. The new CJCSI 1800.01B Officer Military Education Policy is not directive enough to ensure that CBRND considerations are included in the cradle-to-grave educational process of all military personnel. It also does not address education/training for DoD civilians, many of whom staff strategic national-level positions. It is imperative that all non-CBRND subject matter expert (SME) staffs of all agencies that play a role in CBRND Shape issues have a fundamental understanding of key CBRND focus areas required in their functional domains. As CBRND Shape enabling concepts are proposed, they must be developed with the active participation of all DoD and Service staffs and agencies that will play a key role in their

evolution. Concepts must be tested and developed through comprehensive experimentation. Subsequent strategic national-level exercises must include all relevant DoD and interagency players so that Shape/functional and fusion areas are tested and lessons learned captured. As appropriate, tasks identified in the FAA must be incorporated into national-level exercises so expert observers can identify areas that require multi-staff/agency resolution.

6.0.3.2 IMA

This section summarizes possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment. Development of cooperative linkages between various proponent and service CBRND and CBRN/TIM information, detection, and sensing technologies is required. Concepts must first be developed based on proposed linkages that will provide effective, integrated CBRND and CBRN/TIM detection, warning, and shared situational understanding capabilities. These concepts must be explored through experimentation and then cooperative linkages established and tested. The entire package should be developed as a system and fully integrated into a multiagency Common Operating Picture (COP). As each Service develops detection or sensing technologies, they should be analyzed for inclusion into the CBRN/TIM cooperative detection network, and modifications (if required) should be mandated for the Service systems. Continued work on analysis probability tools and models is required. No automated tools exist for assisting in the conduct of global vulnerability assessments focusing on potential adversary courses of action (COAs). Because of the wide range of options available to potential adversaries, tools must be available that can take as input that which is known, and then model and forecast all potential COAs. Development of automated tools is recommended to more adequately manage CBRN personnel, unit, and materiel, ensuring that these scarce assets are available and fully mission capable when needed.

6.1 Task SNSHA 1: Characterize the global CBRN/TIM threat and situation

6.1.1 Functional Area Analysis

6.1.1.1 Definition

To characterize the CBRN/TIM threat and situation for the Chairman of the Joint Chiefs of Staff (CJCS), national defense decision makers, and combatant commanders. Uses Sense data to move from situational awareness¹ as well as shared awareness² to shared understanding.³ Allows military leadership to develop a clear understanding of the current and predicted CBRN/TIM situation in near-real time to inform personnel; provide actual and potential impacts of CBRN/TIM hazards; and envision critical Sense, Shield, and Sustain end states, including preparing for operations and visualizing the sequence of events that moves the force from its current state to those end states. Includes establishing collection priorities and coordination with intelligence agencies to collect information on CBRN/TIM capabilities encompassing such things as adversary intent and objectives, weapons availability and capacity, expected tactics, potential targets, and willingness or historic propensity to employ CBRN/TIM weapons. Also includes compiling and analyzing intelligence information and data provided by intelligence agencies or resources satisfying the global CBRN/TIM threat intelligence collection plan. Provides processed global CBRN/TIM threat intelligence for development of global vulnerability assessments and for an understanding of the current and predicted CBRN/TIM situation. Provides the basis for CBRND tasking of and warning to the combatant commanders and Services. Appropriate collaboration occurs with interagency and international parties. Further encompasses global medical intelligence to be collected in support of CBRN/TIM analysis.

6.1.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4, SN 2.4.1.2, SN 2.5.1, SN 3.3.6, SN 3.4.6, SN 5.1.1, SN 5.1.2, SN 5.7.1, SN 7.5, SN 9, SN 9.1.3), Protection Joint Functional Concept.

6.1.1.2.1 Supported Task: N/A

6.1.1.2.2 Lateral Tasks: SSENS 1, SSENS 2, SSENS 3, SSENS 4, SSENS 5, SSENS 6, SSENS 7, SSENS 8, SSENS 9, SSENS 10, SSENS 11, SSENS 12, SSENS 13, SSENS 14, SSENS 16, SSENS 17, SNSHA 2

6.1.1.2.3 Supporting Task: STSHA 1

6.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited personnel expertise. (C2.2.4.5)

2. Limited modern military systems. (C2.2.5)
3. Marginal or negligible intelligence database. (C2.4.2)
4. Difficult theater intelligence access. (C2.4.4)
5. Little or no certitude of data. (C2.4.6)

Civil. N/A

6.1.2 Functional Needs Analysis

6.1.2.1 Capability and Deficiency Assessment Summary

Table 6.1-1 discusses the capability that currently exists to perform the task “Characterize the global CBRN/TIM threat and situation.” There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

NIST’s mission is to provide national-level, all-source intelligence support from throughout the IC to deployed commanders during crisis or contingency operations. The Joint staff J-2 is the NIST program’s executive agent and has delegated the NIST mission to the Deputy Directorate for Crisis Operations (J-2O). The National Intelligence Support Division (J-2O-1) manages daily operations and interagency coordination for all NISTs. The current ability is assessed as “green” although there are some limitations and deficiencies.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No near/mid-term initiatives are expected to improve limitations or deficiencies.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF to support task should improve if effective experimentation addresses organizational deficiencies and closes knowledge gaps and training and education initiatives address deficiencies identified in this Joint Capabilities Integration and Development System (JCIDS).

¹ “Situational awareness is the ability to have accurate and real-time information of friendly, enemy, neutral, and noncombatant locations; a common, relevant picture of the battlefield scaled to specific level of interest and special needs.” (*Operational Requirements Document for Joint Effects Model*)

² “Shared awareness is a state that exists in the cognitive domain when two or more entities are able to develop a similar awareness of a situation. The degree of similarity required (or difference tolerable) will depend on the type and degree of collaboration and synchronization needed.” (*Understanding Information Age Warfare*, p. 26)

³ Shared understanding is when two or more entities have similar and sufficient levels of knowledge to be able to draw inferences about the possible consequences of the situation, as well as sufficient awareness of the situation to predict future patterns.

Table 6.1-1. SNSHA 1: Capability and Deficiency Assessment

Capability: National Intelligence Support Teams	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current Overall Capability¹	G ²	Y ³	Y ⁴	G ⁵	G ⁶	G ⁷	G ⁸	G ⁹	G ¹⁰	G ¹¹	G ¹²
Near/Mid-Term Overall Capability	G	Y	Y	G	G	G	G	G	G	G	G
Far-Term Overall Capability¹³	G	Y	Y	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Means exist to collect intelligence on designated adversaries.	G – Yes, Y – Limited, R – No
M2	Adversary CBRN/TIM threat intelligence is current.	G – Yes, Y – Limited, R – No
M3	Adversary CBRN/TIM threat intelligence is reliable.	G – Yes, Y – Limited, R – No
M4	All CBRN/TIM threat priority intelligence requests are covered by a collection plan.	G – Yes, Y – Limited, R – No
M5	Adequate means are available for CBRND staff to influence global collection activities.	G – Yes, Y – Limited, R – No
M6	Multiple sources are integrated and deconflicted.	G – Yes, Y – Limited, R – No
M7	Medical intelligence guidance identifies information requirements and processes.	G – Yes, Y – Limited, R – No
M8	Medical CBRN/TIM intelligence criteria are established and defined.	G – Yes, Y – Limited, R – No
M9	Staff has sufficient training and experience to conduct the threat assessment.	G – Yes, Y – Limited, R – No
M10	CBRN/TIM threat intelligence is disseminated in near-real-time.	G – Yes, Y – Limited, R – No
M11	CBRN/TIM threat intelligence is available to the commands.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN/TIM publications do not adequately address this issue. The JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The NIST staff may not be adequately trained/educated in CBRN/TIM issues. CBRND staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/ CBRN/TIM issues.

² Yes. Multiple national means of collection exist.

³ Limited. CBRN/TIM threat intelligence depends on factors that may prevent timely and current information.

⁴ Limited. CBRN/TIM threat intelligence depends on factors that may prevent reliable information.

⁵ Yes. NIST can develop collection plans for CBRN/TIM threats.

⁶ Yes. NIST has the means to provide input for theater collection activities.

⁷ Yes. All-source intelligence analysis is the process where integration and deconfliction occur.

⁸ Yes. NIST can identify medical intelligence information requirements and processes.

⁹ Yes. NIST can establish and define medical CBRN/TIM intelligence criteria.

¹⁰ Yes. NIST does have the experience to sufficiently conduct CBRN/TIM threat assessment.

¹¹ Yes. NIST Chief transmits data through the COLISEUM RFI management system.

¹² Yes. NIST Chief transmits data through the COLISEUM RFI management system.

¹³ DOTMLPF to support task should improve if effective experimentation addresses organizational deficiencies and closes knowledge gaps and training and education initiatives address deficiencies identified in this JCIDS.

6.1.3 Functional Solution Analysis

6.1.3.1 DOTLPF Assessment Summary.

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

1. **Deficiency:** CBRN/TIM threat intelligence is dependent on factors that may prevent timely and current information. At the time of this analysis, CBRN/TIM threat intelligence was dependent on an IC organizational model determined to be flawed by both a congressional investigation and a special presidential commission. Factors such as problems with interagency coordination and planning, clear delineation of lines of authority and responsibility, and organizational effectiveness contributed to the lack of timely and current information.

Non-Materiel Solutions: *Organization:* The IC has been realigned and reorganized in concert with recommendations from both the congressional investigation and the special presidential commission. While it is believed that this reorganization will substantially or totally correct the deficiency, it is vital that DoD document and verify the efficacy of the recent changes through lessons learned from training and exercises as well as focused concept experimentation covering all aspects of CBRND battlespace awareness at the strategic level of war.

2. **Deficiency:** CBRN/TIM threat intelligence is dependent on factors that may prevent reliable information. At the time of this analysis, CBRN/TIM threat intelligence was dependent on an IC organizational model determined to be flawed by both a congressional investigation and a special presidential commission. Factors such as problems with interagency coordination and planning, clear delineation of lines of authority and responsibility, and organizational effectiveness contributed to the lack of reliable information.

Non-Materiel Solutions: *Organization:* The IC has been realigned and reorganized in concert with recommendations from both the congressional investigation and the special presidential commission. While it is believed that this reorganization will correct the deficiency, it is vital that DoD document and verify the efficacy of the recent changes through lessons learned from training and exercises as well as focused concept experimentation covering all aspects of battlespace awareness at the strategic level of war.

3. **Deficiency:** Joint intelligence and CBRN/TIM publications do not adequately address this issue.

Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN/TIM publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.

4. **Deficiency:** The JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities.

Non-Materiel Solutions: *Organization:* JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel:* JRO-CBRND should have

adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.

5. **Deficiency:** The NIST staff is not adequately trained/educated in CBRN/TIM issues.
Non-Materiel Solutions: *Training:* Develop training that will enable the NIST staff to better understand their CBRN/TIM role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic national CBRND. *Leadership:* Develop an education program that will enable the J-2 staff to better understand their CBRN/TIM role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic national CBRND.
6. **Deficiency:** CBRND staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
7. **Deficiency:** Experimentation/red teaming does not provide feedback on intelligence indicators for this task.
Non-Materiel Solutions: *Training:* JRO-CBRND must work with NIST and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans.
8. **Deficiency:** Joint Professional Military Education (JPME) does not adequately cover the fusion of intelligence/CBRN/TIM issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.
9. **Deficiency:** DoD CBRN/TIM experts detailed to the national intelligence organizations and the NIST do not receive adequate preparation, support, or briefing for DoD lessons learned.
Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. Ensure that CBRN SMEs assigned to the NIST are prepared in every way. *Leadership:* Provide CBRN DoD detailees to national intelligence organizations or those assigned to the NIST with formal educational preparation. *Personnel:* CBRN DoD detailees to national intelligence organizations or those assigned to the NIST must possess adequate skill and experience.

6.1.3.2 IMA Assessment Summary

N/A

6.2 Task SNSHA 2: Conduct global CBRN/TIM vulnerability analysis

6.2.1 Functional Area Analysis

6.2.1.1 Definition

To conduct continual global vulnerability assessments focusing on potential adversary's COAs. This global strategic assessment compares regional-based vulnerabilities and risks. Development of a shared understanding of potential adversary's CBRN/TIM COAs and the associated vulnerabilities and risks enables timely and effective preparations for any potential adversary acts. Includes the development of associated risk assessments.

6.2.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4.1.2, SN 2.5.1, SN 3.3.6, SN 4.3.3, SN 4.3.4, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 7.5, SN 9, SN 9.1.2, SN 9.1.3, SN 9.2, SN 9.2.1, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

6.2.1.2.1 Supported Task: N/A

6.2.1.2.2 Lateral Tasks: SNSHA 1, SNSHA 4, SNSHA 6, SNSHA 8, SNSHA 9, SNSHA 14

6.2.1.2.3 Supporting Task: STSHA 2

6.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Limited personnel expertise. (C2.2.4.5)
3. Some or no interoperability. (C2.2.6)
4. Marginal or negligible intelligence database. (C2.4.2)
5. Difficult global intelligence access. (C2.4.4)
6. Little or no certitude of data. (C2.4.6)

Civil. N/A

6.2.2 Functional Needs Analysis

6.2.2.1 Capability and Deficiency Assessment Summary

Table 6.2-1 discusses the capability that currently exists to perform the task “Conduct global CBRN/TIM vulnerability analysis.” There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

NMJIC has the ability to conduct global vulnerability assessments focusing on potential adversary COAs. The current capability is assessed as “yellow” as the result of numerous DOTMLPF limitations.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No improvements are expected over the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. For the far term, experimentation leading to better coordination efforts, and DOTMLPF will raise the overall capability to “green.” The inability to discern threat CBRN/TIM intent with reliability will continue to be a problem.

Table 6.2-1. SNSHA 2: Capability and Deficiency Assessment

Capability: National Military Joint Intelligence Center	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	Y	Y	Y	Y	G	Y	Y	Y	Y
Far-Term Overall Capability	G ¹¹	G	G	G	G	Y	Y	Y	G

	FAA Measure	Scale
M1	Policies and guidelines for conducting global vulnerability analysis are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines for conducting global risk assessment are established.	G – Yes, Y – Limited, R – No
M3	Analytical tools used to evaluate plausible adversary COAs are adequate.	G – Yes, Y – Limited, R – No
M4	Vulnerability assessment process exploits time-sensitive or priority actionable CBRN intelligence.	G – Yes, Y – Limited, R – No
M5	Means are available to collaboratively perform assessments.	G – Yes, Y – Limited, R – No
M6	Means exist to visualize the impact of adversary COAs on forces of interest.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to effectively assess adversary CBRN/TIM COAs.	G – Yes, Y – Limited, R – No
M8	Sufficient doctrine and tactics, techniques, and procedures (TTPs) for effective vulnerability assessment are available.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation provides feedback on efficacy of vulnerability analysis doctrine and TTPs.	G – Yes, Y – Limited, R – No

¹ Partial. As a DoD asset, NMJIC has little influence over the CBRN assessments made by other departments and activities. DOTMLPF for generic vulnerability analysis may be adequate, but CBRND integration into the process is inadequate.

² Limited. NMJIC has guidelines for conducting global vulnerability analyses; however, the global CBRN vulnerability analysis process is not solely within the purview of DoD.

³ Limited. NMJIC has guidelines for conducting risk assessments; however, global CBRN risk assessments are not solely within the purview of DoD.

⁴ Yes. NMJIC has analytical tools to evaluate plausible adversary COA. The standard military decision making process for evaluating COA's has been considered adequate. But CBRN/TIM integration of the analytical tools may not be adequate.

⁵ Partial. NMJIC has an ability to exploit time-sensitive or priority-actionable CBRN/TIM intelligence through netcentric means.

⁶ Yes. NMJIC has the means to perform assessments in collaboration with other agencies.

⁷ Limited. The accuracy with which NMJIC interprets adversary intent is dependent on intelligence covering many adversary capabilities, including CBRN employment doctrine, release authority, resources, adversary forces, and rules of engagement.

⁸ Limited. The NMJIC has the trained operational and analytical/planning staff to effectively assess potential adversary CBRN/TIM COAs. However, the NMJIC may not be able to interpret adversary intent with 100 percent accuracy.

⁹ Limited. NMJIC has TTPs for global CBRN/TIM situational awareness. Global CBRN vulnerability assessment tools are available although more extensive automation would be desirable. There are still issues with determining threat CBRN/TIM intent.

¹⁰ Partial. The task of assessing the efficacy of global CBRN vulnerability analysis doctrine and TTPs is a multidisciplinary, multinational matter that surpasses the authority of the DoD NMJIC. This assessment activity may include feedback from joint exercises/experimentation, as well as encompass other activities such as: the Joint Interagency Coordinating Group, other U.S. government departments and agencies, the selection of nongovernmental organizations, foreign military, intelligence and law enforcement assets.

¹¹ For the far term, experimentation leading to better coordination efforts and DOTMLPF will raise our overall capability to "green." The inability to discern threat CBRN/TIM intent with reliability will continue to be a problem.

6.2.3 Functional Solution Analysis

6.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** DoD's global CBRN risk and vulnerability analysis processes are not fully established.
Non-Materiel Solutions: *Organization:* Incorporate NMJIC input into overall IC activities.
- 2. Deficiency:** Cannot routinely validate or prioritize actionable CBRN intelligence in a timely manner.
Non-Materiel Solutions: *Training:* Validity of raw intelligence is a continuing problem. Training for CBRN issues needs to be reinforced.
- 3. Deficiency:** The accuracy with which NMJIC interprets adversary intent is dependent on intelligence covering many adversary capabilities, including CBRN employment doctrine, release authority, resources, adversary forces, and rules of engagement.
Non-Materiel Solutions: *Training:* Ability to interpret adversary intent is a continuing problem. Continued work on analysis probability tools and models—and training—is required. *Leadership:* Ability to interpret adversary intent is a continuing problem. Continued work on analysis probability tools and models—and education—is required.
- 4. Deficiency:** The current compartmentalization of the intelligence community which results in a lack of collaboration during assessments.
Non-Materiel Solutions: *Organization:* As a DoD asset, NMJIC previously had little influence over assessments of other departments and activities of adversary CBRN capability and intent. The recently completed federal review of intelligence capabilities provides a multitude of recommendations and new initiatives that DoD must participate in to rectify this problem.
- 5. Deficiency:** Lack of automated means to conduct global vulnerability assessments that focus on potential adversary COAs.
Non-Materiel Solutions: None.

6.2.3.2 IMA Assessment Summary

Table 6.2-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 6.2-2. SNSHA 2. IMA Assessment

Idea for Materiel Approach	Description
Automated Tools	Continued work on analysis probability tools and models is required. No automated tools exist for assisting in the conduct of global vulnerability assessments that focus on potential adversary COAs. Because of the wide range of options available to potential adversaries, tools must be available that can take in what is known and then model and forecast all potential COAs.

6.3 Task SNSHA 3: Coordinate international CBRND protocols, standards, and agreements

6.3.1 Functional Area Analysis

6.3.1.1 Definition

To negotiate and coordinate the military aspects of international protocols, standards, and agreements for CBRND with representatives of other nations and regional/international organizations. This task promotes interoperability and integration of CBRND capabilities, including establishing, reviewing, and modifying existing protocols, standards, and agreements when appropriate and necessary. Includes the establishment of interoperability and common procedures and formats for CBRN/TIM hazard alarm, warning, and reporting. Also includes establishment and maintenance of international standards and formats for plotting and predicting CBRN/TIM hazards.

6.3.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4.1.2, SN 2.5.1, SN 3.3.6, SN4.3, SN 5.1.2, SN 5.1.3, SN 9, SN 9.1.3, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

6.3.1.2.1 Supported Task: N/A

6.3.1.2.2 Lateral Tasks: SNSHA 5, SNSHA 8, SNSHLD 1, SNSHLD 2, SNSHLD 3, SNSHLD 4, SNSHLD 5, SNSHLD 6, SNSHLD 7, SNSHLD 8, SNSHLD 9, SNSUST 1, SNSUST 2, SNSUST 4, SNSUST 5

6.3.1.2.3 Supporting Task: N/A

6.3.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. No preexisting arrangements. (C2.1.1.2)
3. Limited personnel expertise. (C2.2.4.5)
4. Some or no interoperability. (C2.2.6)
5. Poor multinational integration. (C2.3.1.2)
6. Moderate staff expertise. (C2.3.1.3)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Uncertain international organization support. (C3.1.2.5)

6.3.2 Functional Needs Analysis

6.3.2.1 Capability and Deficiency Assessment Summary

Table 6.3-1 discusses three capabilities that currently exist to coordinate international CBRND protocols, standards, and agreements. These are the only capabilities that exist, and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

American, British, Canadian, and Australian Armies Program (ABCA) and North Atlantic Treaty Organization (NATO) working groups have established mature and beneficial relationships that allow CBRND protocols, standards, and agreements to be coordinated and reviewed. Problems still exist with many of the nations of the world and the various international conventions that have been established. The current assessment is “green” although there are a number of limitations with existing international conventions.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Limited changes/improvements are expected in the international community at large in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. Limited changes/improvements are expected in the international community at large in the far term. Continual improvements are expected across the board as ABCA/NATO exercises/experimentation efforts provide valuable lessons learned at appropriate levels. U.S. CBRND experimentation efforts at the SN level of war will be applied to ABCA/NATO applications.

Table 6.3-1. SNSHA 3: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6
Current						
International Conventions Chemical Weapons Convention (CWC), Organisation for the Prohibition of Chemical Weapons (OPCW), Biological and Toxin Weapons Convention (BTWC)	Y ¹	Y ²	Y ³	Y ⁴	G ⁵	Y ⁶
American, British, Canadian, and Australian Armies Program (QUADRIPARTITE)	G ⁷	G ⁸	G ⁹	G ¹⁰	G ¹¹	Y ¹²
NATO Working Group	G ¹³	G ¹⁴	G ¹⁵	G ¹⁶	G ¹⁷	Y ¹⁸
Near/Mid						
International Conventions CWC, OPCW, BTWC	Y ¹⁹	Y	Y	Y	G	Y
American, British, Canadian, and Australian Armies Program (QUADRIPARTITE)	G ²⁰	G	G	G	G	Y
NATO Working Group	G ²¹	G	G	G	G	Y
Far						
International Conventions CWC, OPCW, BTWC	Y ²²	Y	Y	Y	G	Y
American, British, Canadian, and Australian Armies Program (QUADRIPARTITE)	G ²³	G	G	G	G	G ²⁴
NATO Working Group	G ²⁵	G	G	G	G	G ²⁶
Current Overall Capability	G	G	G	G	G	Y
Near/Mid-Term Overall Capability	G	G	G	G	G	Y
Far-Term Overall Capability	G	G	G	G	G	G

	FAA Measure	Scale
M1	Required CBRND protocols, standards, and agreements are established.	G – Yes, Y – Limited, R – No
M2	International CBRND standards are current.	G – Yes, Y – Limited, R – No
M3	U.S. and international staffs and agencies are in compliance with existing protocols, standards, and agreements.	G – Yes, Y – Limited, R – No
M4	There is a recurring program to update or maintain currency of international practices, procedures, and formats.	G – Yes, Y – Limited, R – No
M5	CBRND staffs and organizations have the training to effectively assess warning and reporting and hazard prediction models.	G – Yes, Y – Limited, R – No
M6	International exercises/experimentation provide feedback on efficacy of standards and agreements.	G – Yes, Y – Limited, R – No

¹ Limited. A number of efforts have been undertaken by the BTWC/CWC parties to develop and implement universal agreements and policies.

² Limited. A number of efforts have been undertaken by the BTWC/CWC parties to develop and implement international standards.

³ Limited. A number of countries are delaying compliance with protocols and agreements due to frequently changing internal political environment.

⁴ Limited. A number of countries are slow in updating and maintaining currency of international practices, procedures and formats due to frequently changing internal political environment.

⁵ Yes. Current staff has the training and understanding of basic warning and reporting and hazard prediction modeling.

- ⁶ Limited. The participation in international exercises/experimentation is voluntary. The efficacy of the feedback is limited to “openness” of participating states.
- ⁷ Yes. CBRND protocols, standards and agreements are established as Quadripartite Standardization Agreements (QSTAGs).
- ⁸ Yes. There are Quadripartite Working Groups that meet every two years.
- ⁹ Yes. The ABCA has a senior officer on duty in Washington, D.C. who regularly reviews the work of the overall program.
- ¹⁰ Yes. The ABCA has a senior officer on duty in Washington, D.C. who regularly reviews the work of the overall program.
- ¹¹ Yes. The CBRND staff has the training to assess warning and reporting and hazard prediction models as established by Standardization Agreements (STANAGs) and QSTAGs.
- ¹² While there have been many ABCA exercises, an exercise focused exclusively on all aspects of CBRND has not been conducted.
- ¹³ Yes. CBRND protocols, standards and agreements are established as NATO STANAGs.
- ¹⁴ Yes. NATO working groups meet on a regular basis.
- ¹⁵ Yes. NATO ensures compliance with appropriate protocols, standards, and agreements.
- ¹⁶ Yes. NATO working groups meet on a regular basis.
- ¹⁷ Yes. The CBRND staff has the training to assess warning and reporting and hazard prediction models as established by STANAG.
- ¹⁸ While there have been many NATO exercises, an exercise focused exclusively on all aspects of CBRND has not been conducted.
- ¹⁹ Limited changes/improvements are expected in the near/mid term.
- ²⁰ Limited changes/improvements are expected in the near/mid term.
- ²¹ Limited changes/improvements are expected in the near/mid term.
- ²² Limited changes/improvements are expected in the international community at large.
- ²³ Continual improvements are expected across the board as ABCA exercises/experimentation efforts provide valuable lessons learned at appropriate levels.
- ²⁴ U.S. CBRND experimentation efforts at the SN level of war will be applied to ABCA applications.
- ²⁵ Continual improvements are expected across the board as NATO exercises/experimentation efforts provide valuable lessons learned at appropriate levels.
- ²⁶ U.S. CBRND experimentation efforts at the SN level of war will be applied to NATO applications.

6.3.3 Functional Solution Analysis

6.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** International CBRND protocols, standards, and agreements that promote interoperability are not in effect.
Non-Materiel Solutions: *Doctrine:* Differences still exist over “rolling text” and the Chairman’s text. Outreach to all nonsignatory nations must take place to encourage participation.
- 2. Deficiency:** Efficacy of standards and feedback has not been determined through exercises and experimentation in all CBRND areas and is limited to countries that are open to participate.
Non-Materiel Solutions: *Training:* NATO and ABCA exercises and experimentation must explore all aspects of CBRND. Nations outside of ABCA and NATO should be encouraged to participate.
- 3. Deficiency:** Additional policy and doctrine needs to be developed along with an effective inspection regime to strengthen the BTWC/CWC.
Non-Materiel Solutions: *Doctrine:* The Quadripartite Group and NATO need to build a QSTAG/STANAG for considering weapons of mass destruction (WMD)–related terrorism as a causative action for establishing international procedures and mutual support agreements for restoration operations.

6.3.3.2 IMA Assessment Summary

N/A

6.4 Task SNSHA 4: Coordinate CBRND within the interagency process

6.4.1 Functional Area Analysis

6.4.1.1 Definition

To work with representatives of the other Executive departments and agencies to resolve issues and ensure that CBRND responsibilities are coordinated. Includes organizations within DoD, as well as interagency capabilities. Organizations with appropriate resources are designated and tasked, as necessary, to support and/or provide the identified CBRND capabilities. Includes allocating and tasking resources in accordance with established agreements with other non-DoD national agencies.

6.4.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 5.2.1, SN 5.2.3, SN 7.5, SN 9, SN 9.2, SN 9.2.1, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

6.4.1.2.1 Supported Task: N/A

6.4.1.2.2 Lateral Tasks: SNSHA 2, SNSHA 8, SNSHA 9, SNSHA 10, SNSHA 13

6.4.1.2.3 Supporting Task: N/A

6.4.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. Partial preexisting arrangements. (C2.1.1.2)
3. Negligible military commitments from other nations. (C2.1.1.7)
4. Marginal forces assigned. (C2.2.1)
5. Limited personnel expertise. (C2.2.4.5)
6. Some or no interoperability. (C2.2.6)
7. Partial Joint Staff integration. (C2.3.1.1)
8. Moderate staff expertise. (C2.3.1.3)

Civil

Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)

6.4.2 Functional Needs Analysis

6.4.2.1 Capability and Deficiency Assessment Summary

Table 6.4-1 discusses the capabilities that currently exist to perform the task to the designated standard. These are the only capabilities that exist, and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

JDOMS serves as the action agent for the Secretary of Defense to coordinate and direct execution of DoD assistance to civil authorities. In addition, JDOMS serves as the action agent for consequence management operations and plans. The J-3 Operations Directorate is responsible for synchronizing and monitoring worldwide military operations and activities, including coordinating the joint CBRND requirements that are within the interagency process. The current capability assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No near/mid-term capability improvement is anticipated.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused interagency experimentation. For the far term the assessment should become “green.”

Table 6.4-1. SNSHA 4: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5
Current					
Joint Department of Military Support	G ¹	G ²	Y ³	G ⁴	G ⁵
Joint Staff Directorate for Operations, J-3	G ⁶	G ⁷	Y ⁸	G ⁹	G ¹⁰
Near/Mid					
Joint Department of Military Support	G	G	Y	G	G
Joint Staff Directorate for Operations, J-3	G	G	Y	G	G
Far					
Joint Department of Military Support)	G	G	G ¹¹	G	G
Joint Staff Directorate for Operations, J-3	G	G	G ¹²	G	G
Current Overall Capability	G	G	Y	G	G
Near/Mid-Term Overall Capability	G	G	Y	G	G
Far-Term Overall Capability	G	G	G	G	G

	FAA Measure	Scale
M1	Current allocation of responsibility is adequate to satisfy current capability and operational requirements.	G – Yes, Y – Limited, R – No
M2	Projected responsibilities can be determined based on changes in the global CBRN/TIM situation.	G – Yes, Y – Limited, R – No
M3	Current CBRND requirements are satisfied through existing DoD resources.	G – Yes, Y – Limited, R – No
M4	CBRND capabilities not available within DoD are provided through agreement with non-DoD agencies.	G – Yes, Y – Limited, R – No
M5	Extent of mutual support available from other agencies or organizations meets requirements.	G – Yes, Y – Limited, R – No

¹ Current assignment of responsibility is adequate to satisfy current capability and operational requirements.

² Able to determine projected responsibilities based on changes in the global CBRN situation.

³ Existing DoD resources cannot completely satisfy current CBRND requirements.

⁴ CBRND capabilities not available within DoD are provided through agreement with non-DoD agencies.

⁵ Extent of mutual support available from other agencies or organizations meets requirements.

⁶ Yes. Current assignment of responsibilities is able to satisfy current capability and operational requirements.

⁷ Yes. J-3 is able to determine projected responsibilities based on changes in the global CBRN situation.

⁸ Limited. The current DoD and interagency coordination resources to support CBRND and domestic response requirements are limited in size and scope. For example, current resources cannot handle a large scale series of simultaneous, multiple CBRN events.

⁹ Very limited. Many CBRND capabilities available within DoD can be provided to the interagency, but both DoD and non-DoD equipment, TTPs, and standards may not be compatible nor compliant with other agency requirements.

¹⁰ Very limited. While some CBRN mutual support exists, DoD and non-DoD capabilities are often incompatible.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused interagency experimentation.

¹² DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused interagency experimentation.

6.4.3 Functional Solution Analysis

6.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** The current capabilities can not handle a large scale series of simultaneous, multiple CBRN events.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for CBRND mutual capabilities support between DoD and non-DoD executive agencies. *Training:* Develop experimentation for interagency CBRND cooperation to provide lessons learned. Integrate lessons learned into training and exercises for CBRND mutual capabilities support between DoD and non-DoD executive agencies. *Leadership:* Develop JPME for CBRND mutual support capabilities between DoD and non-DoD executive agencies.
- 2. Deficiency:** DoD and non-DoD procedures and equipment may not be compatible.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for CBRND mutual support capabilities between DoD and non-DoD executive agencies. *Training:* Develop training and exercises to enhance CBRND mutual support capabilities between DoD and non-DoD executive agencies. *Leadership:* Develop JPME for CBRND mutual support capabilities between DoD and non-DoD executive agencies.
- 3. Deficiency:** DoD and non-DoD TTPs may not be compatible (e.g., personnel decontamination, equipment decontamination, and facilities decontamination).
Non-Materiel Solutions: *Doctrine:* Develop TTPs for DoD elements that allow equivalent CBRND procedures when a request for assistance is received.

6.4.3.2 IMA Assessment Summary

N/A

6.5 Task SNSHA 5: Determine joint CBRND capability to meet the global CBRN/TIM situation

6.5.1 Functional Area Analysis

6.5.1.1 Definition

To determine joint CBRND capability requirements based on changes in the current and projected global CBRN/TIM situation, including management of JCIDS. JCIDS defines capability gaps, capability needs, and approaches to provide those capabilities within the CBRND functional area. These capabilities derive from a common understanding of existing joint force operations and DOTMLPF capabilities and deficiencies. The JCIDS analyses result in DOTMLPF capabilities and provide the necessary information for the development of the Initial Capabilities Document (ICD) if required. Also includes the procurement of appropriate CBRND systems, equipment, and supplies.

6.5.1.2 Derivation

CJCSI 3170.01D, CJCSM 3170.01A, UJTL (SN 2.2.1, SN 3.3.6, SN 5.7.1, SN 7.5, SN 9.2.1), Protection Joint Functional Concept, Joint Enabling Concept for CBRN Defense, Transformation Planning Guidance.

6.5.1.2.1 Supported Task: N/A

6.5.1.2.2 Lateral Tasks: SNSHA 3, SNSHA 8, SNSHLD 10, SNSHLD 11, SNSHLD 12

6.5.1.2.3 Supporting Task: STSHA 3

6.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. High military systems reliability. (C2.2.5.3)
2. Limited interoperability. (C2.2.6)
3. Limited personnel expertise. (C2.2.4.5)
4. Limited deployed supplies. (C2.8.2)
5. Adequate continental United States (CONUS) resupply. (C2.8.3)
6. Slow pipeline responsiveness (C2.8.3.1)
7. Negligible commercial procurement. (C2.8.6)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C 3.1.1.3)

6.5.2 Functional Needs Analysis

6.5.2.1 Capability and Deficiency Assessment Summary

Table 6.5-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

JRO-CBRND has the ability to determine joint CBRN capability to meet the global CBRN situation. While JRO has the basic ability to perform the task, only a small amount of data at the operational level and above has been gathered through lessons learned in exercises or through experimentation. There are also a number of shortfalls in materials available to guide and train CBRND observer/controllers and to assist exercise developers in the integration of CBRND objectives in operational-level and above exercises. The current capability assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. Realistic modeling, simulation, exercises and experimentation will make comprehensive analysis possible at all levels of war as a result of current ongoing efforts. Capability assessments via operational experiments, operational/developmental test and evaluation, and lessons learned will continue to mature and will have enough depth to allow total analysis. The capstone DOTMLPF experimentation using UNIFIED ENDEAVOR will not take place in FY2009/FY2010. DOTMLPF to support task should improve if effective experimentation addresses organizational deficiencies and closes knowledge gaps and doctrine and if training and education initiatives address deficiencies identified in this JCIDS, raising the far-term assessment to “green.”

Table 6.5-1. SNSHA 5: Capability and Deficiency Assessment

Capability: Joint Requirements Office Chemical, Biological, Radiological, and Nuclear Defense	M1	M2	M3	M4
Current Overall Capability¹	Y ²	G ³	Y ⁴	Y ⁵
Near/Mid-Term Overall Capability	Y	G	G	Y
Far-Term Overall Capability⁶	G ⁷	G	G	G ⁸

	FAA Measure	Scale
M1	JCIDS analyses reflect comprehensive capability requirements at all levels of war.	G – Yes, Y – Limited, R – No
M2	Non-materiel (DOTLPPF) requirements are addressed per CJCSI 3170D- and 3180-series procedures.	G – Yes, Y – Limited, R – No
M3	All CBRND systems and logistical support are acquired in sufficient quantity and maintained to support global operations.	G – Yes, Y – Limited, R – No
M4	Capability assessments via operational experiments, operational/developmental test and evaluation, and lessons learned are available.	G – Yes, Y – Limited, R – No

¹ Limited. Doctrine and TTPs focusing on CBRND at the operational and strategic theater levels are very limited, even though JP 3-11 provides broad doctrinal guidance for CBRND and the new JP 3-40 provides broad doctrine for combating WMD. CBRND staff positions and staffing positions at all levels are not consistently manned, making it difficult to apply CBRND subject matter expertise to planning and evaluating exercises when required. CBRND staffs are not adequately trained/experienced on strategic CBRND issues. JPME does not adequately address CBRND issues.

² No. Limited CBRND systems and logistical support are acquired and maintained in quantities based on budgetary allocation and the program objectives memorandum.

³ Yes. The JRO-CBRND will address non-materiel (DOTLPPF) requirements per CJCSI 3180-series procedures.

⁴ Yes. CBRND systems and logistical support are acquired and maintained in quantities.

⁵ Limited. Capability assessments via operational experiments, operational/developmental test and evaluation, and lessons learned are now becoming available but do not currently have enough depth to allow total analysis. The capstone DOTMLPPF experimentation using UNIFIED ENDEAVOR will not take place until FY2009/FY2010.

⁶ DOTMLPPF to support task should improve if effective experimentation addresses organizational deficiencies/closes knowledge gaps and doctrine, training and education initiatives address deficiencies identified in this JCIDS.

⁷ Capability assessments via operational experiments, operational/developmental test and evaluation, and lessons learned will continue to mature and will have enough depth to allow total analysis. The capstone DOTMLPPF experimentation using UNIFIED ENDEAVOR will not take place in FY2009/FY2010.

⁸ Capability assessments via operational experiments, operational/developmental test and evaluation, and lessons learned will continue to mature and will have enough depth to allow total analysis. The capstone DOTMLPPF experimentation using UNIFIED ENDEAVOR will not take place in FY2009/FY2010.

6.5.3 Functional Solution Analysis

6.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** An exercise including fully integrated objectives or focused on CBRND and combating WMD for a strategic force has not been conducted.

Non-Materiel Solutions: *Doctrine:* Establish guidelines, checklists, and exercise planning tools to integrate CBRND and combating WMD objectives into joint exercises. *Training:* Facilitate the development of exercises that include fully integrated exercise objectives or are totally focused on CBRND and combating WMD for joint strategic forces. *Facilities:* Incorporate infrastructure and telemetric requirements into development of the Joint National Training Center.
- 2. Deficiency:** Relevant and comprehensive operational/strategic-level issues are virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Develop guides for observer/controllers so that they are better able to capture relevant lessons learned from exercises. Integrate captured data into future JCIDS analysis. *Organization:* Ensure that organizations that conduct joint exercises likely to reveal relevant data are adequately staffed with CBRN subject matter experts or that external observer/controller teams (provided by JRO) can be easily integrated into the exercise control/data collection plan. *Training:* Provide assistance to joint exercise developers on CBRND and combating WMD scenarios and objectives and develop CBRN-centric training for observer/controllers. *Leadership:* Integrate techniques for developing joint exercise CBRND and combating WMD training objectives into leader training. *Personnel:* Ensure that personnel chosen to be observer/controllers have requisite combination of technical expertise, operational/exercise experience, and CBRN-centric joint exercise observer/controller training.
- 3. Deficiency:** There have been no experiments focusing on operational/strategic-level warfighting restoration operations concepts and issues.

Non-Materiel Solutions: *Training:* Include CBRND and combating WMD tasks and concepts in the JRO experimentation campaign plan for FY2009/FY2010 UNIFIED ENDEAVOR and all work-ups.
- 4. Deficiency:** There is a limited capability to provide strategic-level CBRN investment strategy.

Non-Materiel Solutions: *Doctrine (partial):* Develop methodology for how to forecast/determine adequate CBRND and combating WMD capability or medical capability for strategic forces.
- 5. Deficiency:** There are very few concepts, doctrine, and TTPs focusing on CBRND and combating WMD requirements at the operational and strategic theater levels.

Non-Materiel Solutions: *Doctrine:* Develop robust concepts, doctrine and TTPs focusing on CBRND and combating WMD requirements at the operational and strategic levels.

- 6. Deficiency:** CBRND staffs are not adequately trained/experienced on strategic CBRND issues.

Non-Materiel Solutions: *Doctrine:* Develop guides and TTPs focusing on CBRND staff roles, responsibilities, and procedures for planning and conducting restoration operation at the operational and strategic theater levels. *Training:* Analyze training received by CBRND specialists assigned to joint staffs. Recommend training changes, enhancements, or alternative fixes as required. *Leadership:* Analyze education received by CBRND specialists assigned to joint staffs. Recommend education changes, enhancements, or alternative fixes as required.

- 7. Deficiency:** JPME does not currently address this issue.

Non-Materiel Solutions: *Leadership:* Commanders, staff directors, and leaders at all levels require extensive education on CBRND issues. Without a complete understanding of how CBRND issues can impact the warfight, they are unable to fully appreciate operational implication of CBRND and therefore assess and record CBRND exercise lesson's learned.

6.5.3.2 IMA Assessment Summary

Table 6.5-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 6.5-2. SNSHA 5: IMA Assessment

Idea for Materiel Approach	Description
Automated tools.	Develop automated tools that take the available data and provide a means to forecast strategic force CBRND and combating WMD requirements

6.6 Task SNSHA 6: Ensure joint CBRND readiness

6.6.1 Functional Area Analysis

6.6.1.1 Definition

To ensure the military forces of the United States are prepared to accomplish assigned missions in a CBRN/TIM environment. Joint CBRND training, exercises, and rehearsals are key components to ensure unit readiness for operations in a CBRN/TIM-contaminated environment. Operational concepts and new systems are evaluated in realistic exercises and experimental environments. Coalition partners, allies, and nonaligned nations achieve similar capability readiness through military assistance or engagement programs, including developing policy and standards for CBRND training, including what is necessary for eligible civilians. This task also ensures the availability of appropriate units and personnel in the correct quantities and locations to support national strategy and objectives. Encompasses the management of CBRND logistical resources for global operations. Also encompasses availability of CBRND expertise to joint forces operating worldwide.

6.6.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 3.4.4, SN 3.4.6, SN 4, SN 4.2.2, SN 4.3.3, SN 5.1.1, SN 5.1.2, SN 5.2.3, SN 5.2.4.1.2, SN 6.1, SN 7.4, SN 7.5, SN 8, SN 8.1, SN 9, SN 9.1.2, SN 9.2.1, SN 9.2.2), Transformation Planning Guidance, Military Transformation: A Strategic Approach, Protection Joint Functional Concept, Training Transformation Implementation Plan.

6.6.1.2.1 Supported Task: N/A

6.6.1.2.2 Lateral Tasks: SNSHA 2, SNSUST 9, SNSUST 10

6.6.1.2.3 Supporting Task: STSHA 4

6.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. Partially completed mission preparation. (C2.1.3)
3. Marginal forces assigned. (C2.2.1)
4. Multiple competing apportionments. (C2.2.2)
5. Marginal forces allocated. (C2.2.3)
6. Partial personnel capability. (C2.2.4)
7. Limited personnel experience. (C2.2.4.5)
8. Low military systems reliability. (C2.2.5.3)

9. Some or no interoperability. (C2.2.6)
10. Poor Joint Staff integration. (C2.3.1.1)
11. Poor multinational integration. (C2.3.1.2)
12. Limited staff expertise. (C2.3.1.3)
13. Limited to short deployed supplies. (C2.8.2)
14. Limited to negligible CONUS resupply. (C2.8.3)
15. Slow pipeline responsiveness. (C2.8.3.1)
16. Limited or no prepositioned materiel. (C2.8.4)
17. Limited commercial procurement. (C2.8.6)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support. (C3.1.2.3)
3. Poor information management. (C3.3.7.4)

6.6.2 Functional Needs Analysis

6.6.2.1 Capability and Deficiency Assessment Summary

Table 6.6-1 discusses a capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff, J-3 Readiness, is the single office within DoD responsible for the planning, coordination, and oversight of joint CBRN defense operational requirements. The current overall assessment is “yellow” due to the facts that policies are not in place throughout the force structure and those that are in place only pertain to immediate survivability. Scarce CBRN experts are dispersed throughout the DoD force structure and are frequently only one or two deep in any given organization. DOTMLPF does not adequately ensure Joint CBRN readiness.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far-term the situation will improve but remain “yellow.” Joint standards will be developed and enforced among the services. JPME/OPME will stipulate CBRND learning areas but will take some time after these actions to reach full capability in this area. As DOTMLPF enhancements are introduced, the expertise of senior leaders will improve, mitigating the need for such extensive callback capabilities. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Table 6.6-1. SNSHA 6: Capability and Deficiency Assessment

Capability: Joint Staff, J-3 Readiness	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18
Current Overall Capability¹	Y ²	Y ³	Y ⁴	G ⁵	R ⁶	Y ⁷	G ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁵	Y ¹⁶	Y ¹⁷	R ¹⁸	R ¹⁹
Near/Mid-Term Overall Capability	Y	Y	Y	G	R	Y	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	R
Far-Term Overall Capability²⁰	Y	Y	Y	G	Y ²¹	Y	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y ²²	Y ²³

	FAA Measure	Scale
M1	Doctrine and TTPs are adequate for operations envisioned over the next 5–10 years.	G – Yes, Y – Limited, R – No
M2	CBRN/TIM events and defense operations are incorporated in joint and Service exercises routinely.	G – Yes, Y – Limited, R – No
M3	National and joint exercises are held that focus on CBRND operations.	G – Yes, Y – Limited, R – No
M4	Joint- or Service-sponsored experiments focusing on CBRND operations occur annually.	G – Yes, Y – Limited, R – No
M5	Policies for training of joint forces are enforced.	G – Yes, Y – Limited, R – No
M6	Policies are in place to train those civilians not members of the joint force.	G – Yes, Y – Limited, R – No
M7	Standards are established for CBRND readiness.	G – Yes, Y – Limited, R – No
M8	A training program is established for potential evacuees.	G – Yes, Y – Limited, R – No
M9	Training of CBRND specialists is adequate.	G – Yes, Y – Limited, R – No
M10	Training of CBRND units is adequate.	G – Yes, Y – Limited, R – No
M11	Training of CBRND staff cells is adequate.	G – Yes, Y – Limited, R – No
M12	Training of joint force staffs is adequate.	G – Yes, Y – Limited, R – No
M13	Personnel assigned to diplomatic posts or employed in at-risk nations are effectively trained to respond to a CBRN/TIM event.	G – Yes, Y – Limited, R – No
M14	Tools and processes are available to globally manage CBRND personnel and units.	G – Yes, Y – Limited, R – No
M15	Tools and processes are available to globally manage CBRND materiel resources.	G – Yes, Y – Limited, R – No
M16	CBRND logistics tracking system is sufficient.	G – Yes, Y – Limited, R – No
M17	CBRN expert access is readily available for all CBRND topics.	G – Yes, Y – Limited, R – No
M18	Sufficient experts are available to meet peak demand.	G – Yes, Y – Limited, R – No

¹ Very limited. DOTMLPF does not adequately ensure Joint CBRN readiness.

² Limited. As a result of the global war on terror, CBRN doctrine and TTPs are adequate for operations envisioned over the next 3–5 years, but not 7–10 years. Additional emphasis must be placed on the full realm of threats envisioned in JV 2010 and JV 2020.

³ Very limited. CBRN events and defense operations are incorporated, but emphasis should be placed on the full spectrum of CBRND operations. This emphasis should include the new JP 3-40, combating WMD, counterproliferation, and consequence management.

⁴ Limited. CBRN specific exercises need to occur more often and cover more topics. CBRN/TIM scenarios need to be integrated into every national and joint exercise because of the recurring need to test capabilities in realistic CBRN/TIM scenarios. Two exercises that focus on CBRN operations are the TOPOFF exercises and the Determined Promise exercises that are held on a recurring basis.

⁵ Advanced Technology Demonstrations and Advanced Technology Concept Demonstrations have been conducted on CBRND operations. Once it is initiated, the new JRO-CBRND-sponsored CBRND Experimentation Campaign Plan will provide an excellent plan for experimentation.

⁶ No. Training enforcement is service-, situation-, and scenario-specific even though there is joint training involving two or more services. JPME is not specific enough for CBRND requirements.

⁷ Limited. Policies are not in place throughout the force structure, and those that are in place only pertain to immediate survivability. Individual training requirements are established for CONUS DoD civilians and contract support personnel.

⁸ Yes. IAW JSCAP and JP 1-03.

⁹ Limited. U.S. Forces Korea does this. However, this capability does not exist across the force structure.

¹⁰ Limited. This requirement is unique to each service. Tactical-level preparation is adequate with all services. Leader training and education for operational-level and above is nonexistent except for elective courses. Multiservice institutional training occurs with the Army as the lead Service.

¹¹ Limited. Training standards vary between Services. The number and type of exercises involving CBRND units varies. The amount of time available to Reserve Component units restricts the level of their training to the most crucial collective tasks.

¹² Limited. Training standards are different among services. The number and types of exercises involving CBRN staff cells differs.

¹³ Limited. Training standards differ. The number and types of exercises involving CBRN training events varies as does the depth and level of expertise within joint staffs. With few exceptions, CBRN training events do not adequately portray the level and complexity of a real-world situation.

¹⁴ Limited. Training is limited to initial survival and evacuation scenarios.

¹⁵ Limited. CBRN personnel and units are managed in the same manner as other deployable personnel and units. However, due to the unique mission of CBRN personnel and units, tools should be developed to intensively manage them.

¹⁶ Limited. CBRN materiel is managed in the same manner as other materiel (e.g., through various classes of supply). However, due to the unique character of CBRN materiel, tools should be developed to intensively manage and track it.

¹⁷ Limited. Currently, CBRN logistics are tracked the same as other assets. However, given the probable heavy medical and logistical requirements that would occur in a CBRN response, a separate CBRND logistics tracking systems should be developed.

¹⁸ Very limited. The Defense Threat Reduction Agency (DTRA) sponsors a call-back capability. Scarce CBRN experts are dispersed throughout the DoD force structure and are frequently only one or two deep in any given organization.

¹⁹ Very limited. In most cases, CBRN experts are readily available (e.g., from DTRA, the Centers for Disease Control, the U.S. Army Medical Research Institute for Infectious Diseases, etc.). However, experts embedded in units are frequently only one or two deep and may not be available to meet peak demand.

²⁰ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

²¹ Joint standards will be developed and enforced among the services. JPME/Officer Professional Military Education will stipulate CBRND learning areas. It will take some time after these actions to reach full capability in this area.

²² As DOTMLPF enhancements are introduced, the expertise of senior leaders will improve, mitigating the need for such extensive call-back capabilities. It will take some time after these actions to reach full capability in this area.

²³ As DOTMLPF enhancements are introduced, the expertise of senior leaders will improve, mitigating the need for such extensive call-back capabilities. It will take some time after these actions to reach full capability in this area.

6.6.3 Functional Solution Analysis

6.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** CBRN doctrine and TTPs are not adequate for operations envisioned over the next 7–10 years.
Non-Materiel Solutions: *Doctrine:* Devise a system that allows for more frequent revision and update to the CBRND doctrinal literature cycle.
- 2. Deficiency:** Emphasis is not placed on the full spectrum of CBRND operations and considerations which range from counterproliferation to consequence management in joint and service exercises.
Non-Materiel Solutions: *Doctrine:* Implement the full range of CBRN-related activities in doctrine: deterrence; counterproliferation; nonproliferation; interdiction; elimination; restoration. *Training:* Institute the full range of CBRN options in doctrine followed immediately by courses in the joint and Service institutional base which reflect all considerations from counterproliferation to consequence management.
- 3. Deficiency:** Training enforcement is specific to service, situation, and scenario. JPME lacks specificity for WMD requirements.
Non-Materiel Solutions: *Training:* Develop JPME that mandates minimum standards of proficiency in all CBRN institutional training.
- 4. Deficiency:** Policies are in place to train DoD civilians throughout the force structure but only pertain to immediate survivability.
Non-Materiel Solutions: *Doctrine:* Develop policies to train DoD civilians throughout the force structure beyond mere immediate survivability. *Training:* Develop training for DoD civilians throughout the force structure beyond mere immediate survivability
- 5. Deficiency:** The capability to establish training programs for potential civilian evacuees does not exist across the force structure.
Non-Materiel Solutions: *Training:* Establish standardized training programs for potential civilian evacuees across the force structure.
- 6. Deficiency:** Sustainment training for CBRND specialists (once they reach their assigned duty stations) is probably not adequate.
Non-Materiel Solutions: *Training:* Develop standards of proficiency for sustainment training for CBRND specialists across the force structure.
- 7. Deficiency:** Training of CBRND units is not standardized. There is a lack of realism in training which emphasizes CBRN. Sustainment training does not adequately reinforce perishable collective technical CBRN-related skills.

Non-Materiel Solutions: *Training:* Across the force structure, develop one set of standards of proficiency for all CBRND units and staffs.

8. **Deficiency:** Institutional training of CBRND staffs is not standardized. Sustainment training does not adequately reinforce perishable collective technical CBRN-related skills.

Non-Materiel Solutions: *Training:* Develop standardized institutional training of CBRND staffs across the force structure.

9. **Deficiency:** The number and type of exercises involving CBRN events differ widely. Few involve the full spectrum of activities required in an actual CBRN event.

Non-Materiel Solutions: *Training:* Develop exercises that more completely include the full spectrum of activities required in multiple, simultaneous actual CBRN events.

10. **Deficiency:** The depth and level of CBRN expertise within various joint staff sections varies.

Non-Materiel Solutions: *Doctrine:* Develop TTPs and exercises to ensure staff proficiency in the full range of CBRN considerations from interdiction and elimination operations, through humanitarian assistance, to restoration operations. *Training:* Develop TTPs and exercises to ensure staff proficiency in the full range of CBRN considerations from interdiction and elimination operations, through humanitarian assistance, to restoration operations.

11. **Deficiency:** There are no tools that can intensively manage CBRN personnel and units.

Non-Materiel Solutions: *Doctrine (partial):* Develop TTPs that more adequately train CBRN personnel and units to ensure these scarce assets are available, fully mission-capable, and able to operate in a joint and combined environment. *Training (partial):* Develop TTPs that more adequately train CBRN personnel and units to ensure these scarce assets are available, fully mission-capable, and able to operate in a joint and combined environment.

12. **Deficiency:** CBRN expertise is scarce throughout the force structure.

Non-Materiel Solutions: *Organization:* Within end-strength constraints, consideration should be given to increasing the capabilities of CBRND units and staffs. *Personnel:* Within end-strength constraints, consideration should be given to increasing the capabilities of CBRND units and staffs.

6.6.3.2 IMA Assessment Summary

Table 6.6-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 6.6-2. SNSHA 6: IMA Assessment

Idea for Materiel Approach	Description
Automated Tools	Develop automated tools that more adequately manage CBRN personnel, unit, and materiel to ensure that these scarce assets are available and fully mission-capable when needed. All data should be available to/through the Joint Operational Effects Federation. The personnel component of the tool should include projected availability, education, experience, and special skills. The unit component of the tool should include unit capability description, required training for unit, last date of required training, and training required but not completed. The unit component should also address equipment fill data, equipment readiness data, and special logistical requirements. The materiel component should list all required materiel, percentage of materiel on hand/available and availability dates, and materiel condition descriptions.

6.7 Task SNSHA 7: Coordinate global CBRN information systems and processes**6.7.1 Functional Area Analysis****6.7.1.1 Definition**

To ensure that global CBRN/TIM information systems and processes allow joint forces to effectively conduct operations in a CBRN/TIM environment. Establishes the standards, common operating procedures, and formats for plotting and predicting CBRN/TIM hazards, along with alarm, warning, and reporting of the hazards. Also includes standards and procedures for displaying hazard information via the global COP. Ensures that interoperability procedures are followed and adhered to for integration into the DoD classified and unclassified networks. Includes maintaining worldwide shared awareness of the current and projected CBRN/TIM threat and situation.

6.7.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4.1.2, SN 3.3.6, SN 4.3.3, SN 4.3.4, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 5.1.3, SN 5.7.1, SN 7.5, SN 8.1.6, SN 9, SN 9.1.1, SN 9.1.2, SN 9.1.3, SN 9.2, SN 9.2.1, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense, Joint Enabling Concept for CBRN Operations.

6.7.1.2.1 Supported Task: N/A

6.7.1.2.2 Lateral Task: SNSUST 6

6.7.1.2.3 Supporting Task: STSHA 5

6.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Low military systems reliability. (C2.2.5.3)
2. Some or no interoperability. (C2.2.6)
3. Partial Joint Staff integration. (C2.3.1.1)
4. High information volume. (C2.3.1.9)

Civil

1. Poor information management. (C3.3.7.4)

6.7.2 Functional Needs Analysis**6.7.2.1 Capability and Deficiency Assessment Summary**

Table 6.7-1 discusses the capabilities that currently exist to perform the task to the designated standard.

Current Capability and Deficiency

All of the capabilities listed are directly responsible for their respective aspects of global CBRN information systems and processes. The Joint Staff Directorate for Command, Control, Communications, and Computer Systems, the J-6, leads the C4 community. It leads in identifying and resolving military aspects of information-based issues of national importance, to include CBRND issues. Because of documented training, education, and experience issues, J-6 personnel may not have a full grasp of the issues that need to be resolved. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfight, the JRO-CBRND must proactively engage the J-6 to determine the adequacy of current and projected global CBRN information systems and processes. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND/J-6 action. The current capability assessment is "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is expected in the near/mid term. Most near/mid-term measures will remain limited until the Joint Warning and Reporting Network (JWARN) automatically interfaces with the Global Command and Control System (GCCS).

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in some deficient areas as a result of international and interagency initiatives that use data resulting from focused experimentation. Most far-term measures will remain limited until JWARN automatically interfaces with GCCS.

Table 6.7-1. SNSHA 7: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current										
Defense Information Systems Agency	Y ¹	R ²	Y ³	R ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰
Defense Threat Reduction Information Analysis Center (DTRIAC)	Y ¹¹	R ¹²	Y ¹³	R ¹⁴	Y ¹⁵	Y ¹⁶	Y ¹⁷	Y ¹⁸	Y ¹⁹	Y ²⁰
Joint Global Command and Control System (GCCS-J)	Y ²¹	R ²²	Y ²³	R ²⁴	G ²⁵	Y ²⁶	Y ²⁷	Y ²⁸	Y ²⁹	Y ³⁰
Joint Program Manager for Information Systems (JPM-IS) CBRN Data Initiative	Y ³¹	R ³²	Y ³³	Y	Y ³⁴	Y ³⁵	Y ³⁶	Y ³⁷	Y ³⁸	Y ³⁹
Near/Mid										
Defense Information Systems Agency	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Defense Threat Reduction Information Analysis Center	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Joint Global Command and Control System	Y	R	Y	R	G	Y	Y	Y	Y	Y
Joint Program Manager for Information Systems CBRN Data Initiative	Y	R	Y	R ⁴⁰	Y	Y	Y	Y	Y	Y
Far										
Defense Information Systems Agency	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Defense Threat Reduction Information Analysis Center	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Joint Global Command and Control System	Y	R	Y	R	G	Y	Y	Y	Y	Y
Joint Program Manager for Information Systems CBRN Data Initiative	Y	R	Y	Y	Y	Y	Y	Y	Y	Y
Current Overall Capability	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Near/Mid-Term Overall Capability	Y	R	Y	R	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	Y	R	Y	R	Y	Y	Y	Y	Y	Y

	FAA Measure	Scale
M1	NCES is used to effectively manage and provide CBRN/TIM information.	G – Yes, Y – Limited, R – No
M2	Standardized CBRN/TIM hazard alarm, warning, and reporting formats and procedures are interoperable with interagency partners.	G – Yes, Y – Limited, R – No
M3	Sense data are integrated into the COP.	G – Yes, Y – Limited, R – No
M4	Distributed sensor arrays operating within the Integrated Detection Network (IDN) provide automated warning and reporting of the CBRN/TIM hazard.	G – Yes, Y – Limited, R – No
M5	Nonnetworked detections and manual reports are processed into the network.	G – Yes, Y – Limited, R – No
M6	Standards for plotting and prediction of CBRN/TIM hazards are established.	G – Yes, Y – Limited, R – No
M7	CBRN/TIM situational information from all global sources is communicated to the DoD and Joint Staff, as appropriate.	G – Yes, Y – Limited, R – No
M8	Mechanism exists to rapidly disseminate CBRN/TIM threat intelligence.	G – Yes, Y – Limited, R – No
M9	Information on the operational impact of CBRN/TIM events is integrated into the COP.	G – Yes, Y – Limited, R – No
M10	A CBRND operation reference information system is readily available.	G – Yes, Y – Limited, R – No

-
- ¹ Limited. Net-Centric Enterprise Services (NCES) is dependent on subsystems, including JPM-IS's Data Initiative. This mission will be achieved by developing a CBRN Data Model and related CBRN extensible markup language (XML). Until all subordinate systems are fully operational, DISA's NCES is less than fully mission-capable.
- ² No. Interagency partners are not operating on a COP.
- ³ Limited. Interfacing software for SENSE data is not fully automated.
- ⁴ No. An integrated detection network does not currently exist for automated warning and reporting of the CBRN hazard.
- ⁵ Limited. Any operator can process reports into the network, but there are still problems with interoperability that continue to hinder the flow of CBRN information across the analysis spectrum.
- ⁶ Limited. Standards for plotting and prediction of CBRN hazards are established. A single standard for automated plotting and prediction CBRN hazards does not yet exist.
- ⁷ Limited. CBRN situational information from all global sources is not fully communicated to the DoD and Joint Staff, as appropriate.
- ⁸ Limited. Any authorized operator can query DTRIAC or J-2 resources. However, the NCES is not fully implemented.
- ⁹ Limited. Any authorized operator can query DTRIAC for the COP. However, the NCES is not fully implemented.
- ¹⁰ Limited. Interagency partners do not access DTRIAC.
- ¹¹ Limited. The NCES is not fully implemented. The NCES, consisting of hardware, software, policy, processes, and procedures, will eventually provide a way for DoD to coordinate staff and allocate resources more efficiently.
- ¹² No. Interagency partners are not operating on a COP.
- ¹³ Limited. Interfacing software for Sense data is not fully automated.
- ¹⁴ No. An integrated detection network does not currently exist for automated warning and reporting of the CBRN hazard.
- ¹⁵ Limited. Any operator can process reports into the network, but there are still problems with interoperability that continue to hinder the flow of CBRN information across the analysis spectrum.
- ¹⁶ Limited. Standards for plotting and prediction of CBRN hazards are established. A single standard for automated plotting and prediction CBRN hazards does not yet exist.
- ¹⁷ Limited. CBRN situational information from all global sources is not fully communicated to the DoD and Joint Staff, as appropriate.
- ¹⁸ Limited. Any authorized operator can query DTRIAC or J-2 resources. However, the NCES is not fully implemented.
- ¹⁹ Limited. Any authorized operator can query DTRIAC for the COP. However, the NCES is not fully implemented.
- ²⁰ Limited. Interagency partners do not access DTRIAC.
- ²¹ Limited. CBRND information must be manually inserted onto GCCS-J.
- ²² No. Interagency partners operate on different Command and Control systems.
- ²³ Limited. Sense data are manually input into the COP.
- ²⁴ No. An integrated detection network does not currently exist for automated warning and reporting of the CBRN hazard.
- ²⁵ Yes. Any authorized operator can manually process reports into GCCS-J.
- ²⁶ Limited. Standards for plotting and prediction of CBRN hazards are established through STANAG 2103 and ATP-45. But there is no single standard for automated plotting and prediction CBRN hazards .
- ²⁷ Limited. CBRN situational information from all global sources is not fully automated and communicated to the DoD and Joint Staff, as appropriate.
- ²⁸ Limited. Any authorized operator can query GCCS-J. However, the NCES is not fully implemented.
- ²⁹ Limited. Any authorized operator can query the COP. However, the NCES is not fully implemented.
- ³⁰ Limited. Interagency partners do not access GCCS-J.
- ³¹ Limited. JPM-IS is working to eliminate interoperability problems across the joint CBRN information spectrum.
- ³² No. Interagency partners operate on different Command and Control systems.
- ³³ Limited. Sense data can only be manually integrated into the COP. JPM-IS is working to eliminate interoperability problems across the joint CBRN information spectrum.
- ³⁴ Limited. JPM-IS is working to eliminate interoperability problems across the joint CBRN information spectrum.
- ³⁵ Limited. Current progress toward creating automation standards is encouraging but work still needs to be done. The programs within JPM have already benefited from the JPM-IS data model and schema.
- ³⁶ Limited. CBRN situational information from all global sources is not fully automated and communicated to the DoD and Joint Staff. There is still a problem with data-interoperability, but the emerging NCES includes mandates to solve this problem.

³⁷ Limited. Any authorized operator can query GCCS-J. However, the NCES and NCES are not fully implemented.

³⁸ Limited. Any authorized operator can query the COP. However, the NCES and NCES are not fully implemented.

³⁹ Limited. The JPM-IS Data Initiative is creating a structure for the CBRN community of operations and phenomena that will include CBRN-related terms and definitions that are formatted relationally.

⁴⁰ No. There is no integrated detection network to provide automated warning and reporting of the CBRN hazard. However, JPM-IS is working to create a common data schema to facilitate automated reporting envisioned in JWARN, Joint Effects Model (JEM), and Joint Operational Effects Federation (JOEF).

6.7.3 Functional Solution Analysis

6.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** Interagency partners operate on different Command and Control technical architecture systems.
Non-Materiel Solutions: *Doctrine:* CJCS should coordinate with interagency partners to craft a policy that compels partners to fully integrate CBRN information management systems. Tasks for the interagency *Universal Joint Task List (UJTL)* must address these issues. Interagency partners should fully participate in the JPM-IS initiative. *Training:* CJCS should continue to encourage the development of training programs and future operational capabilities that integrate CBRN information management systems using *UJTL* tasks to develop interagency training. JPM-IS CBRN Data Initiative should continue as chartered.
- 2. Deficiency:** Interoperability problems with CBRN information systems continue to exist.
Non-Materiel Solutions: *Doctrine:* JPM-IS CBRN Data Initiative should continue as chartered. JRO-CBRND and J-6 should work together through experimentation and exercises to identify and solve interoperability problems.
- 3. Deficiency:** An integrated detection network does not currently exist for automated warning and reporting of the CBRN hazard.
Non-Materiel Solutions: *Doctrine:* Develop ideas, proposals, and concepts for cooperatively linked detection technologies. *Training:* Before concepts for cooperatively linked detection technologies can be fully developed and tested, exercises and experiments will be necessary to refine and test concept hypothesis.
- 4. Deficiency:** CBRN situational information from all global sources is not fully automated.
Non-Materiel Solutions: *Doctrine:* Automate CBRN situational information from all global sources so that the COP portrays real-time shared situational understanding. JPM-IS CBRN Data Initiative should continue as chartered.
- 5. Deficiency:** The NCES and JPM-IS CBRN Data Initiative are not fully implemented.
Non-Materiel Solutions: *Doctrine:* The Global Information Grid Enterprise Services and JPM-IS CBRN Data Initiative should continue as chartered.
- 6. Deficiency:** Joint standards, common operating procedures, and formats for plotting and predicting CBRN hazards, along with alarm, warning, and reporting of the hazards do not exist.
Non-Materiel Solutions: *Doctrine:* JRO-CBRND should foster the development of truly Joint (versus multi-Service) standards and formats for automated plotting and predicting CBRN hazards and alarm and warning systems.

- 7. Deficiency:** Interagency partners are not all sharing a COP.
Non-Materiel Solutions: *Doctrine:* CJCS should coordinate with interagency partners to craft policy that compels partners to fully integrate CBRN information management systems so that all U.S. agencies share the same CBRND COP. Tasks for the interagency *UJTL* must address these issues. Interagency partners should fully participate in the JPM-IS initiative.
- 8. Deficiency:** With the exception of STANAG 2103 and ATP-45, no standards for common operating procedures, formats, plotting, and predicting CBRN hazards exist. Further, hazard alarm, warning, and reporting are not standardized, automated, nor fully integrated into the COP for use by interagency partners.
Non-Materiel Solutions: *Doctrine:* Standardize common operating procedures, and formats for plotting and predicting CBRN hazards, along with alarm, warning, and reporting of the hazards among interagency partners.
- 9. Deficiency:** With the exception of STANAG 2103 and ATP-45 there are no joint (versus multi-Service) standards for common operating procedures or for formats for plotting and predicting CBRN hazards. Nor are alarm, warning, and reporting of the hazards standardized, automated, and fully integrated into the COP.
Non-Materiel Solutions: *Doctrine:* Fully integrate and automate CBRND information, detection, and sensing technologies into the COP.
- 10. Deficiency:** Interagency partners do not access GCCS-J.
Non-Materiel Solutions: *Doctrine:* CJCS should coordinate with interagency partners to craft policy that compels partners to fully integrate CBRN information management systems. Tasks for the interagency *UJTL* must address these issues. Interagency partners should fully participate in the JPM-IS initiative.
- 11. Deficiency:** Several issues hinder the effectiveness of the J-6 and JRO-CBRND in their joint responsibility for identifying and resolving issues involving global CBRN information systems and processes with agencies outside of the joint staff.
Non-Materiel Solutions: *Doctrine:* Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated. *Organization:* JRO-CBRND should have a staff section dedicated to resolving C4ISR community issues. Ensure that CBRN organizations that provide DoD detailees to national C4ISR organizations are proactive in ensuring their institutional CBRN C4ISR needs are both understood and met and that the detailees they provide are prepared in every way. *Training:* Develop training that will enable the J-6 staff to better understand their CBRN role and enhance their ability to identify and resolve CBRND C4 issues that are required to support the Shape function of strategic national CBRND. Develop training programs that allow CBRN staff officers to better support the CBRN C4ISR process. JRO-CBRND must work with J-6 and/or national C4ISR organizations to integrate this task into both C4ISR and CBRN experimentation campaign plans. *Leadership:* Develop an education program that will enable the J-6 staff to better understand their CBRN role and enhance their ability to identify and resolve CBRND C4 issues that are required to support the Shape function of strategic national CBRND. Develop education programs that

allow CBRN staff officers to better understand the CBRN C4ISR process and their roles and responsibilities. Integrate C4ISR CBRN fusion issues into JPME. CBRN DoD detailees to national C4ISR organizations must be provided with formal educational preparation.

Personnel: CBRN DoD detailees to national C4ISR organizations must possess adequate skill and experience.

12. Deficiency: Lack of interoperable CBRN/TIM networked detection technologies.

Non-Materiel Solutions: *Doctrine (partial):* Develop ideas, proposals, and concepts for cooperatively linked detection technologies. *Training (partial):* Before concepts for cooperatively linked detection technologies can be fully developed and tested, exercises and experiments will be necessary to refine and test concept hypothesis.

6.7.3.2 IMA Assessment Summary

Table 6.7-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 6.7-2. SNSHA 7. IMA Assessment

Idea for Materiel Approach	Description
Networked information, detection, and sensing system	There is a need to develop cooperative linkages between various proponent and service CBRND and CBRN/TIM information, detection, and sensing technologies. Concepts must first be developed based on proposed linkages that will provide capabilities for effective, integrated CBRND and CBRN/TIM detection, warning, and shared situational understanding. These concepts must be explored through experimentation and the cooperative linkages that result need to be tested. The entire package should be developed as a system and fully integrated into a multi-agency COP. As each Service develops detection or sensing technologies, they should be analyzed for inclusion into the CBRN/TIM cooperative detection network and necessary modifications should be mandated for the Service systems.

6.8 Task SNSHA 8: Establish national CBRND strategy, plans, and policy

6.8.1 Functional Area Analysis

6.8.1.1 Definition

To produce and disseminate national strategy, plans, and policy providing strategic goals and end states for CBRND capabilities. Joint, multiagency, and international considerations are included. This task is geared to enabling the national strategies. Includes providing strategic guidance for restoration and elimination operations.

6.8.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4.1.2, SN 2.5.1, SN 3.4.4, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 5.2.3, SN 7.5, SN 8.1.6, SN 9, SN 9.1.3, SN 9.2, SN 9.2.1, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense, Joint Enabling Concept for CBRN Operations.

6.8.1.2.1 Supported Task: N/A

6.8.1.2.2 Lateral Tasks: SNSENS 15, SNSHA 2, SNSHA 3, SNSHA 4, SNSHA 5, SNSHA 9, SNSHA 10, SNSHA 11, SNSHA 12, SNSHA 13, SNSUST 3, SNSUST 4

6.8.1.2.3 Supporting Task: STSHA 6

6.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. Partial preexisting arrangements. (C2.1.1.2)
3. Partial Joint Staff integration. (C2.3.1.1)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)

6.8.2 Functional Needs Analysis

6.8.2.1 Capability and Deficiency Assessment Summary

Table 6.8-1 discusses the Joint Staff, Directorate for Strategic Plans and Policy (J5) ability to establish national CBRN strategy, plans, and policy. This is the only capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current capability assessment is “yellow.” Current plans do not adequately address global restoration operations. However, JRO-CBRND, ICW J5 and J8 have developed a *Joint Integrating Concept (JIC) for CBRND*. The JEC establishes a construct to support the *National Strategy to Combat Weapons of Mass Destruction* wherein restoration operations are part of consequence management. These two initiatives can serve as the foundation for future plan development. Not all pertinent Sense, Shape, Shield, and Sustain information is currently included in strategy, plans, and policy. However, once *UJTL 5.0* is formally approved, all Sense, Shape, Shield and Sustain domains must be considered and incorporated into strategy, plans, and policy.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is expected over the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, the success of initiatives recommended by this JCIDS and DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

Table 6.8-1. SNSHA 8: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	G ³	Y ⁴	Y ⁵	Y ⁶	G ⁷	G ⁸	Y ⁹
Near/Mid-Term Overall Capability	Y	G	Y	Y	Y	G	G	Y
Far-Term Overall Capability	G ¹⁰	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Plans are provided for global restoration operations.	G – Yes, Y – Limited, R – No
M2	Plans are provided for global elimination operations.	G – Yes, Y – Limited, R – No
M3	Plans are provided for global CBRND operations.	G – Yes, Y – Limited, R – No
M4	All pertinent Sense, Shape, Shield, and Sustain information is included in strategy, plans, and policy.	G – Yes, Y – Limited, R – No
M5	Strategic planning staffs have the training and experience to effectively plan for CBRND operations.	G – Yes, Y – Limited, R – No
M6	There are sufficient doctrine and TTPs for strategic planning.	G – Yes, Y – Limited, R – No
M7	Plans and policies are updated regularly.	G – Yes, Y – Limited, R – No
M8	National and joint exercises and experimentation provide feedback on efficacy of plans and policy.	G – Yes, Y – Limited, R – No

¹ Limited. Presidential Decision Directives 17, 39, and 62 provide national-level policy and doctrine. Additionally, doctrine found in JP 3-11 series and JP 3-40, provide adequate baseline doctrine and TTPs for national CBRND planning. However, TTPs needs to address more specific techniques. JPME does not adequately cover the art of strategic planning for CBRN issues.

² Limited. Current plans do not adequately address global restoration operations. However, JROCBRND, ICW J5 and J8 have developed a *Joint Enabling Concept (JEC)* for CBRND. The JEC establishes a construct to support the *National Strategy to Combat Weapons of Mass Destruction* wherein restoration operations are part of consequence management. These two initiatives can serve as the foundation for future plan development.

³ Yes. Current plans for global elimination operations do exist.

⁴ Limited. Current information does not adequately address plans for global CBRND operations. Most CBRND planning is done at the combatant command level.

⁵ Limited. All pertinent Sense, Shape, Shield, and Sustain information is not currently included in strategy, plans, and policy. However, once UJTL 5.0 is formally approved, all Sense, Shape, Shield and Sustain domains must be considered and incorporated into strategy, plans and policy.

⁶ Limited. Strategic planning staffs are not adequately trained and educated in CBRN issues. CBRN staff officers are not adequately trained and educated in planning issues. JPME does not adequately cover the fusion of planning. CBRN CJCSI 1800.01a does not require baseline CBRND instruction in JPME. Given the complex nature of planning for CBRN defense operations at the strategic national level, these planning staffs must include multi-disciplined CBRND experienced senior planners.

⁷ Yes. The Joint Services Capability Plan, along with the JP 3-11 series and JP 3-40, provide adequate baseline doctrine and TTPs for strategic national CBRND planning.

⁸ Yes.

⁹ Limited. There are some Senior Service College tabletop exercises that provide feedback on efficacy of plans and policy. (e.g., Solo Challenge, Joint Land, Aerospace and Sea Simulation [JLASS]).

¹⁰ In the far term, the success of initiatives recommended by this JCIDS and DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

6.8.3 Functional Solution Analysis

6.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** Current plans do not adequately address global CBRN restoration operations.
Non-Materiel Solutions: *Doctrine:* Develop plans that adequately address global restoration operations. Considerations must include operations, logistics, medical, economic, infrastructure, the use of nongovernmental organizations, and displaced population relocation.
- 2. Deficiency:** Not enough plans address global CBRND operations.
Non-Materiel Solutions: *Doctrine:* Develop plans that refine global CBRND and restoration operations. Include TIM hazards, radiological hazards, novel and third-generation CB hazards, protection, and decontamination.
- 3. Deficiency:** Not all pertinent Sense, Shape, Shield, and Sustain information is currently included in strategy, plans, and policy.
Non-Materiel Solutions: *Doctrine:* Upon publication and approval of *UJTL 5.0*, review and integrate the Sense, Shape, Shield, and Sustain domains into strategy, plans, and policy.
- 4. Deficiency:** Not all CBRN scenarios and contingencies can be envisioned in the planning process.
Non-Materiel Solutions: *Doctrine:* Employ CBRN Red Teaming in the plan development process.
- 5. Deficiency:** JPME does not adequately cover the art of strategic planning for CBRN issues.
Non-Materiel Solutions: *Training:* Develop JPME that more adequately covers the art of strategic planning for CBRN issues.
- 6. Deficiency:** JRO-CBRND is not optimally placed within the Joint staff.
Non-Materiel Solutions: *Organization:* Given the unique JRO-CBRND charter for CBRN defense, consider its optimal positioning within the Joint Staff. It is now imbedded within the J-8 but has much broader responsibilities. Access is hampered by geographic positioning outside of the Pentagon. Given the enormous military responsibilities (the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues), consider the resourcing of the office and rank-structure and staffing of personnel. There is no cooperative linkage with the Defense Threat Reduction Agency (DTRA). Consider the analogy of the J-2/DIA relationship. The Joint Staff Directorate for Intelligence, J-2, is a unique organization, in that it is both a major component of the Defense Intelligence Agency (DIA, a combat support agency) and a fully integrated element of the Joint Staff. Analysis of establishing a similar arrangement with DTRA should be conducted. Consideration should be

given to establishing JRO-CBRND as a numbered joint staff directorate. See Figure 6.8-1 for a recommendation.

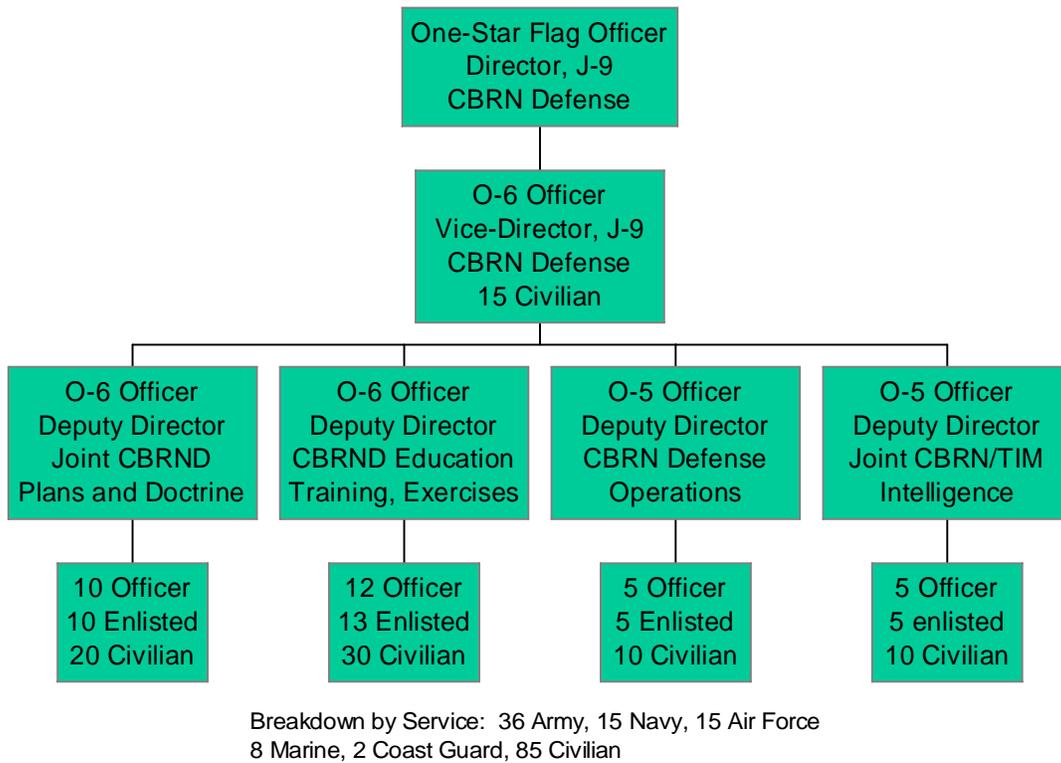


Figure 6.8-1 Proposed CJCS J-9 WMD Staff

6.8.3.2 IMA Assessment Summary

N/A

6.9 Task SNSHA 9: Coordinate CBRND aspects of global medical operations

6.9.1 Functional Area Analysis

6.9.1.1 Definition

To coordinate CBRND aspects of global medical operations. Sets standards for personnel health and fitness required for potential exposure to CBRN/TIM conditions. Provides guidance for the conduct of medical CBRN/TIM health assessments. Establishes threshold criteria for medical CBRN/TIM health assessments, which determine deployment eligibilities for sustained operations in a CBRN/TIM threat environment. Includes the coordination of medical surveillance across the joint force for indications of CBRN/TIM attack or release.

6.9.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.5.1, SN 3.3.6, SN 3.4.4, SN 4.3.3, SN 4.3.4, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 7.5, SN 9, SN 9.1.3, SN 9.2, SN 9.2.1, SN 9.2.2), Transformation Planning Guidance.

6.9.1.2.1 Supported Task: N/A

6.9.1.2.2 Lateral Tasks: SNSHA 2, SNSHA 4, SNSHA 8, SNSHA 10, SNSUST 7

6.9.1.2.3 Supporting Task: STSHA 7

6.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. Fair personnel nutrition and health. (C2.2.4.1)
3. Limited personnel experience. (C2.2.4.5)
4. Limited staff experience. (C2.3.1.3)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)
2. Uncertain international organization support. (C3.1.2.5)

6.9.2 Functional Needs Analysis

6.9.2.1 Capability and Deficiency Assessment Summary

Table 6.9-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staffs Logistics Directorate (J-4) is responsible for medical response to WMD and nuclear, biological, and chemical warfare; consequence management; environmental health and surveillance; interagency medical support; preventive medicine; medical information management/information technology; and patient evacuation (DODD 6000.12).

Projected Near/Mid-Term Capability and Deficiency

No foreseeable changes in capability.

Projected Far-Term Capability and Deficiency

No foreseeable changes in capability.

Table 6.9-1. SNSHA 9: Capability and Deficiency Assessment

Capability: Joint Staffs Logistics Directorate (J-4)	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	G²	G³	G⁴	G⁵	G⁶	G⁷
Near/Mid-Term Overall Capability	G	G	G	G	G	G
Far-Term Overall Capability	G	G	G	G	G	G

	FAA Measure	Scale
M1	Standards for joint force health and fitness that contribute to CBRND are established.	G – Yes, Y – Limited, R – No
M2	Medical health assessment guidance adequately addresses personnel readiness for sustained CBRN operations.	G – Yes, Y – Limited, R – No
M3	Medical surveillance and intelligence information are collected and analyzed.	G – Yes, Y – Limited, R – No
M4	Non-DoD sources are assessed for information.	G – Yes, Y – Limited, R – No
M5	A global system for tracking the status of CBRND medical information exists.	G – Yes, Y – Limited, R – No
M6	Global medical threats are identified and appropriate countermeasures are instituted.	G – Yes, Y – Limited, R – No

¹ Yes. There is sufficient DOTLPF to accomplish this task.

² Yes. DODD 6000.12 provides guidance for standards for joint force health and fitness.

³ Yes. DODD 6205 provides guidance for medical health assessment for personnel readiness.

⁴ Yes. DODD 6420.1 and JP 4-02 provide guidance for medical surveillance and intelligence collection and analysis.

⁵ Yes. JP 4-02 directs coordination with non-DoD medical sources.

⁶ Yes. DODD 6205 and DODD 6000.12 provide guidance for the tracking of CBRN medical information.

⁷ Yes. DODD 6420.1 and JP 4-02 provide procedures for the identification of global medical threats through surveillance and intelligence activities. Medical authority recommends and institutes appropriate medical countermeasures based on identified threats.

6.9.3 Functional Solution Analysis

6.9.3.1 DOTLPF Assessment Summary

There are no capability gaps identified for this task.

6.9.3.2 IMA Assessment Summary

N/A

6.10 Task SNSHA 10: Coordinate global CBRND operations

6.10.1 Functional Area Analysis

6.10.1.1 Definition

To provide overall coordination of global CBRND operations. Multiple CBRN/TIM events could occur in the same time frame around the globe. Rapid and effective response and mitigation coordination is required. CBRN/TIM event information provided in the COP is used to formulate appropriate actions and taskings. Includes the allocation and reallocation of CBRND resources to the combatant commanders. Includes overall coordination of multitheater restoration and elimination operations.

6.10.1.2 Derivation

UJTL (SN 1.1.6, SN 2.2.1, SN 2.4.1.2, SN 3.4.4, SN 3.4.6, SN 4, SN 5.1.1, SN 5.1.2, SN 5.1.3, SN 5.7.1, SN 6.1, SN 7.4, SN 7.5, SN 8.1.6, SN 9, SN 9.1.3, SN 9.2, SN 9.2.1, SN 9.2.2), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense, Joint Enabling Concept for CBRN Operations.

6.10.1.2.1 Supported Task: N/A

6.10.1.2.2 Lateral Tasks: SNSHA 4, SNSHA 8, SNSHA 9, SNSUST 8, SNSUST 12

6.10.1.2.3 Supporting Task: STSHA 8

6.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. No or partial preexisting arrangements. (C2.1.1.2)
3. No mission preparation. (C2.1.3)
4. Poor or partial Joint Staff integration. (C2.3.1.1)
5. Poor multinational integration. (C2.3.1.2)
6. Limited staff experience. (C2.3.1.3)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)
2. Indifferent international politics. (C3.1.2)
3. Restrictive to vague command decisions. (C3.1.3)

6.10.2 Functional Needs Analysis

6.10.2.1 Capability and Deficiency Assessment Summary

Table 6.10-1 discusses the capability that currently exists to perform the task to the established standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Operations Directorate (J3) has primary responsibility for this task. The primary reasons why some standards were rated as deficient and limited in capability generally centered on JPME and CBRN specialists. JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels. CBRN specialists do not receive training as strategic planners. Also, allocation adequacy for CBRN units, personnel and CBRND systems was considered less than fully capable. The overall current capability is assessed as “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. As *UJTL 5.0* comes into common usage and JRO initiatives to educate senior leaders becomes more widespread, Sense, Shape, Shield, and Sustain considerations will start to be integrated into all areas. DOTMLPF should begin to improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, the success of initiatives recommended by this JCIDS and DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises, will improve all measures to a “green” rating.

Table 6.10-1. SNSHA 10: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	Y ²	Y ³	R ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸
Near/Mid-Term Overall Capability⁹	Y	Y	Y ¹⁰	Y	Y	Y	Y
Far-Term Overall Capability	G ¹¹	G	G	G	G	G	G

	FAA Measure	Scale
M1	CBRND units and personnel are adequately allocated.	G – Yes, Y – Limited, R – No
M2	CBRND systems and equipment are adequately allocated.	G – Yes, Y – Limited, R – No
M3	All pertinent Sense, Shape, Shield, and Sustain information is considered.	G – Yes, Y – Limited, R – No
M4	Coordination for CBRND operations includes transport, logistics, communications, and employment considerations.	G – Yes, Y – Limited, R – No
M5	Doctrine and TTPs for global CBRND coordination are available.	G – Yes, Y – Limited, R – No
M6	DoD and Joint Staffs are adequately trained to effectively coordinate CBRND operations.	G – Yes, Y – Limited, R – No
M7	International/joint exercises or experimentation provide feedback on efficacy of coordination of global CBRND operations.	G – Yes, Y – Limited, R – No

¹ No. JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels. CBRN specialists do not receive training as strategic planners.

² Limited. CBRND units and personnel are insufficient for multitheater CBRN events and subsequent restoration operations in the event interdiction should fail against multiple adversaries with CBRN capability. Otherwise, current allocation within the force structure constraints is appropriate.

³ Limited. Current CBRND end-item systems are scarce assets. CBRND resources, especially detection and force protection systems, must be focused on most critical assets.

⁴ No. All pertinent Sense, Shape, Shield, and Sustain information is not considered. UJTL 4.7 does not establish Sense, Shape, Shield, and Sustain as critical domains. However, UJTL 5.0 will establish them.

⁵ Limited. CJCS J-3 can establish coordination; however, given the fluid nature of current and future military engagement areas, precise and finite coordination must await execution orders.

⁶ Limited. TIMs are not adequately addressed at the strategic national level. Joint Publication 3 Series (Operations) addresses CBRN coordination considerations.

⁷ Limited. The Joint Senior Leaders Course provides a limited orientation at the strategic theater and operational levels. However, JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels.

⁸ Limited. Coordination of global CBRN/TIM defense operations at the strategic national level is limited to national policy, deterrence, interdiction, and elimination. CBRN/TIM defense operations occur at the strategic theater level and below.

⁹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹⁰ As UJTL 5.0 comes into common usage, and JRO initiatives to educate senior leaders becomes more widespread, Sense, Shape, Shield, and Sustain considerations will start to be integrated into all areas.

¹¹ In the far term, the success of initiatives recommended by this JCIDS and DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

6.10.3 Functional Solution Analysis

6.10.3.1 DOTLPP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** Given multiple CBRN capable adversaries, CBRND units and personnel are insufficient for multitheater CBRN events and subsequent restoration operations.
Non-Materiel Solutions: *Training:* Given the intensive requirements for reconnaissance and decontamination in a CBRN environment, reevaluate allocation rules for CBRND units.
Personnel: Given the intensive requirements for information management, reconnaissance and decontamination in a CBRN environment, reevaluate allocation rules for CBRND personnel or automated decision aides.
- 2. Deficiency:** All pertinent Sense, Shape, Shield, and Sustain information is not considered.
Non-Materiel Solutions: *Doctrine:* UJTL 5.0 should effectively drive consideration of Sense, Shape, Shield, and Sustain domains.
- 3. Deficiency:** Given the fluid nature of current and future military engagement areas, precise and finite CBRND logistical and operational coordination must await execution orders.
Non-Materiel Solutions: *Doctrine:* Develop staff planning guidance for predictive CBRND operations and logistics.
- 4. Deficiency:** Global TIM considerations are not adequately addressed at the strategic national level.
Non-Materiel Solutions: *Doctrine:* Develop a global TIM assessment tool that allows staff planners predictive capability for TIM hazards.
- 5. Deficiency:** JPME does not mandate a core minimum set of CBRND tasks for mastery at the mid and Senior Service College levels.
Non-Materiel Solutions: *Training:* Conduct front-end analysis and training needs analysis to develop and implement appropriate instruction at the mid and Senior Service College level. Once training analysis is complete, resource manpower and time to support resident instruction and develop distributed training.
- 6. Deficiency:** Lack of automated CBRN/TIM hazard assessment capabilities.
Non-Materiel Solutions: None.

6.10.3.2 IMA Assessment Summary

Table 6.10-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPP assessment.

Table 6.10-2. SNSHA 10. IMA Assessment

Idea for Materiel Approach	Description
Automated tools	Develop a global CBRN automated assessment tool that allows staff planners predictive capability for CBRN hazards

6.11 Task SNSHA 11: Provide Shape “Global Family of Engagement Plan” policies and guidelines to combatant commanders

6.11.1 Functional Area Analysis

6.11.1.1 Definition

To formulate policy for Shape “Global Family of Engagement Plans” and to provide this policy, as well as specific guidelines, to combatant commanders for execution. In conjunction with interagency partners, CJCS establishes and develops these policy and guidelines. Because the threat of CBRN/TIM weapons is of concern to all nations and potential allies, offering assistance in establishing a Shape operational capability through training or equipment can help forge new friendships and cooperation. Provision of this assistance also will make Shape operational issues easier to address in remote or austere areas if the host nation has a Shape capability.

6.11.1.2 Derivation

UJTL (SN 9.2.1, SN 8, SN 7.5, SN 5.4.3), CJCSM 3113.01a.

6.11.1.2.1 Supported Task: N/A

6.11.1.2.2 Lateral Tasks: SNSENS 15, SNSHA 8, SNSUST 11

6.11.1.2.3 Supporting Task: STSHA 9

6.11.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil. N/A

6.11.2 Functional Needs Analysis

6.11.2.1 Capability and Deficiency Assessment Summary

Table 6.11-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The phrase “global family of engagement plan” is used in the *Theater Engagement Planning (TEP) Joint Manual*¹ to describe action to develop a process to globally integrate all military engagement activities. This integration is mandated by *Defense Planning Guidance FY 2002–2007, 6 April 2000*. The TEPs from each geographic combatant commander or designated Executive Agent are integrated into the “Global Family of Engagement Plans.” They are approved by the CJCS and forwarded to the Under Secretary of Defense for Policy for review. This process and the review, and any guidance or support to aid the combatant command in the initial development of the TEP, is a strategic national-level activity. TEP activities, particularly those dealing with CBRND, should be coordinated and integrated with the Theater Security Cooperation Plan where appropriate. Because of the requirement to Sense, Shape, Shield, and Sustain, as embodied in the CBRND Enabling Concept, the process must be accomplished, at a minimum, with the technical assistance and support of JRO-CBRND. The phrase “Shape Global Family of Engagement Plans” denotes the integration of Shape CBRND Enabling Concept ideas into any policies and guidelines that would have an impact on combatant command development of TEPs. The overall current capability is assessed as “red.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD’s ability to articulate and provide Shape Global Family of Engagement Plans and to provide policy, as well as specific guidelines, to combatant commanders for execution. The overall status should improve to “yellow” due to these initiatives but is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The overall status is likely to remain “yellow” due to the inherent difficulties posed by international relations.

¹ *CJCSM 3113.01a*.

Table 6.11-1. SNSHA 11: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R²	R³	R⁴
Near/Mid-Term Overall Capability	Y	Y	Y
Far-Term Overall Capability	Y⁵	Y	Y

	FAA Measure	Scale
M1	“Shape” Global Family of Engagement Plan policies and guidelines and Theater Security Cooperation Plan are established.	G – Yes, Y – Limited, R – No
M2	Existing policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	Joint exercises and experimentation provide feedback on the efficacy of strategic guidance development processes.	G – Yes, Y – Limited, R – No

¹ No doctrine, i.e., staff guidance or JTTPs, has been established specifically for Shape initiatives.

² No. Although generic guidance exists in *CJCSM 3113.01a*, the “Global Family of Engagement Plans” does not include Shape initiatives.

³ There are no polices or guidelines to update.

⁴ Joint exercises focused on restoration operations and the efficacy of Shape Global Family of Engagement Plan policies and guidelines have not been conducted.

⁵ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

6.11.3 Functional Solution Analysis

6.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

1. **Deficiency:** CBRND Shape considerations are not included in the “Global Family of Engagement Plan.”
Non-Materiel Solutions: *Doctrine:* Ensure that “Global Family of Engagement Plan” policies and guidelines include CBRND Shape considerations.
2. **Deficiency:** No exercises focused on CBRND Shape considerations.
Non-Materiel Solutions: *Doctrine:* Establish working groups to establish policies and guidelines that include CBRND Shape considerations into TEPs. *Training:* Develop exercises that include CBRND Shape considerations and focus on gathering information of the efficacy of global family of engagement planning. *Personnel:* Incorporate into Joint National Training Capability.
3. **Deficiency:** No doctrine (i.e., Staff guidance or Joint Tactics, Techniques, and Procedures [JTTPs]) has been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, i.e. staff guidance/policies (Chairman of the Joint Chiefs of Staff Instruction; Chairman of the Joint Chiefs of Staff Manual; or JTTPs). Such policies and guidelines should be included in documents like CJCSM 3113.01A Theater Engagement Planning, Defense Planning Guidance, the Joint Staff Capabilities Plan, and any CBRN-specific publications might provide guidance on CBRND integration into TEPs.
4. **Deficiency:** No training provides feedback.
Non-Materiel Solutions: *Training:* Develop training on “Global Family of Engagement Plan” CBRND Shape considerations so that lessons learned can be gathered.
5. **Deficiency:** No JPME education on global family of engagement planning, including CBRND Shape considerations.
Non-Materiel Solutions: *Leadership:* Develop JPME leader education on “Global Family of Engagement Plan” CBRND Shape considerations. Provide materials to the Joint Forces Staff College so it can use CBRND Shape considerations as a TEP example.

6.11.3.2 IMA Assessment Summary

N/A

6.12 Task SNSHA 12: Establish global cooperative CBRN/TIM-detection policies, procedures, and networks

6.12.1 Functional Area Analysis

6.12.1.1 Definition

To link global active systems (such as satellite systems) with active and passive sensors integration into satellite uplinks with an acceptable share-warn software/hardware protocol with consideration to information classification. Builds a seamless web from the national capabilities down to individual tactical detectors within the global battlespace to provide a means of detecting both delivery vehicles and agents.

6.12.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 2.4.2.1, SN 3.5.3.3, SN 3.5.3.5), JP (2-0, 2-02).

6.12.1.2.1 Supported Task: N/A

6.12.1.2.2 Lateral Tasks: SNSHA 8, SNSHA 14

6.12.1.2.3 Supporting Task: STSHA 10

6.12.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C 2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

6.12.2 Functional Needs Analysis

6.12.2.1 Capability and Deficiency Assessment Summary

Table 6.12-1 discusses the capability that currently exists to perform the task “Establish global cooperative CBRN/TIM-detection policies, procedures, and networks” to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current capability assessment is “yellow.” There currently are no cooperative linkages between various global systems capabilities, even though such linkages have been proposed. Global cooperative CBRN/TIM-detection policies, procedures and networks have not been established with all nonadversary nations.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No substantive improvement is expected over the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The assessment should remain at “yellow” in the far term. As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.) global cooperative CBRN/TIM-detection policies, procedures and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation, international policy debates, and exercises before full capability is realized.

Table 6.12-1. SNSHA 12: Capability and Deficiency Assessment

Capability: Joint Requirements Office for CBRND	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R²	Y³	Y⁴	R⁵	Y⁶	Y⁷
Near/Mid-Term Overall Capability	R	Y	Y	R	Y	Y
Far-Term Overall Capability⁸	Y⁹	Y	Y	Y	Y	G¹⁰

	FAA Measure	Scale
M1	Global cooperative CBRN/TIM-detection policy is established.	G – Yes, Y – Limited, R – No
M2	Global cooperative CBRN/TIM-detection procedures are established.	G – Yes, Y – Limited, R – No
M3	Global cooperative CBRN/TIM-detection networks are established.	G – Yes, Y – Limited, R – No
M4	Policies and procedures have been established with all nonadversary nations.	G – Yes, Y – Limited, R – No
M5	Existing policies and procedures are updated regularly.	G – Yes, Y – Limited, R – No
M6	International/joint exercises or experimentation provide feedback on efficacy of coordination of global CBRN/TIM defense operations.	G – Yes, Y – Limited, R – No

¹ No. Effective organization, training, and doctrine cannot be established because some nonadversary nations are not parties to these proposals.

² There currently are no cooperative linkages between various global systems capabilities, even though such linkages have been proposed. No cooperative CBRN/TIM-detection policies are required because no linkages currently exist between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.).

³ Limited. Global cooperative detection procedures have been proposed.

⁴ Limited. Global cooperative CBRN/TIM-detection networks are proposed.

⁵ No. Global cooperative CBRN/TIM-detection policies, procedures and networks have not been established with all nonadversary nations.

⁶ Limited. There is no need to update policies and procedures at present because global cooperative CBRN/TIM-detection policies, procedures, and networks are only in the proposal stages.

⁷ Limited. Some exercises (e.g., TOPOFF, Determined Promise) can provide feedback on efficacy of coordination of global CBRN/TIM defense operations. **Only real-time warning in the virtual environment** is envisioned as a potential candidate for feedback in international and joint exercises because this task pertains to global cooperative CBRN/TIM-detection policies, procedures, and networks.

⁸ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁹ As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.) global cooperative CBRN/TIM-detection policies, procedures and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation, international policy debates, and exercises before full capability is realized.

¹⁰ International and joint exercises will begin to yield effective lessons learned on global cooperative CBRN/TIM-detection policies, procedures, and networks.

6.12.3 Functional Solution Analysis

6.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** The National Military Command Authority (NMCA) could receive an inaccurate picture of the CBRN COP.
Non-Materiel Solutions: *Doctrine:* Establish JTTPs and international protocols for cooperative CBRN/TIM detection.
- 2. Deficiency:** NMCA does not have a real-time view of the CBRN COP.
Non-Materiel Solutions: *Doctrine:* Establish JTTPs and international protocols for cooperative CBRN/TIM-detection networks.
- 3. Deficiency:** Concepts have not been refined through experimentation.
Non-Materiel Solutions: *Training:* Concepts must first be developed based on proposed linkages that will provide effective, integrated CBRN/TIM-detection capabilities. These concepts must be explored and refined through experimentation and then cooperative linkages established and tested.
- 4. Deficiency:** Global cooperative CBRN/TIM-detection policies, procedures, and networks have not been established with all nonadversary nations.
Non-Materiel Solutions: *Doctrine:* Establish cooperative CBRN/TIM-detection policies and procedures with nonadversary nations.
- 5. Deficiency:** Lack of global CBRN/TIM-detection network capabilities.
Non-Materiel Solutions: None.

6.12.3.2 IMA Assessment Summary

Table 6.12-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 6.12-2. SNSHA 12: IMA Assessment

Idea for Materiel Approach	Description
Networked detection system	There is a need to develop global cooperative linkages between various global, proponent and service detection and sensing technologies.. Concepts must first be developed based on proposed linkages that will provide effective, integrated CBRN/TIM-detection capabilities. These concepts must be explored through experimentation and then cooperative linkages established and tested. The entire package should be developed as a system. As each Service or allied country develops detection or sensing technologies, they should be analyzed for inclusion into the global CBRN/TIM cooperative detection network and modifications (if required) should be mandated for the Service systems.

6.13 Task SNSHA 13: Coordinate internationally accepted standards and procedures for determining employment of CBRN/TIM weapons

6.13.1 Functional Area Analysis

6.13.1.1 Definition

To develop and secure approval of internationally accepted standards and procedures for determining employment of CBRN/TIM weapons. Includes standards and procedures for determining first use of CBRN/TIM weapons by a nation state or transnational organization and the means by which verification of attack will be confirmed. Considers information classification.

6.13.1.2 Derivation

UJTL (SN 9.1.3, SN 7.5, SN 8.1.12)

6.13.1.2.1 Supported Task: N/A

6.13.1.2.2 Lateral Tasks: SNSHA 4, SNSHA 8, SNSHA 14

6.13.1.2.3 Supporting Task: STSHA 11

6.13.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Restricted information exchange. (C2.3.1.8)
4. Ambiguous threat. (C2.9.3)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

6.13.2 Functional Needs Analysis**6.13.2.1 Capability and Deficiency Assessment Summary**

Table 6.13-1 discusses the capabilities that currently exist to perform the task to the established standards. These are the only capabilities that exist, and no other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

OSD and the CJCS are responsible for ensuring that military representatives are able to coordinate with allies, allied military organizations, potential hosting nations, and coalition partners for establishing internationally accepted standards and procedures for determining employment of CBRN/TIM weapons. The capability to establish internationally accepted standards and procedures for determining employment of CBRN/TIM weapons exists now administratively. Mechanisms currently used are NATO working groups that develop Standardization Agreements and Allied Joint Publications (AJPs) as well as ABCA Quadripartite working groups. The current assessment is “yellow” because each nation in the international community has its own verification protocol. Also, use of TIM poses special problems in trying to determine whether it is an accident or an intentional attack. International recognition would have to currently be sought on an ad hoc basis. International exercises, even with Quadripartite and NATO partners, seldom use realistic CBRN/TIM scenarios or highlight verification exercise objectives.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No substantive improvement is expected in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, international exercises/experiments, with NATO partners, will use realistic CBRN/TIM scenarios and highlight verification exercise objectives and will result in some slight improvements. Only after lessons are learned from these exercises/experiments can progress be made in other areas. The far-term capability will improve to “green.”

Table 6.13-1. SNSHA 13: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
ABCA Quadripartite Working Group	Y ¹	G ²	Y ³
NATO Working Groups	Y ⁴	G ⁵	Y ⁶
Near/Mid			
ABCA Quadripartite Working Group	Y	G	Y
NATO Working Groups	Y	G	Y
Far			
ABCA Quadripartite Working Group	Y	G	G ⁷
NATO Working Groups	Y	G	G ⁸
Current Overall Capability	Y	G	Y
Near/Mid-Term Overall Capability	Y	G	Y
Far-Term Overall Capability	Y	G	G

	FAA Measure	Scale
M1	Internationally accepted standards and policy for determining employment of CBRN/TIM weapons are established.	G – Yes, Y – Limited, R – No
M2	Existing standards and policies are updated regularly.	G – Yes, Y – Limited, R – No
M3	International exercises/experimentation provide feedback on efficacy of standards and policy.	G – Yes, Y – Limited, R – No

¹ Within the Quadripartite, QSTAG 1999, the sampling and identification of biological and chemical agents (SIBCA), provides an outline of what is to be accomplished—but each nation has its own national verification protocol. Also, use of TIM poses special problems in trying to determine whether it is an accident or an intentional attack. International recognition would have to currently be sought on an ad hoc basis.

² Quadripartite groups meet on a regular basis.

³ International exercises, even with Quadripartite and NATO partners, seldom use realistic CBRN/TIM scenarios or highlight verification exercise objectives.

⁴ Within NATO, STANAG 4359, the sampling and identification of biological and chemical agents and provides an outline of what is to be accomplished, but each nation has its own national verification protocol. Also, use of TIM poses special problems in trying to determine whether it is an accident or an intentional attack. International recognition would have to currently be sought on an ad hoc basis.

⁵ NATO working groups meet on a regular basis.

⁶ International exercises, even with Quadripartite and NATO partners, seldom use realistic CBRN/TIM scenarios or highlight verification exercise objectives.

⁷ International exercises, with Quadripartite partners, will use realistic CBRN/TIM scenarios and highlight verification exercise objectives. Only after lessons are learned from these exercises can progress be made in other areas.

⁸ International exercises, with NATO partners, will use realistic CBRN/TIM scenarios and highlight verification exercise objectives. Only after lessons are learned from these exercises can progress be made in other areas.

6.13.3 Functional Solution Analysis

6.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

- 1. Deficiency:** Each NATO/Quadripartite nation has its own national verification protocol.
Non-Materiel Solutions: *Doctrine:* Develop universally accepted and employed verification protocols.
- 2. Deficiency:** Nations not part of NATO or the Quadripartite must agree to use sampling and identification of biological and chemical agents (SIBCA) or some other arrangement.
Non-Materiel Solutions: *Doctrine:* Engage nations not part of NATO and the Quadripartite to establish formal agreements to use sampling and identification of biological and chemical agents.
- 3. Deficiency:** TIM poses special problems in trying to determine whether it is an accident or an intentional attack.
Non-Materiel Solutions: *Doctrine:* Develop procedures and protocols for verification of TIM attacks.
- 4. Deficiency:** International recognition would have to currently be sought on an ad hoc basis.
Non-Materiel Solutions: *Doctrine:* Establish international verification standards.
- 5. Deficiency:** Doctrine and TTPs need to be developed for collaborative verification procedures.
Non-Materiel Solutions: *Doctrine:* Develop doctrine and TTPs for collaborative verification procedures that work for the international community.
- 6. Deficiency:** There are no international exercises that provide feedback on the processes employed for determining employment of CBRN weapons and verification procedures.
Non-Materiel Solutions: *Training:* Ensure development of and participate in international exercises that will provide feedback on the processes employed for determining employment of CBRN weapons.

6.13.3.2 IMA Assessment Summary

N/A

6.14 Task SNSHA 14: Sense the exportation of CBRN/TIM weapons or components

6.14.1 Functional Area Analysis

6.14.1.1 Definition

To obtain information and data from all sources that determine when a nation state or transnational organization has initiated the exportation of CBRN/TIM weapons or components to other countries or transnational organizations. Areas of interest include nation states/ organizations involved and types of CBRN/TIM weapons being exported.

6.14.1.2 Derivation

UJTL (SN 9.1.3, SN 2.4.1.2, SN 8.1.10), JP (2-0, 2-02).

6.14.1.2.1 Supported Task: N/A

6.14.1.2.2 Lateral Tasks: SNSHA 2, SNSHA 12, SNSHA 13

6.14.1.2.3 Supporting Task: STSHA 8

6.14.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)
4. Prehostilities state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

6.14.2 Functional Needs Analysis

6.14.2.1 Capability and Deficiency Assessment Summary

Table 6.14-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Staff Directorate for Intelligence, J-2, is responsible for working with national-level organizations to obtain intelligence that is required to support joint operations. In the case of this task, the lead federal agency for nonproliferation issues and the coordination of the associated intelligence initiatives is the State Department. Per joint intelligence doctrine, the J-2 is responsible for coordinating all intelligence-related CBRN functions pertaining to adversary employment of CBRN weapons with the appropriate CBRN staff element, but because of documented training, education, and experience issues, J-2 personnel may not have a full grasp of what needs to be coordinated. As the Chairman of the Joint Chiefs of Staff's single source of expertise in addressing CBRN defense issues involving the warfight, JRO-CBRND must proactively engage the J-2 to determine the adequacy of current and projected national-level intelligence capabilities to sense the exportation of CBRN/TIM weapons or components. For the purposes of this analysis, current capabilities are listed and issues that need to be further assessed and clarified are provided for JRO-CBRND action. The current assessment is "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this JCIDS analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTMLPF enhancements will dramatically improve DoD's ability to articulate and assess Sense requirements, but the overall status will remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. New organizational structures or other capabilities resulting from near/mid-term experimentation results (as recommended in this JCIDS analysis) may dramatically improve DoD's ability to develop intelligence indicators for sensing the exportation of CBRN/TIM weapons or components, but the overall status is projected to remain "yellow" due to the inherent difficulty in gathering intelligence on CBRN/TIM proliferation activities.

Table 6.14-1. SNSHA 14: Capability and Deficiency Assessment

Capability: Joint Staff Directorate for Intelligence, J-2	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability	Y ⁵	Y	Y
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	Countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on countries or transnational organizations initiating exportation of CBRN/TIM weapons or components to other countries or transnational organizations is accurate.	G – Yes, Y – Limited, R – No
M3	Strategic surprise does not occur.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. The J-2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on intelligence indicators for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² The J-2 works with various national-level organizations to detect and identify countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations. Techniques and procedures to facilitate this process and to provide useful indicators may not be adequate.

³ The J-2 works with various national-level organizations to ensure accuracy of intelligence on countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations. Techniques and procedures to facilitate this process and to ensure accuracy may not be adequate.

⁴ The J-2 works with various national-level organizations to ensure that strategic surprise does not occur. Adequate resources and means may not be sufficiently applied to ensure countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations are detected.

⁵ Near/mid-term improvements for all measures will depend upon the emphasis placed upon, and efficacy of experimentation which will be designed to close knowledge gaps.

⁶ DOTMLPF to support task should improve if effective experimentation closes knowledge gaps.

⁷ Once knowledge gaps are closed, concepts may be refined and new capabilities will be proposed and refined as a result of experimentation.

6.14.3 Functional Solution Analysis

6.14.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA Summary.

1. **Deficiency:** Techniques and procedures to facilitate detecting and identifying countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J-2 and/or national intelligence organizations to develop effective techniques, procedures, and indicators for detecting and identifying countries/transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries/transnational organizations. These indicators must include the means to determine agent types, nuclear weapon types and yields, TIMs being considered, means by which to release TIMs, delivery modes or systems, countries and transnational organizations involved, business interests or industrial organizations involved, shipping mechanisms, techniques used to avoid detection and enter nation states, and routes.

2. **Deficiency:** Techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations may not be adequate.

Non-Materiel Solutions: *Doctrine:* JRO-CBRND must work with J-2 and/or national intelligence organizations to develop effective techniques and procedures to ensure accurate intelligence on countries or transnational organizations initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations and to develop metrics to measure accuracy.

3. **Deficiency:** Adequate resources and means may not be sufficiently applied to ensure that a nation state or transnational organization initiating the exportation of CBRN/TIM weapons or components to other countries or transnational organizations is detected.

Non-Materiel Solutions: *Organization:* The CBRN organization or staffing of the J-2 as well as each national intelligence organization must be analyzed from a DoD standpoint to ensure that they can provide required CBRN intelligence concerning CBRN hazards. These hazards need to be detected, identified and quantified in order for Shape to provide a clear understanding of the current and predicted CBRN situation to the commander. An organization dedicated to providing CBRN technical expertise and assistance to the J-2 and national-level intelligence organizations should be established. *Training:* JRO-CBRND must work with J-2 and/or national intelligence organizations to develop effective training for analysts as well as those managing all means of collection. The training must allow analysts and collection managers the means by which to determine inadequacy of collection mechanisms and a means to make recommendations for improvement. *Leadership:* JRO-CBRND must work with J-2 and/or national intelligence organizations to develop an effective CBRN education program for analysts as well as those managing all means of

collection. The education process must provide analysts and collection managers with the tools they need to assess the efficacy of their analysis and collection efforts. *Personnel*: Personnel should not be assigned to intelligence analysis or collection activities vital to CBRN areas without requisite CBRN education and/or experience. *Facilities*: Training requirements should be analyzed and special training facilities developed/modified if required.

4. **Deficiency**: Joint intelligence and CBRN publications do not adequately address this issue. **Non-Materiel Solutions**: *Doctrine*: Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
5. **Deficiency**: JRO-CBRND is not adequately staffed and organized to meet its intelligence-related responsibilities. **Non-Materiel Solutions**: *Organization*: JRO-CBRND should have a staff section dedicated to resolving CBRN intelligence community issues. *Personnel*: JRO-CBRND should have adequate trained/experienced personnel assigned to man a staff section dedicated to resolving CBRN intelligence community issues.
6. **Deficiency**: The J-2 staff is not adequately trained/educated in CBRN issues. **Non-Materiel Solutions**: *Training*: Develop training that will enable the J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic national CBRND. *Leadership*: Develop an education program that will enable the J-2 staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of strategic national CBRND.
7. **Deficiency**: CBRN staff officers are not adequately trained/educated in intelligence issues. **Non-Materiel Solutions**: *Training*: Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership*: Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
8. **Deficiency**: Experimentation/red teaming does not provide feedback on intelligence indicators for this task. **Non-Materiel Solutions**: *Training*: JRO-CBRND must work with J-2 and/or national intelligence organizations to integrate this task into both intelligence and CBRN experimentation campaign plans. Interagency experimentation and exercises must also be developed to cover nonproliferation issues.
9. **Deficiency**: JPME does not adequately cover the fusion of intelligence/CBRN issues. **Non-Materiel Solutions**: *Leadership*: Integrate intelligence/CBRN fusion issues into JPME.
10. **Deficiency**: DoD CBRN experts detailed to the national intelligence organizations do not receive adequate preparation, support, or briefing for DoD lessons learned.

Non-Materiel Solutions: *Organization:* Ensure that CBRN organizations that provide DoD detailees to national intelligence organizations are proactive in ensuring their institutional CBRN intelligence needs are both understood and met and that the detailees they provide are prepared in every way. *Leadership:* CBRN DoD detailees to national intelligence organizations must be provided with formal educational preparation. *Personnel:* CBRN DoD detailees to national intelligence organizations must possess adequate skill and experience.

6.14.3.2 IMA Assessment Summary

N/A

CHAPTER 7. STRATEGIC THEATER SHAPE TASKS

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7.0 Strategic Theater Shape

7.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives, define limits and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans. The strategic theater sublevel encompasses combatant command tasks. Eleven strategic theater shape tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA).

This chapter, detailing the Strategic Theater (ST) Shape (SHA) area, restates relevant information from the CBRND Defense (CBRND) FAA, including a description of each of the 11 STSHA tasks, derivation of the task, an indication of other linked-tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and gives a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near- or far-term resolution to identified deficiencies within the individual capabilities.

7.0.2 FNA Summary

Table 7.0-1 summarizes the overall current and projected capability to perform the STSHA tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow.” From a readiness point of view, any combatant command (COCOM) staff has a team of operational planners and information command and control specialists to include CBRND subject matter experts. This team of experts forms the backbone of the COCOM staff and command structure. The COCOM staff is responsible for readiness, to include CBRN issues and concerns. Joint Tactics, Techniques, and Procedures (JTTPs) and tools to evaluate and assess CBRND staffs, capabilities, systems, and concepts within an Area of Responsibility (AOR) are limited. Forces and staffs of other nations may or may not have training, equipment, or experience to effectively conduct CBRND operations. The theater CBRN/toxic industrial material (TIM) vulnerability analysis and risk assessments process surpasses the sole purview of DoD. Actionable CBRN intelligence is only as valid as its source and the time it takes to process. Possible and plausible CBRN employment and TIM hazards are not necessarily also included in visualizing the impact of adversary Courses of Action (COAs)

on forces of interest. TIM vulnerability assessment tools are limited; TIM vulnerability analysis must be conducted manually on a region-by-region basis. There are also deficiencies associated with a COCOM's ability to coordinate theater CBRND information systems and processes required to meet the theater CBRN/TIM situation. As programmed, the Joint Warning and Reporting Network (JWARN) is a suite of hardware and software that should, once fully operational, provide adequate coverage to each of the measures listed in Table 7.0-1. Until JWARN is fully operationally capable, limitations to CBRN information systems and processes include manual data receipt and entry, limited interface with the Common Operating Picture (COP), restricted information flow into the Global Command and Control System (GCCS) and limitations to real-time situational awareness. JWARN is available within the theater and interfaces with the GCCS but is currently limited to manual input and retrieval. Capability will improve dramatically with the anticipated fielding initial operational capability (IOC) of the Joint Effects Model (JEM) Block I in FY2006 and the IOC of the Joint Operational Effects Federation (JOEF) Block I, Increment I in FY2008. JOEF will provide a significant CBRN-adaptive planning capability. The JEM will provide a single, validated capability to predict and track CBRN and TIM events and effects. The JOEF will provide an operational requirements modeling and simulation system which accurately predicts CBRN effects on personnel, equipment, and operations.

Despite continuing improvements in all of these areas, STSHA is projected only to "yellow" over the mid term. The overall projected assessment remaining the same for ST-level Shape tasks is based on anticipated extrapolated results of current and programmed doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) initiatives. There are no major technological barriers to be overcome, but major emphasis in future budgeting and programming of resources will be required to initiate or enhance recommended DOTMLPF solutions. The estimated pace of change reflected in this assessment could be accelerated or slowed based on decisions to accelerate or slow the implementation of recommended solutions. An additional assessment challenge is to anticipate and incorporate the contribution that an educated, trained, and experienced leadership base will make to improvements in CBRND Shape capability. Integration of CBRND capability improvements and enhancements into the fabric of all DoD functions will be possible only when leaders at every level have a foundational and practical understanding of the impacts of CBRN effects on their functional areas. Leaders must be able to assess these impacts and to develop solutions within their functional domains that will mitigate or eliminate these impacts.

Many of the current DOTMLPF solution recommendations have been made to correct deficiencies in leader CBRND education and training. A CBRND-experienced leadership base will be realized only when future education and training initiatives have been established long enough to produce educated and trained leaders. As of October 2004 a new CJCSI 1800.01B, Officer Professional Military Education Policy has been produced with no CBRND learning areas or objectives. Lack of inclusion of CBRND learning areas/objectives has in the past been cited by academic deans as a justification for why more emphasis could not be placed on CBRND issues in their curricula. One of the 10 special areas of emphasis approved and proposed for 2005 by the July 2004 Joint Faculty Education Conference Initial Assessment is combating weapons of mass destruction (WMDs). But even if this proposal is accepted, special areas of emphasis are nonbinding. Until this Chairman of the Joint Chiefs of Staff Instruction (CJCSI)

provides definitive and directive guidance for providing CBRND integration into Joint Professional Military Education (JPME) curricula, this problem will continue.

Table 7.0-1. Strategic Theater Shape Summary FNA Findings

CBRN Strategic Theater Shape Task Number	CBRN Strategic Theater Shape Task Title	Capability		
		Current	Near/Mid	Far
STSHA 1	Characterize the theater CBRN/TIM threat and situation.	●	●	●
STSHA 2	Conduct theater CBRN/TIM vulnerability analysis.	●	●	●
STSHA 3	Determine CBRN resources required to meet the theater CBRN situation.	●	●	●
STSHA 4	Ensure theater CBRND readiness.	●	●	●
STSHA 5	Coordinate theater CBRND information systems and processes.	●	●	●
STSHA 6	Provide theater CBRND plans and policy.	●	●	●
STSHA 7	Coordinate CBRND aspects of theater medical operations.	●	●	●
STSHA 8	Coordinate theater CBRND operations.	●	●	●
STSHA 9	Develop TEPs for Shape-related issues.	●	●	●
STSHA 10	Establish Theater cooperative CBRN/TIM-detection policies, procedures, and networks.	●	●	●
STSHA 11	Develop theater policies, standards, and procedures for determining employment of CBRN/TIM weapons.	●	●	●
OVERALL		●	●	●

7.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF (non-materiel and materiel) solutions for the capability gaps identified in the FNA section.

7.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with training and doctrinal issues and include the development of JTTPs. Before a CBRN/TIM attack, the combatant commander will need to be proactive in determining and shaping the theater CBRN/TIM situation. In large measure, this shaping will be conducted in a virtual and simulated

environment. Although some CBRN-related training and evaluation may be conducted, such events at the theater level are frequently stovepiped and compartmentalized. Therefore, an accurate assessment of true capabilities is difficult to obtain. JTTPs, training, and exercises must be developed to facilitate assessing theater CBRND readiness. Means and methods must be developed to ensure currency and accuracy of intelligence throughout the intelligence acquisition community. Incorporate Joint Intelligence Center (JIC) queries into overall intelligence community (IC) capabilities. Develop formal JTTPs which address TIM hazards and their impact on friendly and adversary COAs. Develop JTTPs to address regional TIM and biological warfare agent vulnerability analysis. *Universal Joint Task List (UJTL) 5.0* should be approved and published at the earliest opportunity after being vetted. Staff planning guidance that provides factors for CBRN resources under varying threat levels should be developed. Resource materiel management positions with qualified logistics-CBRN experts are needed. JTTPs that specifically address a joint CBRND logistic tracking system and JTTPs that specifically address joint CBRND materiel resources, below the wholesale level, should be developed. The COCOM commander will need to have a dedicated staff cell within the HQ to provide theater CBRND, plans, policies, and guidance. JTTPs and joint training and education courses need to be developed to focus planners on the complex nature of planning for CBRND operations, restoration and elimination operations, and the development of planning guidance. Other solutions include improvement in environmental health and safety training of deploying forces and JTTPs for medical management of TIM casualties. International exercises must be held to identify capability gaps in international CBRN/TIM employment verification procedures. New doctrine and TTPs need to address procedures for all of the international community and approaches to verifying TIM employment.

7.0.3.2 IMA

This paragraph summarizes possible material approaches that address the remaining materiel requirements of the DOTLPF assessment. Continued work on analysis probability tools and models is required. No automated tools exist for assisting in the conduct of global vulnerability assessments focusing on potential adversary COAs. Because of the wide range of options available to potential adversaries, tools must be available that can take as input that which is known, and then model and forecast all potential COAs. Formal automated analytical processes to facilitate TIM vulnerability analysis must be developed. Development of cooperative linkages between various proponent and service detection and sensing technologies is required. Other materiel needs include an automated global database/software program of CBRN/TIM hazards and an automated plume-prediction technology tied to real-time geospatial unit location such as JEM and JOEF.

7.1 Task STSHA 1: Characterize the theater CBRN/TIM threat and situation

7.1.1 Functional Area Analysis

7.1.1.1 Definition

To characterize the CBRN/TIM threat and situation for the combatant commanders and theater component commanders. Uses Sense data to move from situational awareness as well as shared awareness to shared understanding. Allows military leadership to develop a clear understanding of the current and predicted CBRN/TIM situation and its impact on theater operations in near-real time. Informs personnel; provides actual and potential impacts of CBRN/TIM hazards; and envisions critical Sense, Shield, and Sustain end states, including preparing for operations and visualizing the sequence of events that moves the theater force from its current state to those end states. Includes establishing collection priorities and coordination with intelligence agencies to collect information on CBRN/TIM capabilities encompassing such things as adversary intent and objectives, weapons availability and capacity, expected tactics, potential targets, and willingness or historic propensity to employ CBRN/TIM weapons. Also includes compiling and analyzing intelligence information and data provided by intelligence agencies or resources satisfying the theater CBRN/TIM threat intelligence collection plan. Provides processed theater CBRN/TIM threat intelligence for development of regional vulnerability assessments and for an understanding of the current and predicted CBRN/TIM situation. Provides the basis for CBRND tasking of and warning to the combatant commanders and Services. Appropriate collaboration occurs with interagency and international parties. This task further encompasses theater medical intelligence to be collected in support of CBRND analysis.

7.1.1.2 Derivation

UJTL (ST 2.2.1, ST 2.4, ST 2.4.1, ST 2.5, ST 5.2.1, ST 5.3.3, ST 5.4.1, ST 6, ST 8.1.4, ST 8.2, ST 9, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

7.1.1.2.1 Supported Task: SNSHA 1

7.1.1.2.2 Lateral Tasks: STSENS 1, STSENS 2, STSENS 3, STSENS 4, STSENS 5, STSENS 6, STSENS 8, STSENS 9, STSHA 2

7.1.1.2.3 Supporting Tasks: OPSHA 1, OPSHA 10

7.1.1.3 Condition

Perform this task under conditions of:

Physical N/A

Military

1. Restrictive mission instructions. (C2.1.1)

2. No preexisting arrangements. (C2.1.1.2)
3. No or outlined mission preparation. (C2.1.3)
4. Few modern military systems. (C2.2.5)
5. Few modern military simulation systems. (C2.2.5.5)
6. Poor Joint Staff integration. (C2.3.1.1)
7. Poor multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Negligible intelligence database. (C2.4.2)
12. Negligible theater intelligence access. (C2.4.4)
13. Little or no certitude of data. (C2.4.6)
14. Negligible deployed supplies. (C2.8.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support. (C3.1.2.3)
3. Uncertain international organization support. (C3.1.2.5)
4. Restrictive Presidential and/or Secretary of Defense decisions. (C3.1.3)
5. Low internationalism. (C3.2.6.5)
6. High health risk. (C3.3.1.5)
7. Unspecified TIM present in the civilian sector. (C3.3.7.5)

7.1.2 Functional Needs Analysis

7.1.2.1 Capability and Deficiency Assessment Summary

Table 7.1-1 discusses the proposed capability to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Joint Intelligence Center of the joint force headquarters is responsible for providing and producing the intelligence required to support the joint force commander and staff, components, task forces and elements, and the national intelligence community (Joint Publication 1-02). Joint intelligence and CBRN publications do not adequately address characterizing the theater CBRN/TIM threat and situation. The theater-level CBRN staff is not adequately staffed and organized to meet its intelligence-related responsibilities. The J2 staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on the accurate characterization of the threat for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues. Therefore, the current overall assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Capability improvements are forecast for the near/mid term through DOTMLPF improvements in all deficient areas as a result of initiatives that use data resulting from focused experimentation. The overall assessment in the near/mid term is “green.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. Continued DOTMLPF enhancements will result from exercise and wargame lessons learned, resulting in an assessment of “green” for the far term.

Table 7.1-1. STSHA 1: Overall Capability and Deficiency Assessment

Capability: Joint Force HQ JIC	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	R ²	R ³	R ⁴	G ⁵	G ⁶	G ⁷	G ⁸	G ⁹	Y ¹⁰	G ¹¹
Near/Mid-Term Overall Capability¹²	Y ¹³	Y ¹⁴	Y ¹⁵	G	G	G	G	G	G ¹⁶	G
Far-Term Overall Capability¹⁷	G	Y	Y	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Means exist to collect intelligence on designated theater adversaries.	G – Yes, Y – Limited, R – No
M2	Theater CBRN/TIM threat intelligence is current.	G – Yes, Y – Limited, R – No
M3	Theater CBRN/TIM threat intelligence is reliable.	G – Yes, Y – Limited, R – No
M4	All CBRN/TIM threat priority intelligence requests are covered by a collection plan.	G – Yes, Y – Limited, R – No
M5	Adequate means are available for CBRND staff to influence theater collection activities.	G – Yes, Y – Limited, R – No
M6	Multiple sources are integrated and deconflicted.	G – Yes, Y – Limited, R – No
M7	Medical intelligence guidance identifies information requirements and processes.	G – Yes, Y – Limited, R – No
M8	Medical CBRN/TIM intelligence criteria are established and defined.	G – Yes, Y – Limited, R – No
M9	Staff has sufficient training and experience to conduct the threat assessment.	G – Yes, Y – Limited, R – No
M10	CBRN/TIM threat intelligence is disseminated in near-real time.	G – Yes, Y – Limited, R – No

¹ Although multiple national means of collection exist and can be requested by the COCOM staff, recent operational experience in S.W. Asia and congressional investigations have rendered the efficacy of national intelligence collection, particularly human intelligence (HUMINT), suspect at best.

² CBRN threat intelligence, particularly that relying on HUMINT, is dependent on factors that may prevent timely and current information.

³ CBRN threat intelligence, particularly that relying on HUMINT, is dependent on factors that may preclude obtaining reliable information.

⁴ Limited. CBRN threat intelligence is dependent on factors that may prevent reliable information.

⁵ Yes. The COCOM JIC staff can develop collection plans for CBRN threats.

⁶ Yes. The COCOM JIC has the means to provide input for theater collection activities.

⁷ Yes. All source intelligence analysis is the process where integration and deconfliction occurs.

⁸ Yes. The COCOM medical staff identifies intelligence information requirements and processes.

⁹ Yes. The COCOM medical staff has the means to establish and define medical CBRN/TIM intelligence criteria.

¹⁰ The JIC has the experience to conduct threat assessment but may be limited in CBRN training education and experience.

¹¹ CBRN threat intelligence is disseminated in near-real time, via COLISEUM.

¹² DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹³ New national intelligence initiatives should provide enhanced means to collect intelligence on theater adversaries. Difficulties with HUMINT will continue to be a limiting factor.

¹⁴ New national intelligence initiatives should provide enhanced means to ensure currency of intelligence. Difficulties with HUMINT will continue to be a limiting factor.

¹⁵ New national intelligence initiatives should provide enhanced means to ensure reliability of intelligence. Difficulties with HUMINT will continue to be a limiting factor.

¹⁶ CBRN training and exercises will benefit from JRO-sponsored enhancements. Staff members within the JIC will coordinate better with CBRND staffs and have more experience.

¹⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

7.1.3 Functional Solution Analysis

7.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Currency of intelligence is dependent on the acquisition means and methods.
Non-Materiel Solutions: *Doctrine:* Develop means and methods to ensure currency of intelligence throughout the intelligence acquisition and collection community.
2. **Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
3. **Deficiency:** COCOM CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* Each theater-level CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel:* Each theater-level CBRND staff should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues.
4. **Deficiency:** COCOM J2/JIC staffs are not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable each JIC staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of theater-level CBRND. *Leadership:* Develop an education program that will enable JIC staff to better understand their CBRN role and enhance their ability to obtain intelligence that is required to support the Shape function of theater-level CBRND.
5. **Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
6. **Deficiency:** Experimentation/red teaming does not provide feedback on accurate characterization of the threat for this task.
Non-Materiel Solutions: *Training:* JRO CBRND must work with both the intelligence and CBRN communities to integrate this task into both intelligence and CBRN experimentation campaign plans.
7. **Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

- 8. Deficiency:** JIC does not have influence over the national-level intelligence accuracy.
Non-Materiel Solutions: *Doctrine:* Develop means and methods to ensure accuracy of intelligence throughout the intelligence acquisition and collection community.

7.1.3.2 IMA Assessment Summary

N/A

7.2 Task STSHA 2: Conduct theater CBRN/TIM vulnerability analysis

7.2.1 Functional Area Analysis

7.2.1.1 Definition

To conduct theater vulnerability assessments focusing on potential adversaries' courses of action (COAs). This theater strategic assessment compares regional-based vulnerabilities and risks. Development of a shared understanding of potential adversaries' CBRN/TIM COAs and the associated vulnerabilities and risks enables timely and effective preparations for any potential adversary acts. Includes the development of associated risk assessments.

7.2.1.2 Derivation

UJTL (ST 2.2.1, ST 2.4, ST 2.4.1, ST 2.4.1.1, ST 2.4.1.2, ST 2.5, ST 5, ST 5.1, ST 5.1.1, St 5.1.3, ST 5.1.4, St 5.1.6, ST 5.2, ST 5.2.1, ST 5.3.1.1, ST 5.3.1.2, ST 5.3.1.3, ST 5.3.3, ST 6, ST 6.2, ST 6.1.6, ST 8.1.4, ST 8.2, ST 8.3.2, ST 9, ST 9.3, St 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

7.2.1.2.1 Supported Task: SNSHA 2

7.2.1.2.2 Lateral Tasks: STSHA 1, STSHA 3, STSHA 4, STSHA 6, STSHA 7

7.2.1.2.3 Supporting Task: OPSHA 2

7.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No or outline mission preparation. (C2.1.3)
2. Few modern military systems. (C2.2.5)
3. Few modern military simulation systems. (C2.2.5.5)
4. No or some interoperability. (C2.2.6)
5. Negligible intelligence database. (C2.4.2)
6. Negligible theater intelligence access. (C2.4.4)
7. Little or no certitude of data. (C2.4.6)

Civil. N/A

7.2.2 Functional Needs Analysis

7.2.2.1 Capability and Deficiency Assessment Summary

Table 7.2-1 discusses the J2 JIC at the COCOM level: the only capability that currently exists to perform the task “Conduct theater CBRN/TIM vulnerability analysis.” The J2 JIC is the only capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The JIC is responsible for providing and producing the intelligence required to support the joint force commander and staff, components, task forces and elements, and the national intelligence community (Joint Publication 1-02). The current capability for the JIC to perform vulnerability and risk assessments is “yellow.” The primary reason for this assessment is that the vulnerability and risk assessment process requires information beyond organic DoD means. Also, there are deficiencies in the validity of intelligence and availability of vulnerability and risk assessment tools, particularly for TIM and biological warfare agents.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecasted for the near/mid term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far term. The assessment will improve to “green.” Vulnerability analysis guidelines will be enhanced to adequately address AOR-wide TIM concerns. TIM vulnerability assessment tools will be enhanced. Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

Table 7.2-1. STSHA 2. Capability and Deficiency Assessment

Capability: J-2 JIC	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability¹¹	Y	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability¹²	G ¹³	Y	G ¹⁴	Y	G ¹⁵	G ¹⁶	G ¹⁷	G ¹⁸	G ¹⁹

	FAA Measure	Scale
M1	Policies and guidelines for conducting theater vulnerability assessment are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines for conducting theater risk assessment are established.	G – Yes, Y – Limited, R – No
M3	Analytical tools used to evaluate plausible adversary’s COAs are adequate.	G – Yes, Y – Limited, R – No
M4	Vulnerability assessment process exploits time-sensitive or priority actionable CBRN/TIM intelligence.	G – Yes, Y – Limited, R – No
M5	Means are available to collaboratively perform assessments.	G – Yes, Y – Limited, R – No
M6	Means exist to visualize the impact of adversary’s COAs on forces of interest.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to effectively assess adversary’s CBRN/TIM COAs.	G – Yes, Y – Limited, R – No
M8	Sufficient doctrine and TTPs for effective theater vulnerability and risk assessments are available.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation provide feedback on efficacy of vulnerability assessment doctrine and TTPs.	G – Yes, Y – Limited, R – No

¹ No. Extremely limited. JTTPs for regional TIM and biological warfare agent vulnerability analysis are very limited.

² Limited. The JIC either has been furnished or has developed vulnerability analysis guidelines. However, such guidelines may not adequately address an AOR-wide TIM concern.

³ Limited. The JIC has guidelines for conducting risk assessments. However, AOR-wide CBRN risk assessments surpass the sole purview of DoD.

⁴ The JIC has analytical tools used to evaluate plausible COAs. The military decision making process – classically used to evaluate COAs – has been considered adequate—but CBRN/TIM integration into these tools may not be adequate.

⁵ Partial. The JIC has an ability to exploit time-sensitive or priority-actionable CBRN/TIM intelligence through net-centric means; however, actionable CBRN intelligence is only as valid as its source and the time it takes to process.

⁶ Limited. The JIC has the means to collaboratively perform assessments with other agencies.

⁷ Limited. The JIC has the means to visualize the impact of adversary COAs. However, possible and plausible CBRN employment and TIM hazards are not necessarily also included in this visualization.

⁸ By definition, the JIC has the training and experience to assess adversary COAs. However, the JIC may not have the training and experience to assess adversary CBRN/TIM COAs.

⁹ Limited. The JIC has doctrine and JTTPs for AOR CBRN/TIM situational awareness. However, TIM vulnerability assessment tools are limited.

¹⁰ Limited. While joint exercises/experimentation can provide feedback on the vulnerability analysis process, TIM vulnerability analysis must be conducted manually on a region-by-region basis.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹³ Vulnerability analysis guidelines will be enhanced to adequately address AOR-wide TIM concerns.

¹⁴ CBRN/TIM considerations will be integrated into JIC analytical tools.

¹⁵ Experimentation designed to discover required enhancements to interagency CBRND coordination issues will improve collaborative efforts.

¹⁶ Possible/plausible CBRN and TIM hazards will be adequately represented in JIC COA visualization products.

¹⁷ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation, providing the JIC with the training and experience to assess adversary CBRN/TIM COAs.

¹⁸ TIM vulnerability assessment tools will be enhanced.

¹⁹ TIM vulnerability assessment tools will be enhanced.

7.2.3 Functional Solution Analysis

7.2.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** AOR-wide CBRN risk assessments surpass the sole purview of DoD.
Non-Materiel Solutions: *Doctrine:* Incorporate JIC queries into overall IC capabilities.
- 2. Deficiency:** There is a lack of sophisticated and validated techniques and procedures developed to assist collectors and collector managers in the acquisition of raw WMD information.
Non-Materiel Solutions: *Doctrine:* Tactics, techniques, and procedures (TTPs) need to be developed to cover all of the unique aspects of intelligence collecting on WMD issues across the spectrum. *Training:* Discovery experimentation should be employed to investigate/validate new ways of fusing CBRN/intelligence issues. Training needs to be developed to assist collectors and collector managers in the acquisition of raw WMD information. This training needs to be developed in collaboration with both the intelligence and the CBRND communities. *Leader Education:* Learning areas and objectives covering CBRN/intelligence fusion issues should be institutionalized in Officer Professional Military Education (OPME)/JPME. These learning areas and objectives should be required at all intermediate/senior-level colleges and in the Joint Forces Staff College.
- 3. Deficiency:** Possible and plausible CBRN employment and TIM hazards are not necessarily included in visualizing the impact of adversary COAs on forces of interest.
Non-Materiel Solutions: *Training:* Develop formal JTTPs that address CBRN employment/TIM hazards and their impact on friendly and adversary COA.
- 4. Deficiency:** Lack of automated tools exists for conducting global vulnerability assessments focusing on potential adversary COAs of CBRN, including use of TIMs.
Non-Materiel Solutions: None
- 5. Deficiency:** JTTPs for regional TIM and biological warfare agent vulnerability analysis are limited.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs to address regional TIM and biological warfare agent vulnerability analysis.

7.2.3.2 IMA Assessment Summary

Table 7.2-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 7.2-2. STSHA 2. IMA Assessment

Idea for Materiel Approach	Description
Automated tools	Continued work on analysis probability tools and models is required. No automated tools exist for assisting in the conduct of global vulnerability assessments focusing on potential adversary CBRN/TIM COAs. Because of the wide range of options available to potential adversaries, tools must be available that can take as input that which is known, and then model and forecast all potential COAs. Develop formal automated analytical processes to evaluate CBRN/TIM vulnerability analysis.

7.3 Task STSHA 3: Determine CBRND resources required to meet the theater CBRND situation

7.3.1 Functional Area Analysis

7.3.1.1 Definition

To determine CBRND unit, personnel, equipment, and logistics resources required for a specific theater of operations. Determines the required allocation, provisioning, positioning, tracking, and sustaining of CBRND units and personnel throughout the theater, ensuring the availability of appropriate units as well as personnel in the correct quantities and positions. Includes required allocation of CBRND equipment, supplies, and consumables throughout the theater of operations to include repositioning and stockpiling. CBRND logistics are managed for extended operations. Also includes adjustments to TPFDD to ensure timely arrival and employment of CBRND resources.

7.3.1.2 Derivation

UJTL (ST 1.1.2, ST 2.2.1, ST 2.4.1.1, ST 2.4.1.2, ST 4.2.6, ST 5, ST 5.1, ST 5.1.1, ST 5.1.2, ST 5.1.3, ST 5.1.4, ST 5.1.6, ST 5.2, ST 5.2.1, ST 5.3.3, ST 5.4.1, ST 6, ST 6.2, ST 6.2.1, ST 7.1.1, ST 8.2.3, ST 9, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

7.3.1.2.1 Supported Task: SNSHA 5

7.3.1.2.2 Lateral Tasks: STSHA 2, STSHA 6, STSHA 7, STSHA 8, STSHLD 1, STSHLD 2, STSHLD 9

7.3.1.2.3 Supporting Task: OPSHA 3

7.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. Limited military commitments from other nations. (C2.1.1.7)
2. No or outline mission preparation. (C2.1.3)
3. Marginal forces assigned. (C2.2.1)
4. Multiple competing apportionments. (C2.2.2)
5. Marginal forces allocated. (C2.2.3)
6. Low personnel capability. (C2.2.4)
7. Low military systems reliability. (C2.2.5.3)

8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. No or partial time-phased force and deployment data (TPFDD) availability. (C2.5.1.1)
11. Negligible or short deployed supplies. (C2.8.2)
12. Unresponsive or slow pipeline responsiveness. (C2.8.3.1)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Limited international organization support. (C3.1.2.5)

7.3.2 Functional Needs Analysis**7.3.2.1 Capability and Deficiency Assessment Summary**

Table 7.3-1 discusses the capabilities that currently exist to perform the task: determine CBRND resources required to meet the theater CBRND situation to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The capability to execute this task resides in the COCOM HQ staff, and the current capability assessment is “yellow.” The primary reason for this assessment centers around the mechanics of logistics for CBRND materiel. The current system is Service-specific, and there are no JTTPs that specifically address influences the flow of joint CBRN resources. The CBRND materiel management process is manual, requiring a dedicated individual in the supporting materiel management center (MMC). Training and experience are situation-dependent. CBRN considerations include a wide array of threat-based tasks that require visibility from the tactical to strategic theater level. Other concerns include tools and processes to manage CBRND personnel and units.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Some capability improvement is forecast for the near/mid term, raising the assessment to “green.” Planning staffs will have been provided the training and will acquire the experience necessary to determine required adjustments to the TPFDD based on CBRN considerations. *UJTL 5.0* will be fully implemented, and Sense, Shape, Shield, and Sustain factors will be consistently considered as a result of training, education and experience.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should continue to improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Table 7.3-1. STSHA 3: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	G ²	G ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	G ⁸	G ⁹	Y ¹⁰
Near/Mid-Term Overall Capability¹¹	G	G	G ¹²	Y	Y	Y	G	G	G ¹³
Far-Term Overall Capability	G	G	G	Y	Y	Y	G	G	G

	FAA Measure	Scale
M1	CBRND staff cells have the ability to influence the TPFDD.	G – Yes, Y – Limited, R – No
M2	Means exist to adjust the TPFDD based on CBRND considerations.	G – Yes, Y – Limited, R – No
M3	Planning staffs have the training and experience to determine required adjustments to the TPFDD based on CBRND considerations.	G – Yes, Y – Limited, R – No
M4	Tools and processes are available to manage CBRND personnel and units.	G – Yes, Y – Limited, R – No
M5	Tools and processes are available to manage CBRND materiel resources.	G – Yes, Y – Limited, R – No
M6	CBRND logistics tracking system is sufficient.	G – Yes, Y – Limited, R – No
M7	Appropriate CBRND logistics management processes are in place.	G – Yes, Y – Limited, R – No
M8	Analytical tools are used to assess logistical demand.	G – Yes, Y – Limited, R – No
M9	All pertinent Sense, Shape, Shield, and Sustain factors are considered.	G – Yes, Y – Limited, R – No

¹ Limited. There are no JTTPs that specifically address joint CBRND materiel resources below the wholesale level.

² Yes. Operational staffs to include CBRND experts, have the ability to provide input to the TPFDD process.

³ Yes. The force mix can be adjusted given adequate time and strategic lift capabilities.

⁴ Limited. The force mix can be adjusted given adequate time and strategic lift capabilities. However, training and experience are situation-dependent. CBRN considerations include a wide array of threat-based tasks that require visibility from the tactical to strategic theater level.

⁵ Limited. Processes exist to manage CBRND personnel and units, but allocation of those assets is subject to availability and in the case of units, readiness and deployability.

⁶ Limited. Processes are available to manage CBRND materiel resources. However, the process is manual, requiring a dedicated individual in the supporting MMC.

⁷ Limited. Any COCOM staff can track logistics. However, there is no dedicated system to track CBRND -related materiel.

⁸ Yes. CBRND-related materiel spans five separate classes of supply. The concept of focused-logistics allows the operational level logistician to track and ship assets and deliver tailored packages and sustainment items. However, this process does not differentiate CBRND-specific items.

⁹ Yes. GSORTS has the capability to monitor specified materiel. However, CBRN equipment does not maintain its own class of supply, therefore, each item must be manually tracked.

¹⁰ Limited. Until UJTL 5.0 is fully implemented, Sense, Shape, Shield, and Sustain factors may not be fully considered.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Planning staffs will have been provided the training and will acquire the experience necessary to determine required adjustments to the TPFDD based on CBRN considerations

¹³ UJTL 5.0 will be fully implemented and Sense, Shape, Shield, and Sustain factors will be consistently considered as a result of training, education, and experience.

7.3.3 Functional Solution Analysis

7.3.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** The current system is Service-specific. There are no JTTPs that specifically address adjusting the flow of joint CBRN resources, personnel, and units.
Non-Materiel Solutions: *Doctrine:* Develop staff planning guidance that provides factors for CBRN resources under varying threat levels.
- 2. Deficiency:** Training and experience are situation-dependent. CBRN considerations include a wide array of threat-based tasks that require visibility from the tactical to strategic theater level.
Non-Materiel Solutions: *Training:* Develop staff training that provides factors for CBRN resources under varying threat levels.
- 3. Deficiency:** The CBRND materiel management process is manual, requiring a dedicated individual in the supporting MMC.
Non-Materiel Solutions: *Personnel:* Resource materiel management positions with qualified logistics-CBRN experts.
- 4. Deficiency:** The current system is Service-specific. There are no JTTPs that specifically address a joint CBRND logistic tracking system.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that specifically address a joint CBRND logistic tracking system.
- 5. Deficiency:** Until *UJTL 5.0* is fully implemented, Sense, Shape, Shield, and Sustain factors may not be fully considered.
Non-Materiel Solutions: *Doctrine:* Approve and publish *UJTL 5.0* at the earliest opportunity after being vetted.
- 6. Deficiency:** There are no JTTPs that specifically address joint CBRND materiel resources, below the wholesale level.
Non-Materiel Solutions: *Training:* Develop JTTPs that specifically address joint CBRND materiel resources, below the wholesale level.

7.3.3.2 IMA Assessment Summary

Table 7.3-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 7.3-2. STSHA 3. IMA Assessment

Idea for Materiel Approach	Description
Automated tool common interface	There is a need for automated tools to have a common user interface. Minimizing information overload on the operator, as well as minimizing the software workload when operating in multiple applications, is a key factor for the automated decision support tools. Different software tools need to have the same “look and feel.”

7.4 Task STSHA 4: Ensure theater CBRND readiness

7.4.1 Functional Area Analysis

7.4.1.1 Definition

To ensure theater forces are prepared to accomplish assigned missions in a CBRN/TIM environment. Joint CBRND training, exercises, and rehearsals are key components to ensure force readiness for operations in a CBRN/TIM environment. Operational concepts and new systems are evaluated in realistic exercises and multinational environments. Forces are evaluated and assessed for effective CBRND task performance across the range of military operations and in a variety of physical environments. CBRND systems are evaluated for operational effectiveness and performance utility. Includes the effective documentation and management of lessons learned information to provide a historical record for trend analysis and a repository for the warfighting staffs to examine during development of integrated priority lists.

7.4.1.2 Derivation

UJTL (ST 1.1.2, ST 2.2.1, ST 2.4.1, ST 2.4.1.1, ST 2.4.1.2, ST 4.2.4, ST 4.2.6, ST 5.1, ST 5.1.3, ST 5.1.4, ST 5.2.1, ST 5.3.1.1, ST 5.3.1.2, ST 5.3.1.4, ST 5.4.3, ST 6, ST 6.1.16, ST 6.2, ST 6.2.2, ST 9, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, Training Transformation Implementation Plan.

7.4.1.2.1 Supported Task: SNSHA 6

7.4.1.2.2 Lateral Tasks: STSHA 2, STSHA 6, STSHLD 4, STSHLD 8, STSHLD 9, STSHLD 11

7.4.1.2.3 Supporting Task: OPSHA 4

7.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No or outline mission preparation. (C2.1.3)
2. Marginal forces assigned. (C2.2.1)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Few modern military systems. (C2.2.5)
6. Few modern military simulation systems. (C2.2.5.5)

7. Poor Joint Staff integration. (C2.3.1.1)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Little or no intelligence dissemination and receipt. (C2.4.7)

Civil. N/A

7.4.2 Functional Needs Analysis

7.4.2.1 Capability and Deficiency Assessment Summary

Table 7.4-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any COCOM staff has a team of operational planners and information command and control specialists to include CBRND subject matter experts. This team of experts forms the backbone of the COCOM staff and command structure. The COCOM staff is responsible for readiness, to include CBRN issues and concerns. JTTPs and tools to evaluate and assess CBRND staffs, capabilities, systems, and concepts within an AOR are limited. Forces and staffs of other nations may or may not have training, equipment, or experience to effectively conduct CBRND operations.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Joint TTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 7.4-1. STSHA 4: Capability and Deficiency Assessment

Capability: COCOM J-3	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³
Near/Mid-Term Overall Capability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	G ¹⁴	G	G	G	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Tools and processes are available to evaluate and assess CBRND capability in theater.	G – Yes, Y – Limited, R – No
M2	Units and HQ staffs are routinely evaluated and assessed in performing CBRND tasks.	G – Yes, Y – Limited, R – No
M3	CBRND systems and concepts, both current and projected, are assessed and evaluated under realistic conditions.	G – Yes, Y – Limited, R – No
M4	CBRND operations are exercised with coalition partners.	G – Yes, Y – Limited, R – No
M5	CBRND staff cells and units have access to dedicated information technology to support training.	G – Yes, Y – Limited, R – No
M6	HQ/unit exercises are conducted under simulated CBRN/TIM conditions.	G – Yes, Y – Limited, R – No
M7	Adequate training tools are available.	G – Yes, Y – Limited, R – No
M8	CBRND specialists/staffs are trained to perform required CBRND tasks.	G – Yes, Y – Limited, R – No
M9	Forces/staffs of other nations are trained in CBRND operations.	G – Yes, Y – Limited, R – No
M10	CBRND staff cells conduct training and rehearsals.	G – Yes, Y – Limited, R – No
M11	An accessible, digital information repository system is available.	G – Yes, Y – Limited, R – No
M12	Information repository is available to all operating forces.	G – Yes, Y – Limited, R – No

¹ There are few training events that specifically address training forces/staffs of other nations for anticipated CBRND operations.

² Limited. COCOM staff has tools and processes to evaluate and assess CBRND capabilities in theater. However, the current system is Service-specific. There are no JTTPs that specifically addresses tools and processes to evaluate and assess joint CBRND capability.

³ Limited. Any COCOM staff can routinely evaluate and assess CBRND tasks, but the current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses evaluating and assessing joint CBRND tasks.

⁴ Limited. Any COCOM staff can assess and evaluate systems under realistic conditions, but the current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses assessing joint CBRND systems and concepts, both current and projected, under realistic conditions.

⁵ Limited. Any COCOM staff has the ability to exercise with coalition partners, but there are few exercises that specifically address CBRND operations with coalition partners.

⁶ Limited. Any COCOM staff has access to information technology to support training, but the current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses CBRND staff cells and units having access to dedicated information technology to support training.

⁷ The current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses CBRND staff cells and units having access to dedicated information technology to support training.

⁸ Limited. Any COCOM staff has the training, but the current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses the joint force CBRND readiness.

⁹ Limited. Any COCOM staff has CBRND specialists/staffs trained to perform CBRND tasks, but there are few JTTPs and familiarization training that specifically addresses the CBRND specialists/staff task on joint force CBRND readiness.

¹⁰ Limited. Any COCOM staff has the ability to train forces/staffs of other nations, but there are few training events that specifically address training forces/staffs of other nations for anticipated CBRND operations. Political constraints inhibit training forces/staffs of other nations on CBRN operations.

¹¹ Limited. Any COCOM staff has the tools to conduct training and rehearsals, but there are limited JTTPs and familiarization training that specifically addresses joint force CBRND readiness.

¹² Limited. Any COCOM staff has access to digital information repository, but the units must know how to access it, through the Global Information Grid (GIG). There are limited JTTPs and familiarization training that specifically addresses accessing the digital information repository.

¹³ Limited. Any COCOM staff has access to digital information repository, but the units must know how to access it, through the GIG. There are limited JTTPs and familiarization training that specifically addresses accessing the digital information repository.

14 DOTMLPF should improve in all deficient areas (for all measures in this row) as a result of initiatives that use data resulting from focused experimentation. Joint TTPs, training and exercises, and education will all improve.

7.4.3 Functional Solution Analysis

7.4.3.1 DOTLPF Assessment Summary.

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

1. **Deficiency:** Limited JTTPs and familiarization training that specifically address joint CBRND readiness.

Non-Materiel Solutions: *Doctrine:* Develop JTTP on joint CBRN readiness requirements to meet the Joint Task Force/Joint Operations Area CBRN situation. JTTP must address processes to evaluate and assess joint CBRND capability, tasks, systems, and concepts (both current and projected, under realistic conditions). JTTP must also address procedures to evaluate and assess CBRND specialists/staff in major units and headquarters. *Training:* Develop joint training on joint CBRN readiness requirements to meet the theater CBRN situation. *Leadership:* Expand joint leadership education course(s) on the joint CBRN readiness requirements to meet the theater CBRN situation.

2. **Deficiency:** There are few exercises that specifically address CBRND operations with coalition partners or the full spectrum of CBRN/TIM conditions.

Non-Materiel Solutions: *Training:* Develop exercises that specifically address CBRND operations with coalition partners and introduce the full spectrum of CBRN/TIM conditions.

7.4.3.2 IMA Assessment Summary

N/A

7.5 Task STSHA 5: Coordinate theater CBRND information systems and processes

7.5.1 Functional Area Analysis

7.5.1.1 Definition

To ensure that theater CBRND information systems and processes allow joint forces to effectively conduct operations in a CBRN/TIM environment. Establishes theater standards, common operating procedures, and formats for plotting and predicting CBRN/TIM hazards, along with alarm, warning, and reporting of the hazards. Establishes standards and procedures for displaying CBRN/TIM hazard information via the theater COP. Includes maintaining theater shared awareness of the current and projected CBRN/TIM threat and situation. Includes establishing an interoperable CBRND Integrated Detection Network (IDN) to detect, characterize, and warn of CBRN/TIM hazards. Ensures the smooth integration and rapid dissemination of CBRND information across the GIG. Ensures that planners and staffs possess the appropriate tools to collaboratively plan, assess, and manage CBRND processes. This task includes access to automated collaborative workspace tools that are integrated/interoperable with existing Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) systems.

7.5.1.2 Derivation

UJTL (ST 2.2.1, ST 2.2.3, ST 2.4.1.1, ST 2.5, ST 5.1, ST 5.1.1, ST 5.1.3, ST 5.1.4, ST 5.1.6, ST 5.2, ST 5.2.1, ST 5.3.1.1, ST 5.3.1.2, ST 5.3.1.3, ST 6, ST 6.1.6, ST 6.2, ST 6.2.1, ST 6.2.2, ST 7.1.1, ST 7.5, ST 8.1.4, ST 8.2, ST 8.2.3, ST 9, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, DoD Net-Centric Data Strategy, DODI 8500.2.

7.5.1.2.1 Supported Task: SNSHA 7

7.5.1.2.2 Lateral Task: N/A

7.5.1.2.3 Supporting Task: OPSHA 5

7.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Negligible personnel experience. (C2.2.4.5)

3. Low military systems reliability. (C2.2.5.3)
4. Few modern military simulation systems. (C2.2.5.5)
5. Some or no interoperability. (C2.2.6)
6. Partial Joint Staff integration. (C2.3.1.1)
7. Poor multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Little or no intelligence dissemination and receipt. (C2.4.7)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Limited international organization support. (C3.1.2.5)
3. Poor information management. (C3.3.7.4)

7.5.2 Functional Needs Analysis**7.5.2.1 Capability and Deficiency Assessment Summary**

Table 7.5-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task. The COCOM HQ was assessed in light of current limited staff use of JWARN and the anticipated fielding IOC of the Joint Effects Model (JEM) Block I in FY 06 and the IOC of the JOEF Block I, Increment I in FY2008. JOEF will provide a significant CBRN-adaptive planning capability. The JEM will provide a single, validated capability to predict and track CBRN and TIM events and effects. The JOEF will provide an operational requirements modeling and simulation system which accurately predicts CBRN effects on personnel, equipment, and operations.

Current Capability and Deficiency

The COCOM HQ was assessed in light of fielding of Block I of the JEM and JOEF. Since JEM/JOEF IOC will not be met until FY2006/FY2008, respectively, all standards were assessed as “yellow.” JWARN provides limited capability within the theater.

Projected Near/Mid-Term Capability and Deficiency

The COCOM will benefit from JEM and JOEF Block I, which will be IOC for the near/mid term. All near/mid-term measures will be assessed as “green” if the IOC is met.

Projected Far-Term Capability and Deficiency

JOEF will provide the COCOM with enhanced capabilities and algorithms as block II/III are IOC in FY2010.

Table 7.5-1. STSHA 5: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Current Overall Capability	Y ¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁵
Near/Mid-Term Overall Capability	G ¹⁶	G	G	G	G	G	G	G	G	G	G	G	G	G	G
Far-Term Overall Capability	G ¹⁷	G	G	G	G	G	G	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Hazards effects models and tools are adequate and available at all appropriate levels for assessment and decision making.	G – Yes, Y – Limited, R – No
M2	Theater is adequately covered by the IDN.	G – Yes, Y – Limited, R – No
M3	Sensors managed at all echelons are networked to the IDN.	G – Yes, Y – Limited, R – No
M4	Sufficient doctrine and TTPs exist for effective IDN operation.	G – Yes, Y – Limited, R – No
M5	Joint forces are adequately trained to effectively operate the IDN.	G – Yes, Y – Limited, R – No
M6	All operation centers are networked to IDN.	G – Yes, Y – Limited, R – No
M7	IDN successfully tracks and monitors the hazard.	G – Yes, Y – Limited, R – No
M8	Means exist to disseminate routine, essential and critical CBRN/TIM threat intelligence rapidly.	G – Yes, Y – Limited, R – No
M9	Means exist to compile and display information on CBRN/TIM events that occurs throughout the theater.	G – Yes, Y – Limited, R – No
M10	Means exist to present information on the operational impact of a CBRN/TIM event.	G – Yes, Y – Limited, R – No
M11	Coalition and joint CBRND IDN provide automated warning and reporting.	G – Yes, Y – Limited, R – No
M12	CBRND information is easily disseminated onto the GIG.	G – Yes, Y – Limited, R – No
M13	CBRND data and information formats are interoperable across the coalition and interagency.	G – Yes, Y – Limited, R – No
M14	Required participants are able to exchange information through planning, assessment and management tools.	G – Yes, Y – Limited, R – No
M15	CBRND information is processed using existing C4ISR assets.	G – Yes, Y – Limited, R – No

¹ Limited. JWARN is available within the theater to make assessment and decision making based on the hazards effects, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

² Limited. JWARN provides no capability, JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

³ Limited. JWARN provides no capability, JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

⁴ Limited. Doctrine and TTP are being developed as the different modules and blocks are being fielded.

⁵ Limited. Training is being conducted (new equipment training) and developed as the different modules and blocks are being fielded.

⁶ Limited. JWARN provides no capability, JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

⁷ Limited. JWARN is available within the theater and can be used to basically track and monitor the hazard, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

⁸ Limited. JWARN is available within the theater and can disseminate routine, essential and critical CBRN threat intelligence rapidly, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

⁹ Limited. JWARN is available within the theater and can compile and display information on CBRN events that occurs throughout the theater, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹⁰ Limited. JWARN is available within the theater to basically present information on the operational impact of a CBRN event, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹¹ Limited. JWARN is available within the theater and can provide automated warning and reporting to the Coalition and joint forces, but JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹² Limited. JWARN is available within the theater but interfaces with only the GCCS, manually. JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹³ Limited. JWARN is available within the theater and allows CBRND data and information formats to be interoperable across the coalition and interagency environment but is labor-intensive. JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹⁴ Limited. JWARN is available within the theater and is able to exchange information manually through planning, assessment and management tools. JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹⁵ Limited. JWARN is available within the theater and CBRND information is manually processed using existing C4ISR assets. JEM will not be IOC until FY2006, and JOEF will not be IOC until FY2008.

¹⁶ All near/mid-term measures will improve dramatically with the IOC of JEM Block I in FY2006 and the IOC of JOEF Block I, Increment I in FY2008.

¹⁷ All far-term measures will improve even more with JOEF Block II/III IOC in FY2010.

7.5.3 Functional Solution Analysis

7.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

1. **Deficiency:** JWARN is available but is currently limited to manual input and retrieval.

Non-Materiel Solutions: *Doctrine:* JWARN doctrine (TTPs) will need to be developed and updated as each module is fielded. *Training:* JWARN training will need to be developed and updated as each module is fielded. Exercises and experiments could provide valuable insight and feedback on JWARN capabilities. *Leadership:* JWARN leadership education will need to be developed and updated as each module is fielded.

7.5.3.2 IMA Assessment Summary

N/A

7.6 Task STSHA 6: Provide theater CBRND strategy, plans, and policy

7.6.1 Functional Area Analysis

7.6.1.1 Definition

To provide theater strategy, plans, and policy providing goals and end states for CBRND capabilities. Includes joint, multiagency, and international considerations. This task is geared to enabling the national strategies. Includes providing strategic theater guidance for restoration and elimination operations. Considers all Sense, Shape, Shield, and Sustain factors. Staff action in deliberate and crisis planning modes is supported. Includes providing strategic guidance for theater restoration and elimination operations.

7.6.1.2 Derivation

UJTL (ST 1.3.4, ST 1.3.7, ST 2.2.1, ST 2.2.3, ST 2.4.1, ST 2.4.1.1, ST 2.4.1.2, ST 4.2.4, ST 5, ST 5.1, ST 5.1.1, ST 5.1.2, ST 5.1.3, ST 5.1.4, ST 5.1.6, ST 5.2, ST 5.2.1, ST 5.3.1.3, ST 5.3.3, ST 5.4.1, ST 5.4.3, ST 6, ST 6.1.6, ST 6.2, ST 6.2.1, ST 7.1.1, ST 8.1.4, ST 8.2, ST 8.3.2, ST 9, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, Combatant Commander's Planning Guide for WMD Elimination Operations.

7.6.1.2.1 Supported Task: SNSHA 8

7.6.1.2.2 Lateral Tasks: STSHA 2, STSHA 3, STSHA 4, STSHA 7, STSHA 8, STSHA 9, STSHA 10, STSHA 11, STSHLD 5, STSHLD 6, STSUST 1, STSUST 2, STSUST 3, STSUST 4, STSUST 5, STSUST 6, STSUST 14

7.6.1.2.3 Supporting Task: OPSHA 6

7.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. No preexisting arrangements. (C2.1.1.2)
3. Negligible personnel experience. (C2.2.4.5)
4. Some or no interoperability. (C2.2.6)
5. Poor Joint Staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)
7. Negligible theater intelligence access. (C2.4.4)

Civil. N/A

7.6.2 Functional Needs Analysis

7.6.2.1 Capability and Deficiency Assessment Summary

Table 7.6-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any COCOM HQ has a team of operational planners and information command and control specialists to include a CBRN staff cell. This team of experts forms the backbone of the theater command structure. Restoration and interdiction/elimination operations are concepts that planning staffs will continue to mature given specific threats within their respective AORs and therefore could not be rated fully capable. The Military Decision-Making Process is a formal concept that is universally accepted, and therefore plans and planning guidance should incorporate considerations for all eventualities. However, as recent operations have shown, CBRND-specific considerations had shortfalls. No specific means is available at this time to identify and track CBRND resources or contaminated items that are required to be redirected, removed, or disposed of. Institutional training that is focused on planning for restoration operations and CBRN consequence management is limited. Therefore, the measures concerning CBRND plans and planning guidance were rated as “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas (for all measures in this row) as a result of initiatives that use data resulting from focused experimentation. Joint TTPs, training and exercises, and education will all improve, raising the far-term forecast to “green.”

Table 7.6-1. STSHA 6: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	Y	Y	Y	Y	G	Y	Y	Y	Y
Far-Term Overall Capability	G ¹¹	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Means exist to formulate CBRND planning guidance.	G – Yes, Y – Limited, R – No
M2	Planning staffs have the training and experience to effectively plan for CBRND operations.	G – Yes, Y – Limited, R – No
M3	Plans address all pertinent Sense, Shape, Shield, and Sustain issues.	G – Yes, Y – Limited, R – No
M4	Doctrine and TTPs are sufficient for effective CBRND planning.	G – Yes, Y – Limited, R – No
M5	Standing plans are adaptable to dynamically changing CBRND situations.	G – Yes, Y – Limited, R – No
M6	Operational and analytical/planning staffs have the training and experience to effectively plan for restoration operations.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to effectively plan for elimination operations.	G – Yes, Y – Limited, R – No
M8	Joint, multiagency, and international considerations are included.	G – Yes, Y – Limited, R – No
M9	Means are established to identify and track CBRND resources or contaminated items that are required to be redirected, removed, or disposed of.	G – Yes, Y – Limited, R – No

¹ Limited. Institutional training for planning staffs is available. Institutional training that is focused on planning for restoration operations and CBRN consequence management is limited.

² Limited. Any COCOM staff has the ability to formulate planning guidance, but there are few JTTPs and education and training that specifically address formulating CBRND planning guidance.

³ Limited. Any COCOM staff has the training and experience to plan operations, but there are few JTTPs and education and training that specifically address CBRND operations.

⁴ Limited. Any COCOM staff has the ability to develop plans, but there are few JTTPs that specifically address the process to select all pertinent Sense, Shape, Shield, and Sustain issues.

⁵ Limited. There are doctrine and JTTPs that specifically address theater CBRND planning, but given the broad range of CBRN/TIM threats worldwide, each COCOM still needs to develop its own TTPs for CBRN planning.

⁶ Yes. Standing plans are adaptable to dynamically changing CBRN situations.

⁷ Limited. Any COCOM operational and analytical/planning staff has the training and experience to effectively plan, but there are few JTTPs and courses that specifically address restoration operations.

⁸ Limited. Any COCOM operational and analytical/planning staff has the training and experience to effectively plan, but there are few JTTPs and courses that specifically address interdiction/elimination operations.

⁹ Limited. Joint, multiagency, and international considerations are infrequently included in plans at this time.

¹⁰ Limited. No specific means is available at this time to identify and track CBRND resources or contaminated items that are required to be redirected, removed, or disposed of.

¹¹ DOTMLPF should improve in all deficient areas (for all measures in this row) as a result of initiatives that use data resulting from focused experimentation. Joint TTPs, training and exercises, and education will all improve.

7.6.3 Functional Solution Analysis

7.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** Few JTTPs specifically address formulating CBRND planning guidance.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on formulating CBRND planning guidance for the theater. *Training:* Expand joint training on formulating CBRND plans and policy for the theater.
- 2. Deficiency:** Few JTTPs specifically address CBRND operations.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on planning CBRND restoration and interdiction/elimination operations for the theater. *Training:* Develop joint training on planning CBRND restoration and interdiction/elimination operations for the theater.
Leadership: Develop joint leader education course(s) on CBRND restoration and elimination operations for the theater.
- 3. Deficiency:** Few JTTPs specifically address the process to select all pertinent Sense, Shape, Shield, and Sustain issues and incorporate them into plans.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on the process to select and incorporate into plans all pertinent Sense, Shape, Shield, and Sustain issues. *Training:* Develop joint training on the process to select all pertinent Sense, Shape, Shield, and Sustain issues. *Leadership:* Develop joint education course(s) on the process to select all pertinent Sense, Shape, Shield, and Sustain issues.
- 4. Deficiency:** Given the broad range of CBRN/TIM threats worldwide, each COCOM still needs to develop its own TTPs for CBRN planning.
Non-Materiel Solutions: *Doctrine:* Each COCOM HQ must develop procedures to incorporate theater-specific CBRN/TIM threats into plans and policy.
- 5. Deficiency:** Joint, multiagency, and international considerations are seldom included in plans at this time.
Non-Materiel Solutions: *Doctrine:* Include joint, multiagency, and international considerations into all theater plans and policy.
- 6. Deficiency:** No specific means is available at this time to identify and track CBRND resources or contaminated items that are required to be redirected, removed, or disposed of.
Non-Materiel Solutions: *Doctrine:* Develop specific TTPs or means to identify and track CBRND resources or contaminated items that are required to be redirected, removed, or disposed of.

7.6.3.2 IMA Assessment Summary. N/A

7.7 Task STSHA 7: Coordinate CBRND aspects of theater medical operations

7.7.1 Functional Area Analysis

7.7.1.1 Definition

To coordinate CBRND aspects of theater medical operations. Sets standards for personnel health and fitness required for potential exposure to CBRN/TIM conditions (e.g., immuno-competency, lung capacity, cholinesterase levels). Provides theater guidance for the conduct of medical CBRND health assessments ensuring compliance with nationally established threshold criteria for medical CBRND health assessments. Includes the coordination of medical surveillance throughout the theater for indications of CBRN/TIM attack or release. Also includes pre- and post-deployment medical evaluation to determine exposure to CBRN/TIM agents. Includes developing medical courses of action for inclusion in theater planning. Includes all aspects of CBRND medical logistics.

7.7.1.2 Derivation

UJTL (ST 2.2.1, ST 2.4.1, ST 2.4.1.1, ST 2.4.1.2, ST 4.2.6, ST 5, ST 5.1.1, ST 5.1.2, ST 5.1.3, ST 5.1.4, ST 5.1.6, ST 5.2, ST 5.2.1, ST 5.4.1, ST 5.4.3, ST 6, ST 6.2, ST 7.1.1, ST 8.1.4, ST 8.2.3, ST 8.3.2, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Transformation Planning Guidance, Protection Joint Functional Concept.

7.7.1.2.1 Supported Task: SNSHA 9

7.7.1.2.2 Lateral Tasks: STSHA 2, STSHA 3, STSHA 6, STSHA 8, STSHLD 3

7.7.1.2.3 Supporting Task: OPSHA 7

7.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. No or outline mission preparation. (C2.1.3)
3. Low personnel capability. (C2.2.4)
4. Poor personnel nutrition and health. (C2.2.4.1)
5. Negligible personnel experience. (C2.2.4.5)
6. Limited staff expertise. (C2.3.1.3)
7. Highly restricted information exchange. (C2.3.1.8)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited international organization support. (C3.1.2.5)
3. High health risk. (C3.3.1.5)
4. Insignificant science and technology. (C3.3.7)

7.7.2 Functional Needs Analysis

7.7.2.1 Capability and Deficiency Assessment Summary

Table 7.7-1 discusses the only capability to coordinate CBRND aspects of theater medical operations to perform the task to the designated standard.

Current Capability and Deficiency

Medical screening is adequate and appropriate for this capability. Automated disease outbreak tracking systems are generally available at the strategic national level and therefore, the theater-level medical health care providers need a reachback capability. Personnel and record screening are assessed as adequate. Procedures to isolate/quarantine casualties are assessed as limited because the caveat included host nation individuals, a task outside the realm of the COCOM HQ. Health risk assessment for TIM hazards are limited because a broad analysis of chemical and toxic material production/storing capabilities has not been accomplished globally. The task concerning units that were potentially or actually exposed to CBRN/TIM was rated limited because a real-time/near-real-time geospatial understanding of units on the battlefield has not been realized. The overall current assessment is on the low side of “yellow.”

Projected Near/Mid-Term Capability and Deficiency

JEM and JOEF are projected to be fielded in the near/mid-term future. JOEF will support real-time decision making that will allow the commander to assess and react to actual and potential impacts on the warfighting mission due to NBC hazards, logistical concerns, medical support needs (e.g. casualty estimation, troop exposures, casualty care and treatment, etc.) and deployment of NBC defense equipment. The project overall near/mid-term capability is “green.”

Projected Far-Term Capability and Deficiency

No changes in the foreseeable future. The project overall far-term capability is “green.”

Table 7.7-1. STSHA 7: Capability and Deficiency Assessment

Capability: COCOM Medical Staff/Unit	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current Overall Capability¹	G ²	G ³	Y ⁴	Y ⁵	Y ⁶	G ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	G ¹²
Near/Mid-Term Overall Capability	G	G	Y	Y	G ¹³	G	G ¹³	Y	G ¹³	G ¹³	G
Far-Term Overall Capability	G	G	Y	Y	G	G	G	Y	G	G	G

	FAA Measure	Scale
M1	Personnel are screened for deployment eligibility.	G – Yes, Y – Limited, R – No
M2	Medical records are assessed for medical indicators.	G – Yes, Y – Limited, R – No
M3	Standards for personnel health and fitness are effective for potential CBRN/TIM environments.	G – Yes, Y – Limited, R – No
M4	Casualties (US, host nation, and third country nationals), both human and MWA, restricted by medical/veterinary isolation/quarantine, are identified.	G – Yes, Y – Limited, R – No
M5	A theater-wide system for tracking the status of CBRND medical information exists.	G – Yes, Y – Limited, R – No
M6	Theater medical threats are identified and appropriate counter-measures are instituted.	G – Yes, Y – Limited, R – No
M7	CBRND health risk assessment estimate is available.	G – Yes, Y – Limited, R – No
M8	Units, potentially or actually exposed/contaminated by CBRN/TIM or ROTA event, are identified and tracked.	G – Yes, Y – Limited, R – No
M9	CBRND medical courses of action are integrated into theater planning.	G – Yes, Y – Limited, R – No
M10	Logistics requirements and deficiencies are identified.	G – Yes, Y – Limited, R – No
M11	Non-DoD sources are accessed for information.	G – Yes, Y – Limited, R – No

¹ Limited. There is limited JTTPs to specifically address this task.

² Yes. Personnel are screened before deployment.

³ Yes. Medical staffs can sufficiently assess records.

⁴ DoD-wide standards for general military personnel health and fitness are well documented and sustained. However, medical linkage to health criteria for CBRN should be developed. Drawing of baseline cholinesterase levels needs to be standardized across the services.

⁵ Limited. Most theater medical/veterinary personnel are proficient at quarantine protocol. However, coordination across the joint services medical community (as well as host nations/coalition partners) for identifying, screening, isolating, and quarantining infected personnel should be improved, to include the use of automated disease-outbreak tracking systems. These systems should be fed into the J-2, CBRN, and preventive medicine experts to provide population indicators of biological weapons use in AOR.

⁶ There is a current limited capability to track the status of CBRND medical information, which will increase with the fielding of JEM and JOEF.

⁷ Yes. National medical assets can identify potential medical threats and institute limited medical countermeasures.

⁸ Limited. TIMs health risk assessment requires a broad analysis of chemical and toxic material production/storing capabilities in the area of operations. A database of global to local TIM hazards does not currently exist. However, expertise can be made available to the COCOM to conduct a health risk assessment based on regional hazards.

⁹ Limited. Most COCOM staffs can track adequately those units actually or potentially exposed to CBRN/TIM. However, real-time/near-real-time understanding of the geographical location of units on the battlefield, tied to automated plume prediction technology is necessary.

¹⁰ Unless specifically requested, medical COAs for CBRND are not typically included in theater plans, particularly for TIMs.

¹¹ Logistics requirements are identified for some medical issues, but CBRND medical issues are typically not addressed.

¹² Yes. Reachback capabilities exist for multiple medical need analyses.

¹³ JEM and JOEF increases the capability from partial to full.

7.7.3 Functional Solution Analysis

7.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

1. **Deficiency:** Coordination across the joint services medical community (as well as host nations/coalition partners) for identifying, screening, isolating, and quarantining infected personnel should be improved.
Non-Materiel Solutions: *Doctrine:* Doctrine for early identification for nonstandard and novel chemical/biological threats needs to be developed. *Training:* Training on early identification for nonstandard and novel chemical/biological threats needs to be implemented.

2. **Deficiency:** A global database of local CBRN/TIM hazards does not currently exist.
Non-Materiel Solutions: None

3. **Deficiency:** Real-time/near-real-time understanding of the geographical location of units on the battlefield tied to automated plume prediction technology does not exist.
Non-Materiel Solutions: None

4. **Deficiency:** There is limited JTTPs to specifically address coordinating CBRND/TIM aspects of theater medical operations.
Non-Materiel Solutions: *Doctrine:* Improvement in environmental health and safety training of deploying forces is needed, JTTPs for medical management of CBRND/TIM casualties needs to be improved or some form of reachback capability needs to be implemented for health care professionals to conduct adequate assessments, diagnoses, and treatment.

7.7.3.2 IMA Assessment Summary

Table 7.7-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 7.7-2. STSHA 7: IMA Assessment

Idea for Materiel Approach	Description
Automated database	Development of an automated global database/software program of CBRN/TIM hazards or development of a theater medical personnel reachback capability to national medical and occupational safety and health databases.
Automated tool	Development of automated plume prediction technology tied to real-time geospatial unit location is necessary.

7.8 Task STSHA 8: Coordinate theater CBRND operations

7.8.1 Functional Area Analysis

7.8.1.1 Definition

To provide overall coordination of theater CBRND operations. Preparatory activities are coordinated with affected joint forces, coalition partners, and appropriate nongovernmental organizations and indigenous agencies. Preparations are extended to cooperative nonaligned nations to reduce their CBRN/TIM vulnerability and enhance collaborative operating potential. CBRND resources provided by other nations and agencies, including resources identified under agreements and treaties, are integrated into preparations. Multiple CBRN/TIM events could occur in the same time frame throughout the theater. Rapid and effective response and mitigation coordination is required. CBRN/TIM event information provided in the COP is used to formulate appropriate actions and taskings. Includes the allocation and reallocation of CBRND resources to joint commanders throughout the theater. Includes overall coordination and tracking of theater restoration and elimination operations.

7.8.1.2 Derivation

UJTL (ST 1.1.2, ST 2.2.1, ST 2.4.1, ST 2.5, ST 5, ST 5.1, ST 5.2, ST 5.2.1, ST 5.3.1, ST 5.4.1, ST 5.4.3, ST 6, ST 7.1.1, ST 8.1, ST 8.2, ST 8.3.2, ST 9), Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense.

7.8.1.2.1 Supported Tasks: SNSHA 10, SNSHA 14

7.8.1.2.2 Lateral Tasks: STSHA 3, STSHA 6, STSHA 7, STSUST 7, STSUST 11, STSUST 12, STSUST 14

7.8.1.2.3 Supporting Tasks: OPSHA 8, OPSHA 12

7.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No preexisting arrangements (C2.1.1.2)
2. No or outline mission preparation (C2.1.3)
3. Few modern military systems. (C2.2.5)
4. Few modern military simulation systems. (C2.2.5.5)
5. Poor Joint Staff integration. (C2.3.1.1)

6. Poor multinational integration. (C2.3.1.2)
7. Limited staff experience. (C2.3.1.3)
8. Negligible deployed supplies. (C2.8.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support (C3.1.2.3)
3. Uncertain international organization support (C3.1.2.5)
4. Restrictive Presidential and/or Secretary of Defense decisions. (C3.1.3)

7.8.2 Functional Needs Analysis

7.8.2.1 Capability and Deficiency Assessment Summary

Table 7.8-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The COCOM operations directorate (J-3) provides the capability to perform this task. The current capability is assessed as “yellow,” primarily centering on the JPME (does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels) and CBRN specialists (do not receive training as strategic planners). Also, allocation adequacy for CBRN units, personnel, and CBRND systems was considered limited.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception that *UJTL* 5.0 will be fully implemented and Sense, Shape, Shield, and Sustain factors will be consistently considered as a result of training, education, and experience.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. Little capability improvement is forecast for the far term with the exception that DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Table 7.8-1. STSHA 8: Capability and Deficiency Assessment

Capability: COCOM J-3	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	Y ²	Y ³	R ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸
Near/Mid-Term Overall Capability⁹	Y	Y	G ¹⁰	Y	Y	Y	Y
Far-Term Overall Capability¹¹	Y	Y	G	Y	Y	Y	Y

	FAA Measure	Scale
M1	CBRND units and personnel are adequately allocated.	G – Yes, Y – Limited, R – No
M2	CBRND systems and equipment are adequately allocated.	G – Yes, Y – Limited, R – No
M3	All pertinent Sense, Shape, Shield, and Sustain information is considered.	G – Yes, Y – Limited, R – No
M4	Coordination for CBRND operations includes transport, logistics, communications, and CBRND unit employment considerations.	G – Yes, Y – Limited, R – No
M5	Doctrine and TTPs for theater CBRND coordination are available.	G – Yes, Y – Limited, R – No
M6	Theater staffs are adequately trained to effectively coordinate CBRND operations.	G – Yes, Y – Limited, R – No
M7	Theater exercises or experimentation provide feedback on efficacy of coordination of theater CBRND operations.	G – Yes, Y – Limited, R – No

¹ No. JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels. CBRN specialists do not receive training as strategic planners.

² Limited. Current apportionment to theaters within force structure constraints is appropriate. However, should interdiction fail, given multiple CBRN capable adversaries, CBRND units and personnel are insufficient for multitheater CBRN events and subsequent restoration operations.

³ Limited. Current CBRND end-item systems are scarce assets. CBRND resources, especially detection and force protection systems, must be focused on most critical assets.

⁴ No. Not all pertinent Sense, Shape, Shield, and Sustain information is considered. UJTL 5.0 will establish Sense, Shape, Shield, and Sustain as critical domains. However, UJTL 4.7 does not.

⁵ Limited. COCOM J-3 can establish coordination; however, given the fluid nature of current and future military engagement areas, precise and finite coordination must await execution orders.

⁶ Limited. Joint Publication 3 Series (Operations) addresses CBRND coordination considerations. However, TIM are not adequately addressed at the Strategic Theater level.

⁷ Limited. Joint Senior Leaders Course provides a limited orientation at the Strategic Theater and Operational levels. However, JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels.

⁸ Limited. Few exercises or experimentation adequately incorporate appropriate CBRN/TIM issues.

⁹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹⁰ UJTL 5.0 will be fully implemented, and Sense, Shape, Shield, and Sustain factors will be consistently considered as a result of training, education, and experience.

¹¹ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

7.8.3 Functional Solution Analysis

7.8.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** Given multiple CBRN capable adversaries, CBRN units and personnel are insufficient for multitheater CBRN events and subsequent restoration operations and individual theater resources will be constrained.
Non-Materiel Solutions: *Organization:* Given the intensive requirements for reconnaissance and decontamination in a CBRN environment, reevaluate allocation rules for CBRN units. *Personnel:* Given the intensive requirements for information management, reconnaissance and decontamination in a CBRN environment, reevaluate allocation rules for CBRN personnel.
- 2. Deficiency:** Lack of automated CBRN/TIM hazard assessment capability.
Non-Materiel Solutions: None
- 3. Deficiency:** Few exercises or experimentation adequately incorporate appropriate CBRN/TIM issues.
Non-Materiel Solutions: *Doctrine:* UJTL 5.0 should effectively drive consideration of Sense, Shape, Shield, and Sustain domains. *Training:* Incorporate appropriate CBRN/TIM issues into all theater-level exercises and experimentation.
- 4. Deficiency:** Given the fluid nature of current and future military engagement areas, precise and finite CBRN logistical and operational coordination must await execution orders.
Non-Materiel Solutions: *Doctrine:* Develop staff planning guidance for predictive CBRN operations and logistics.
- 5. Deficiency:** Theater TIM considerations are not adequately addressed at the Strategic Theater level.
Non-Materiel Solutions: *Doctrine:* Develop a process and plan to address TIMs at the Strategic Theater level.
- 6. Deficiency:** JPME does not mandate a core minimum set of CBRNE tasks for mastery at the mid and Senior Service College levels.
Non-Materiel Solutions: *Training:* Conduct front-end analysis and training needs analysis to develop and implement appropriate instruction at the intermediate and Senior Service College level. Once training analysis is complete, resource manpower and time to support resident instruction and develop distributed training.

7.8.3.2 IMA Assessment Summary

Table 7.8-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 7.8-2. STSHA 8: IMA Assessment

Idea for Materiel Approach	Description
Automated tool	Develop a theater TIM automated assessment tool that allows staff planners predictive capability for TIM hazards

7.9 Task STSHA 9: Develop TEPs for Shape considerations and activities for assigned theater or designated countries

7.9.1 Functional Area Analysis

7.9.1.1 Definition

To develop Theater Engagement Plans (TEPs) that will develop cooperation and trust through a combination of restoration operations exercises, training, equipment exchange, and other cooperative efforts. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. To ensure cooperation and interoperability, the combatant commander develops TEPs for assigned theater or designated countries. TEPs that include Shape considerations and activities can help to mitigate reluctance to support the United States. If countries are provided with the means to achieve situational understanding after CBRN/TIM attacks or if they are assured of U.S. assistance, they will feel less threatened.

7.9.1.2 Derivation

UJTL (ST 9.4, ST 8.2.1, ST 8.1.2), CJCSM 3113.01A.

7.9.1.2.1 Supported Task: SNSHA 11

7.9.1.2.2 Lateral Tasks: STSENS 7, STSHA 6, STSUST 8

7.9.1.2.3 Supporting Task: OPSHA 9

7.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

7.9.2 Functional Needs Analysis

7.9.2.1 Capability and Deficiency Assessment Summary

Table 7.9-1 discusses the only capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The combatant command develops TEPs for Shape considerations and activities for assigned theater or designated countries. Nothing precludes the COCOM staff from establishing these TEPs now, but there is very little in the way of existing doctrine or TTPs to help guide them. Theater engagement planning is primarily a strategic planning document intended to link COCOM-planned regional engagement activities with national strategic objectives. TEPs are based on defense planning guidance. COCOM-planned and -supported operations and activities produce multiple benefits in readiness, modernization, and engagement. However, peacetime military engagement activities must be prioritized to ensure efforts are focused on those that are of greatest importance, without sacrificing warfighting capability. Because weapons of mass destruction represent the most significant threat to global security, it is an ideal candidate for theater engagement planning, which identifies the synchronization of these activities on a regional basis and illustrates the efficiencies gained from regional COCOM engagement activities that support national strategic objectives. Nothing precludes a COCOM staff from initiating theater engagement planning for Shape-related considerations. No guidance has been provided and no doctrine exists specifically addressing for Shape-related consideration integration into TEPs. No Shape-related exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries. No doctrine has been developed. Leader education does not address this issue.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Near/mid-term experimentation results (as recommended in this Joint Capabilities Integration and Development System [JCIDS] analysis) may lead to development of new capabilities. It is projected that improvements due to coordination/DOTLPF enhancements will dramatically improve the ability of the COCOM staff to develop TEPs for Shape-related issues, but the overall status will remain “yellow” due to the inherent difficulty in initiating and developing new theater engagement planning programs.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The overall status is likely to remain “yellow” due to the inherent difficulties posed by international relations.

Table 7.9-1. STSHA 9: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4
Current Overall Capability¹	Y ²	G ³	Y ⁴	R ⁵
Near/Mid-Term Overall Capability	Y	G	Y	R
Far-Term Overall Capability⁶	Y	G	Y	Y ⁷

	FAA Measure	Scale
M1	Shape TEPs are established for designated countries.	G – Yes, Y – Limited, R – No
M2	TEPs are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	TEPs meet guidelines of <i>CJCSM 3113.01A</i> .	G – Yes, Y – Limited, R – No
M4	Joint exercises/experimentation provide feedback on efficacy of TEPs for specific countries.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Nothing precludes a COCOM staff from initiating TEP for Shape-related considerations. No guidance has been provided, and no doctrine exists specifically addressing Shape integration into TEP.

³ Nothing precludes meeting this standard once Shape-related TEPs are established.

⁴ CJCSM 3113.01A does not address integration of Shape-related considerations into TEP.

⁵ No Shape-related exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.

⁶ Doctrine will be developed. Leader education will begin to address this issue.

⁷ Results of experimentation and feedback from insertion in training exercises will begin to provide valuable data on TEP-related issues.

7.9.3 Functional Solution Analysis

7.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** No guidance has been provided, and no doctrine/TTPs exists specifically addressing Shape integration into TEPs.
Non-Materiel Solutions: *Doctrine:* Establish policies, TTPs, and guidelines that include practical ways to enhance Shape-related consideration integration into TEPs.
- 2. Deficiency:** No Shape exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.
Non-Materiel Solutions: *Training:* Develop exercises to include Shape-related considerations with TEP countries to determine efficacy of policy once established.
- 3. Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* At the urging of the Joint Forces Staff College (JFSC), and as part of a Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND) joint education initiative, a team began to investigate ways to develop CBRN defense initiatives as part of theater engagement planning. The subject matter experts at the JFSC felt that in the current global environment, CBRND was an ideal platform for military engagement, enhancing a common global defense capability against weapons of mass destruction. The team plans to present these JCIDS tasks to the JFSC as a foundation for the development of TEP education materials when they are finalized.

7.9.3.2 IMA Assessment Summary

N/A

7.10 Task STSHA 10: Establish theater cooperative CBRN/TIM-detection policies, procedures, and networks

7.10.1 Functional Area Analysis

7.10.1.1 Definition

To link theater active systems (such as Air Defense Radar) with passive detectors (such as Biological Integrated Detection System [BIDS]) to produce a theater cooperative CBRN/TIM-detection network. Builds a seamless web from the theater capabilities down to individual tactical detectors within the theater battlespace to provide a means of detecting both delivery vehicles and agents.

7.10.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

7.10.1.2.1 Supported Task: SNSHA 12

7.10.1.2.2 Lateral Task: STSHA 6

7.10.1.2.3 Supporting Task: OPSHA 11

7.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

7.10.2 Functional Needs Analysis

7.10.2.1 Capability and Deficiency Assessment Summary

Table 7.10-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

While any theater-level staff can develop policies and procedures specific and unique to its operational circumstances, this task is asking much more. This task is not normally a function of a theater commander. This capability must be developed and facilitated by Strategic National assets and passed to the field commander as a vetted operational capability package. Because of this current deficiency, the capability is assessed as “red.” The capability to incorporate cooperatively linked detection technologies does not currently exist; therefore, effective DOTMLPF has not yet been developed.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term the capability assessment should improve to “yellow.” A COCOM HQ has the ability to establish CBRN/TIM-detection policies within the theater. As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with Global Positioning System (GPS) linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.) theater cooperative CBRN/TIM-detection policies, procedures, and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation and exercises before full capability is realized.

Table 7.10-1. STSHA 10: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	G ⁶	R ⁷
Near/Mid-Term Overall Capability	R	R	R	R	G	R
Far-Term Overall Capability	Y ⁸	Y	Y	Y	G	Y

	FAA Measure	Scale
M1	Theater cooperative CBRN/TIM-detection policy is established.	G – Yes, Y – Limited, R – No
M2	Theater cooperative CBRN/TIM-detection procedures are established.	G – Yes, Y – Limited, R – No
M3	Theater cooperative CBRN/TIM-detection networks are established.	G – Yes, Y – Limited, R – No
M4	Policy and procedures have been established with theater allies.	G – Yes, Y – Limited, R – No
M5	Existing policy and procedures are updated regularly.	G – Yes, Y – Limited, R – No
M6	Multinational exercises/experimentation provide feedback on efficacy of policies and procedures.	G – Yes, Y – Limited, R – No

¹ Limited. Conceivably, any COCOM HQ could incorporate cooperatively linked detection technologies; however, the capability does not currently exist, therefore, effective DOTMLPF is irrelevant.

² A COCOM HQ has the ability to establish CBRN/TIM-detection policies within the theater as outlined in the Theater Security Cooperation Plan. However, cooperative linkages between various systems capabilities, although proposed, have not yet been coordinated. Since no linkages currently exist between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.), no theater cooperative CBRN/TIM-detection policies are required.

³ Any COCOM HQ CBRN cell has the ability to establish CBRN/TIM-detection procedures within the theater. However, distributed, cooperative CBRN/TIM-detection capabilities do not currently exist, and theater cooperative CBRN detection procedures are not established.

⁴ Any COCOM HQ communications cell has the ability to establish networks within the theater. However, cooperative linkages between various system capabilities do not currently exist; therefore, cooperative CBRN/TIM-detection networks need not be established.

⁵ Any COCOM HQ has the ability to establish policies and procedures. However, cooperative linkages between various system capabilities do not exist currently; therefore, policies and procedures need not be established.

⁶ Any COCOM HQ has the ability to update policies and procedures regularly.

⁷ Since the capability to establish cooperative linkages between various detection technologies does not currently exist, exercises and experiments to provide feedback are not yet necessary.

⁸ A COCOM HQ has the ability to establish CBRN/TIM-detection policies within the theater. As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.) theater cooperative CBRN/TIM-detection policies, procedures, and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation and exercises before full capability is realized.

7.10.3 Functional Solution Analysis

7.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** Lack of a networked CBRN/TIM-detection capability.
Non-Materiel Solutions: None
- 2. Deficiency:** Since the capability to establish cooperative linkages between various detection technologies does not currently exist, proposals and concepts must be tested in exercises and experiments to provide feedback and test hypotheses.
Non-Materiel Solutions: *Doctrine:* Develop ideas, proposals, and concepts for cooperatively linked detection technologies. *Training:* Before concepts for cooperatively linked detection technologies can be fully developed and tested, exercises and experiments will be necessary to refine and test concept hypotheses.
- 3. Deficiency:** The capability of cooperatively linked detection technologies does not currently exist; therefore, effective DOTLPF has not been established.
Non-Materiel Solutions: *Doctrine:* Before cooperatively linked detection technologies reach IOC, effective doctrine and JTTPs should be developed. *Organization:* Before cooperatively linked detection technologies reach IOC, organizational requirements and changes should be developed and executed. *Training:* Before cooperatively linked detection technologies reach IOC, effective training for theater-level staffs should be developed. *Leadership:* Before cooperatively linked detection technologies reach IOC, leader education should be developed and integrated into the Joint Forces Staff College. *Personnel:* Before cooperatively linked detection technologies reach IOC, personnel requirements need to be identified. *Facilities:* Before cooperatively linked detection technologies reach IOC, facility needs must be identified.

7.10.3.2 IMA Assessment Summary

Table 7.10-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 7.10-2. STSHA 10: IMA Assessment

Idea for Materiel Approach	Description
Networked detection system	Development of cooperative linkages between various proponent and service detection and sensing technologies is required. Concepts must first be developed based on proposed linkages that will provide effective, integrated CBRN/TIM-detection capabilities. These concepts must be explored through experimentation and then cooperative linkages established and tested. The entire package should be developed as a system. As each Service develops detection or sensing technologies, they should be analyzed for inclusion into the CBRN/TIM cooperative detection network and modifications (if required) be mandated for the Service systems.

7.11 Task STSHA 11: Develop theater policies, standards, and procedures for determining employment of CBRN/TIM weapons

7.11.1 Functional Area Analysis

7.11.1.1 Definition

To develop theater policy, standards, and procedures for verifying compliance with internationally accepted standards and procedures. Includes standards and procedures to be used by theater forces for determining first use of CBRN/TIM weapons by a nation-state or transnational organization and the means by which verification of attack will be confirmed.

7.11.1.2 Derivation

UJTL (ST 9.6, ST 7.1.5, ST 7.2.3, ST 8.2.10).

7.11.1.2.1 Supported Task: SNSHA 13

7.11.1.2.2 Lateral Tasks: STSHA 6, STSHLD 7

7.11.1.2.3 Supporting Task: N/A

7.11.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Restricted information exchange. (C2.3.1.8)
4. Ambiguous threat. (C2.9.3)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

7.11.2 Functional Needs Analysis

7.11.2.1 Capability and Deficiency Assessment Summary

Table 7.11-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any COCOM HQ has the basic ability to develop specific theater policies, standards, and procedures for determining employment of CBRN/TIM weapons for its assigned theater or with designated countries. In many cases national-level policy, standards, and procedures will already be established and should be observed. However, in those cases where national-level policy, standards, and procedures do not apply or where theater-specific situations require that they be augmented, the COCOM staff has the capability. Additionally, the capability to establish internationally accepted standards and procedures for determining employment of CBRN/TIM weapons exists now administratively. Mechanisms currently used are NATO working groups that develop Standardization Agreements (STANAGs) and Allied Joint Publications (AJPs) as well as American, British, Canadian, and Australian Armies Program Quadrapartite working groups. Theater exercises, even with close and traditional partners, seldom use realistic CBRN/TIM scenarios or highlight verification exercise objectives. Doctrine and TTPs have not yet been developed for collaborative verification procedures and for TIM. The capability is rated on the low side of “green.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The far-term outlook is “green,” however, as theater exercises will begin to use realistic CBRN/TIM scenarios and highlight verification exercise objectives. Comprehensive doctrine and TTPs will be developed for collaborative verification procedures and for TIM. International verification protocol will be established.

Table 7.11-1. STSHA 11: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	G ²	G ³	Y ⁴
Near/Mid-Term Overall Capability	G	G	Y
Far-Term Overall Capability	G	G	G ⁵

	FAA Measure	Scale
M1	Theater policy and standards for determining employment of CBRN/TIM weapons are established.	G – Yes, Y – Limited, R – No
M2	Existing policy and standards are updated regularly.	G – Yes, Y – Limited, R – No
M3	Theater exercises/experimentation provide feedback on efficacy of policy and standards.	G – Yes, Y – Limited, R – No

¹ Although basic guidelines exist, more comprehensive doctrine and TTPs needs to be developed for collaborative verification procedures and for TIM. Every nation has its own national verification protocol.

² Standards and policies have been developed at the national level that can be used by any COCOM. COCOMs have established policies, standards, and procedures that can be used within the command and with traditional theater allies. When new international partners join a COCOM-sponsored coalition, they must be integrated into the determination process and provided with policies, standards, and procedures.

³ Any COCOM staff can update standards and policies as required.

⁴ Theater exercises, even with close and traditional partners, seldom use realistic CBRN/TIM scenarios or highlight verification exercise objectives.

⁵ Theater exercises will begin to use realistic CBRN/TIM scenarios and highlight verification exercise objectives. Lessons learned will provide data for DOTMLPF enhancements.

7.11.3 Functional Solution Analysis

7.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMAs section.

- 1. Deficiency:** Doctrine and TTPs need to be developed for collaborative verification procedures.
Non-Materiel Solutions: *Doctrine:* Develop doctrine and TTPs for collaborative verification procedures that work for the international community.
- 2. Deficiency:** There are no theater exercises that provide feedback on the processes employed for determining employment of CBRN weapons and verification procedures.
Non-Materiel Solutions: *Training:* Insure development of and participate in theater exercises that will provide feedback on the processes employed for determining employment of CBRN weapons.

7.11.3.2 IMA Assessment Summary

N/A

CHAPTER 8. OPERATIONAL SHAPE TASKS

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8.0 Operational Shape

8.0.1 Introduction

The Operational (OP) level of war is where campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces and provide the means by which tactical successes are exploited to achieve strategic objectives. Twelve Operational Shape (SHA) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA).

This chapter, detailing the Operational Shape (OPSHA) area, restates relevant information from the CBRND Defense (CBRND) FAA including a description of each of the 12 OPSHA tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis, and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and in the Ideas for Materiel Approaches (IMAs) section. The IMAs provide a possible near or far term resolution to identified deficiencies within the individual capabilities.

8.0.2 FNA Summary

Table 8.0-1 summarizes the overall current and projected capability to perform the OPSHA tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “red.” Before a CBRN/TIM attack, the joint force commander will need to be proactive in determining and shaping the Joint Operations Area (JOA) CBRN/toxic industrial material (TIM) situation. CBRND assets will be required to meet surge demands, and these demands could potentially outstrip the current logistical philosophy of just-in-time delivery. During the analysis, a conundrum for the planning staff was noticed. Active defense, interdiction, and elimination measures applied effectively under the Sense, Shape, and Shield domains could mitigate or even preclude the requirements for the extreme CBRND logistical and medical burden imposed under the Sustain domain. However, a failure to apply appropriate CBRND logistical planning and management factors early in the Shape domain could prove catastrophic, should more aggressive active defense measures fall short or be precluded by other restrictive criteria. Any operational-level HQ has a team of operational planners and information

command and control specialists to include CBRND subject matter experts. This team of experts will form the backbone of any joint task force command structure. Restoration and elimination operations are concepts that planning staffs will continue to develop given specific threats within their respective Areas of Responsibility (AORs) and therefore could not be rated fully capable. The Military Decision-Making Process is a formal concept that is universally accepted, and therefore plans and planning guidance should incorporate considerations for all eventualities. However, as recent operations have shown, CBRND-specific considerations had shortfalls. Therefore, the measures concerning CBRND plans and planning guidance were not rated fully capable. Joint Tactics, Techniques, and Procedures (JTTPs) and tools to evaluate and assess CBRND staffs, capabilities, systems, and concepts within an AOR are limited. There are no tactics, techniques, and procedures (TTPs) that specifically and comprehensively address the impact of CBRN/TIM hazards on operational objectives. Forces and staffs of other nations may not have training, equipment, or experience to effectively conduct CBRND operations. The organizational structure of a subordinate joint force’s intelligence element is determined by the Joint Force Commander (JFC) based on the situation and mission. All subordinate joint force J-2s, however, will at a minimum require a core element of analytical and administrative capabilities. Most situations will require augmentation of joint force intelligence capabilities through the deployment and integration of theater intelligence elements into a joint intelligence support element (JISE). Capabilities of the JISE include order of battle analysis; identification of adversary centers of gravity (COGs); analysis of adversary command, control, communications, and computers; targeting support; collection management; and maintenance of a 24-hour watch. The biggest deficiency from a CBRN/TIM aspect is currency and reliability of intelligence data and products. There are major deficiencies associated with an operational-level staff’s ability to coordinate JOA/JTF CBRND information systems and processes required to meet the JTF/JOA CBRN/TIM situation. As programmed, the Joint Warning and Reporting Network (JWARN) is a suite of hardware and software that should, once fully operational, provide adequate capability from a CBRND Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) standpoint. Until JWARN is fully operationally capable (FOC), limitations to CBRN information systems and processes include manual data receipt and entry, limited interface with the Common Operating Picture (COP), restricted information flow into the Global Command and Control System (GCCS), and limitations to real-time situational awareness. Anticipated improvements over the near/mid term will raise the projected capability rating to “yellow.”

Table 8.0-1. Operational Shape Summary FNA Findings

CBRN Operational Shape Task Number	CBRN Operational Shape Task Title	Capability		
		Current	Near/Mid	Far
OPSHA 1	Characterize the JOA CBRN/TIM threat and situation.	●	●	●
OPSHA 2	Conduct JOA CBRN/TIM vulnerability analysis.	●	●	●
OPSHA 3	Determine CBRND resources required to meet the JTF/JOA CBRND situation.	●	●	●

OPSHA 4	Ensure JTF or joint force CBRND readiness.	●	●	●
OPSHA 5	Coordinate JTF/JOA CBRND information systems and processes.	●	●	●
OPSHA 6	Provide JTF/JOA CBRND plans and policy.	●	●	●
OPSHA 7.	Coordinate CBRND aspects of JOA medical operations.	●	●	●
OPSHA 8	Coordinate JTF/JOA CBRND operations.	●	●	●
OPSHA 9	Provide Shape country assistance teams to support TEP.	●	●	●
OPSHA 10	Provide JOA CBRN/TIM weapons information to the combatant commander.	●	●	●
OPSHA 11	Establish JOA cooperative CBRN/TIM detection policies, procedures, and networks.	●	●	●
OPSHA 12	Determine operational effects and impacts due to CBRN/TIM hazards.	●	●	●
OVERALL		●	●	●

8.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF, non-materiel and materiel) solutions for the capability gaps identified in the FNA section.

8.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with training and doctrinal issues and include the development of JTTPs. DOTMLPF recommendations include the development of doctrine for active defense, interdiction, and elimination measures. Development of joint training on determining joint CBRN resources required to meet the JTF/JOA CBRN situation is suggested, as well as development of joint leadership education course(s) on determining joint CBRN resources required to meet the JTF/JOA CBRN situation. It would also be advisable to develop JTTPs that address the following:

- Adjusting the flow of resources based specifically on CBRN conditions.
- Determining adjustment of resources based on joint CBRND considerations.
- Influencing the flow of joint CBRN resources.
- Determining joint CBRN resources required to meet the JTF/JOA CBRN situation.
- Addressing a truly joint CBRND logistics management process.
- Developing JTTPs that address joint analytical tools to assess CBRND logistical demands.

Proposed solutions to deficiencies associated with the J2's ability to conduct JOA CBRN/TIM vulnerability analysis and potential DOTMLPF solutions include a need to develop joint exercise/experiments that portray the JOA TIM threat and situation.

DOTMLPF solutions also suggest the following steps:

- Develop Joint Professional Military Education (JPME) courses that address JISE functions and CBRN/TIM threat and vulnerability analysis.
- Develop doctrine and TTPs for vulnerability assessments that include near- and far-term TIM hazard effects, mitigation, and remediation.
- Develop formalized courses which instruct intelligence and CBRN specialists in TIM vulnerability assessment processes and which include Occupational Safety and Health Administration (OSHA) and U.S. Environmental Protection Agency standards in CBRN JPME.
- Develop standardized U.S. Department of Defense (DoD) TIM vulnerability analysis and risk assessment processes.
- Develop formal analytical processes to evaluate adversary courses of action (COA)s in relation to TIM considerations.
- Develop formal TTPs and JPME courses which address TIM hazards and their impact on friendly and adversary COA.
- Deconflict TIM permissible exposure limits between OSHA, deployed military, and host nation guidelines, and standardize CBRN/TIM COA analysis process.
- Exercise and capture lessons learned concerning the efficacy of TIM vulnerability analysis processes.
- The Office of the Command Surgeon should promulgate TIM health hazard effects, mitigation techniques, and remediation processes for use by U.S. forces deployed abroad.
- Review force structure.
- Within end strength constraints, consider adjusting force structure as a result of lessons learned from joint exercises/experiments.
- Develop training support packages that incorporate lessons learned from joint exercises/experiments.
- Develop leadership education and JPME course(s) that incorporate lessons learned from CBRND issues in joint exercises/experiments.
- Review available data and lessons learned from historical wide area events, to validate logistical planning factors. Such events could include natural disasters, large TIM releases, terrorist activity, and testing historically conducted by the United States and the former Soviet Union.
- Develop a Joint Master Scenario Events List (JMSEL) and training for joint exercises/experiments that address coordination of CBRND operations within a JOA.
- Develop courses and JTTPs that address CBRND coordination within the JOA.
- Actively pursue a joint lessons learned program that captures CBRND lessons from exercises/experiments and real-world events.
- Incorporate all lessons into the Joint Universal Lessons Learned System (JULLS).

8.0.3.2 IMA

This paragraph summarizes possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment. Materiel needs include an automated global database/software program of CBRN/TIM hazards, and an automated plume prediction technology tied to real-time geospatial unit location. Develop automated systems/tools designed specifically to provide information on and determine operational impacts due to CBRN/TIM hazards. Operational forces require the ability to determine operational effects and impacts due to CBRN/TIM hazards and potential DOTMLPF solutions. Automation must be integrated into existing systems to speed up the process and ensure accuracy.

8.1 Task OPSHA 1: Characterize the JOA CBRN/TIM threat and situation

8.1.1 Functional Area Analysis

8.1.1.1 Definition

To characterize the CBRN/TIM threat and situation for the Joint Task Force (JTF) or JFC in the JOA. Uses Sense data to move from situational awareness as well as shared awareness to shared understanding. Informs personnel; provides actual and potential impacts of CBRN/TIM hazards; and envisions critical Sense, Shield, and Sustain end states, including preparing for operations and visualizing the sequence of events that moves the JTF or joint force from its current state to those end states. Includes establishing collection priorities and coordination with intelligence organizations to collect information on CBRN/TIM capabilities encompassing such things as adversary intent and objectives, weapons availability and capacity, expected tactics, potential targets, and willingness or historic propensity to employ CBRN/TIM weapons. Also includes compiling and analyzing intelligence information and data provided by intelligence organizations or resources satisfying the JTF or JFC's CBRN/TIM threat intelligence collection plan. Provides processed CBRN/TIM threat intelligence for development of regional vulnerability assessments and for an understanding of the current and predicted CBRN/TIM situation. Provides the basis for CBRND tasking of and warning to the JTFs or JFCs. Further encompasses JOA medical intelligence to be collected in support of CBRND analysis.

8.1.1.2 Derivation

UJTL (OP 2.2, OP 2.2.1, OP 2.5, OP 2.4.1, OP 2.5.1, OP 2.4, OP 2.4.1.1, OP 2.4.2.1, OP 2.5, OP 2.5.3, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.3, OP 5.3.9, OP 5.4.2, OP 5.4.5, OP 5.7, OP 5.7.6, OP 6.1.6, OP 6.2.10, OP 7), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.1.1.2.1 Supported Task: STSHA 1

8.1.1.2.2 Lateral Tasks: OPSENS 1, OPSENS 2, OPSENS 3, OPSENS 4, OPSHA 2, OPSUST 14

8.1.1.2.3 Supporting Tasks: TASHA 1, TASHA 2, TASHA 3, TASHA 4, TASHA 16

8.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. Restrictive mission instructions. (C2.1.1)

2. No preexisting arrangements. (C2.1.1.2)
3. No or outline mission preparation. (C2.1.3)
4. Few modern military systems. (C2.2.5)
5. Few modern military simulation systems. (C2.2.5.5)
6. Poor joint staff integration. (C2.3.1.1)
7. Poor multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Negligible intelligence database. (C2.4.2)
12. Negligible theater intelligence access. (C2.4.4)
13. Little or no certitude of data. (C2.4.6)
14. Negligible deployed supplies. (C2.8.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support. (C3.1.2.3)
3. Restrictive Presidential and/or Secretary of Defense decisions. (C3.1.3)
4. Uncertain international organization support. (C3.1.2.5)
5. Low internationalism. (C3.2.6.5)
6. High health risk. (C3.3.1.5)
7. Unspecified TIM present in the civilian sector. (C3.3.7.5)

8.1.2 Functional Needs Analysis

8.1.2.1 Capability and Deficiency Assessment Summary

Table 8.1-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The organizational structure of a subordinate joint force's intelligence element is determined by the JFC based on the situation and mission. All subordinate joint force J-2s, however, will require (at a minimum) a core element of analytical and administrative capabilities. Most situations will require augmentation of joint force intelligence capabilities, through the deployment and integration of theater intelligence elements into a joint intelligence support element. Capabilities of the JISE include order-of-battle analysis; identification of adversary COGs; analysis of adversary command, control, communications, and computers; targeting support; collection management; and maintenance of a 24-hour watch. The current capability is assessed as "yellow" primarily due to DOTMLPF deficiencies.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term. Except that DOTLMPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The far-term forecast should improve to “green.” New acquisition means and methods will ensure currency of intelligence in the far term. National-level intelligence accuracy will improve in the far term as a result of new intelligence initiatives. Continued DOTLMPF enhancements will result from exercise and wargame lessons learned.

Table 8.1-1. OPSHA 1: Capability and Deficiency Assessment

Capability: JISE	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current Overall Capability¹	G ²	G ³	G ⁴	R ⁵	R ⁶	R ⁷	G ⁸	G ⁹	G ¹⁰	R ¹¹	R ¹²	G ¹³	G ¹⁴	G ¹⁵
Near/Mid-Term Overall Capability¹⁶	G	G	G	Y ¹⁷	Y ¹⁸	Y ¹⁹	G	G	G	R	R	G	G	G
Far-Term Overall Capability²⁰	G	G	G	G	G ²¹	G ²²	G	G	G	R ²³	R ²⁴	G	G	G

	FAA Measure	Scale
M1	CBRND staff cells and units have access to dedicated information technology resources to perform tasks and responsibilities.	G – Yes, Y – Limited, R – No
M2	Means exist to formulate the collection plans for the CBRN/TIM threat.	G – Yes, Y – Limited, R – No
M3	Means are available to collect operational intelligence on adversaries’ CBRN/TIM activities.	G – Yes, Y – Limited, R – No
M4	Means exist to collect intelligence on designated theater adversaries.	G – Yes, Y – Limited, R – No
M5	JOA CBRN/TIM threat intelligence is current.	G – Yes, Y – Limited, R – No
M6	JOA CBRN/TIM threat intelligence is reliable.	G – Yes, Y – Limited, R – No
M7	All CBRN/TIM threat priority intelligence requests are covered by a collection plan.	G – Yes, Y – Limited, R – No
M8	Adequate means are available for CBRN/TIM staff to influence JTF/joint force collection activities.	G – Yes, Y – Limited, R – No
M9	Multiple sources are integrated and deconflicted.	G – Yes, Y – Limited, R – No
M10	Medical intelligence guidance identifies information requirements and processes.	G – Yes, Y – Limited, R – No
M11	Medical CBRN/TIM intelligence criteria are established and defined.	G – Yes, Y – Limited, R – No
M12	Staff has sufficient training and experience to conduct the threat assessment.	G – Yes, Y – Limited, R – No
M13	CBRN/TIM threat intelligence is disseminated in near-real-time.	G – Yes, Y – Limited, R – No
M14	CBRN/TIM threat intelligence is available to all units in the JOA.	G – Yes, Y – Limited, R – No

¹ Joint intelligence and CBRN publications do not adequately address this issue. The operational-level CBRN staff is not adequately staffed and organized to interface with the JISE. The JISE staff is not adequately trained/educated in CBRN issues. CBRN staff officers are not adequately trained/educated in intelligence issues. Experimentation does not provide feedback on accurate characterization of the threat for this task. JPME does not adequately cover the fusion of intelligence/CBRN issues.

² Yes. The JISE has access to information technology resources that provide COP and access to national-level intelligence means.

³ Yes. The JISE has means to formulate CBRN/TIM collection plans.

⁴ Yes. Limited means are available to collect operational intelligence on adversaries’ CBRN/TIM activities and potential production/storage facilities, as well as international trafficking in known precursor or dual-use materiel.

⁵ Although the JISE has means available to access collected intelligence on designated theater adversaries through national-level intelligence assets, recent operational experience in S.W. Asia and congressional investigations have rendered the efficacy of national intelligence collection, particularly human intelligence (HUMINT), suspect at best.

⁶ The JISE has means to update the JOA CBRN/TIM threat intelligence picture. However, currency of intelligence is dependent on the acquisition means and methods. HUMINT, in particular, is dependent on factors that may preclude timely and current information.

⁷ The JISE CBRN/TIM intelligence reliability depends on national-level intelligence accuracy. Any national means relying on HUMINT is dependent on factors that may preclude obtaining reliable information

⁸ Yes. The JISE has means available to ensure that CBRN/TIM threat priority intelligence requests are covered by a collection plan.

⁹ Limited. The JISE has means available for CBRN/TIM staff to influence JTF/joint force collection activities, but these activities are subject to the commander’s priority list. Normally, CBRN intelligence ranks very high on this list.

- ¹⁰ Yes. The JISE is in a constant state of integrating and deconflicting multiple-source information.
- ¹¹ No. The AF C4 Medical Functional Area Working Group has just identified medical intelligence shortcomings, including the information requirements process, as major areas of concern in preventing enhanced battlespace situational awareness.
- ¹² No. The AF C4 Medical Functional Area Working Group has just identified medical intelligence shortcomings, including the establishment and definition of medical CBRN/TIM intelligence criteria, as major areas of concern in preventing enhanced battlespace situational awareness.
- ¹³ Yes. The JISE staff function and mission is to conduct threat assessment.
- ¹⁴ Yes. The JISE has means available to disseminate in near-real-time the CBRN/TIM threat intelligence. This intelligence dissemination process is limited distribution.
- ¹⁵ Yes. This intelligence dissemination is made on a limited-distribution basis.
- ¹⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.
- ¹⁷ New national intelligence initiatives should provide enhanced means to collect intelligence on theater adversaries. Difficulties with HUMINT will continue to be a limiting factor.
- ¹⁸ New national intelligence initiatives should provide enhanced means to ensure currency of intelligence. Difficulties with HUMINT will continue to be a limiting factor.
- ¹⁹ New national intelligence initiatives should provide enhanced means to ensure reliability of intelligence. Difficulties with HUMINT will continue to be a limiting factor.
- ²⁰ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.
- ²¹ New acquisition means and methods will ensure currency of intelligence in the far term.
- ²² National-level intelligence accuracy will improve in the far term as a result of new intelligence initiatives.
- ²³ Shortfalls identified by the AF C4 Medical Functional Area Working Group as “red” are not expected to improve to “yellow” until far term (2014–2019).
- ²⁴ Shortfalls identified by the AF C4 Medical Functional Area Working Group as “red” are not expected to improve to “yellow” until far term (2014–2019).

8.1.3 Functional Solution Analysis

8.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Currency of intelligence is dependent on the acquisition means and methods.
Non-Materiel Solutions: *Doctrine:* Develop means and methods to ensure currency of intelligence throughout the intelligence acquisition and collection community.
2. **Deficiency:** Joint intelligence and CBRN publications do not adequately address this issue.
Non-Materiel Solutions: *Doctrine:* Joint intelligence and CBRN publications must be enhanced to adequately address this issue and to interface with each other so that roles and responsibilities are clearly delineated.
3. **Deficiency:** Combatant command (COCOM) CBRND staff is not adequately staffed and organized to meet its intelligence-related responsibilities.
Non-Materiel Solutions: *Organization:* Each operational-level CBRND staff should have a section dedicated to resolving CBRN intelligence issues. *Personnel:* Each operational-level CBRND staff should have adequate trained/experienced personnel assigned to man a section dedicated to resolving CBRN intelligence issues.
4. **Deficiency:** The J2 staff is not adequately trained/educated in CBRN issues.
Non-Materiel Solutions: *Training:* Develop training that will enable each JISE staff to better understand its CBRN role and enhance its ability to obtain intelligence that is required to support the Shape function of operational-level CBRND. *Leadership:* Develop an education program that will enable each JISE staff to better understand its CBRN role and enhance its ability to obtain intelligence that is required to support the Shape function of operational-level CBRND.
5. **Deficiency:** CBRN staff officers are not adequately trained/educated in intelligence issues.
Non-Materiel Solutions: *Training:* Develop training programs that allow CBRN staff officers to better support the CBRN intelligence process. *Leadership:* Develop education programs that allow CBRN staff officers to better understand the CBRN intelligence process and their roles and responsibilities.
6. **Deficiency:** Experimentation/red teaming does not provide feedback on accurate characterization of the threat for this task.
Non-Materiel Solutions: *Training:* JRO CBRND must work with both the intelligence and CBRN communities to integrate this task into both intelligence and CBRN experimentation campaign plans.
7. **Deficiency:** JPME does not adequately cover the fusion of intelligence/CBRN issues.
Non-Materiel Solutions: *Leadership:* Integrate intelligence/CBRN fusion issues into JPME.

- 8. Deficiency:** The JISE does not have influence over the national-level intelligence accuracy.
Non-Materiel Solutions: Doctrine: Develop means and methods to ensure accuracy of intelligence throughout the intelligence acquisition and collection community.
- 9. Deficiency:** The medical intelligence community has identified fundamental problems in their ability to contribute to CBRND battlespace awareness.
Non-Materiel Solutions: Doctrine: Change Air force and joint doctrine to put medical intelligence on equal footing with line intelligence. Develop TTPs to define the medical role in CBRND/intelligence fusion areas.

8.1.3.2 IMA Assessment Summary

N/A

8.2 Task OPSHA 2: Conduct JOA CBRN/TIM vulnerability analysis

8.2.1 Functional Area Analysis

8.2.1.1 Definition

To conduct JOA vulnerability assessments focused on potential adversaries' COAs. This operation-level assessment compares regional-based vulnerabilities and risks. Development of a shared understanding of potential adversaries' CBRN/TIM COAs and associated vulnerabilities and risks enables timely and effective preparations for any potential adversary acts. Includes the development of associated operational effects, impacts, and risk analyses and assessments.

8.2.1.2 Derivation

UJTL (OP 2.2, OP 2.2.1, OP 2.4.1.1, OP 2.4.1.2, OP 2.4, OP 2.4.2.1, OP 2.5, OP 5, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3.1, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.4.5, OP 5.7, OP 5.7.3, OP 5.7.6, OP 7, OP 7.1, OP 7.2, OP 7.3), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.2.1.2.1 Supported Task: STSHA 2

8.2.1.2.2 Lateral Tasks: OPSENS 2, OPSHA 1, OPSHA 3, OPSHA 4, OPSHA 6, OPSHA 10, OPSHA 12

8.2.1.2.3 Supporting Tasks: TASHA 4, TASHA 5, TASHA 6

8.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No or outline mission preparation. (C2.1.3)
2. Few modern military systems. (C2.2.5)
3. Few modern military simulation systems. (C2.2.5.5)
4. Some or no interoperability. (C2.2.6)
5. Negligible intelligence database. (C2.4.2)
6. Negligible theater intelligence access. (C2.4.4)
7. Little or no certitude of data. (C2.4.6)

Civil. N/A

8.2.2 Functional Needs Analysis

8.2.2.1 Capability and Deficiency Assessment Summary

Table 8.2-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The organizational structure of a subordinate joint force's intelligence element is determined by the JFC based on the situation and mission. All subordinate joint force J-2s, however, will at a minimum require a core element of analytical and administrative capabilities. Most situations will require augmentation of joint force intelligence capabilities through the deployment and integration of JOA intelligence elements into a joint intelligence support element. Capabilities of the JISE include order-of-battle analysis; identification of adversary COGs; analysis of adversary command, control, communications, and computers; targeting support; collection management; and maintenance of a 24-hour per day watch. Several deficiencies, including lack of training and experience in the staffs and ineffective DOTMLPF, result in a current assessment of "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception of DOTMLPF that should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a "green" rating.

Table 8.2-1. OPSHA 2: Capability and Deficiency Assessment

Capability: JISE	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	R ⁸	R ⁹	R ¹⁰
Near/Mid-Term Overall Capability¹¹	Y	Y	Y	Y	G	Y	Y	R	R
Far-Term Overall Capability¹²	G ¹³	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Guidelines for conducting JOA vulnerability analyses are established.	G – Yes, Y – Limited, R – No
M2	Guidelines for conducting JOA risk assessments are established.	G – Yes, Y – Limited, R – No
M3	Analytical tools used to evaluate plausible adversaries’ COAs are adequate.	G – Yes, Y – Limited, R – No
M4	Vulnerability assessment process exploits time-sensitive or priority-actionable CBRN/TIM intelligence.	G – Yes, Y – Limited, R – No
M5	Means are available to collaboratively perform assessments (to have immediate access to appropriate subject matter experts/analysts no matter where they are physically located).	G – Yes, Y – Limited, R – No
M6	Means exist to visualize the impact of adversaries’ COAs on forces of interest.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to effectively assess adversaries’ CBRN/TIM COAs.	G – Yes, Y – Limited, R – No
M8	Sufficient doctrine and TTPs for effective JOA vulnerability assessment are available.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation provide feedback on the efficacy of vulnerability assessment doctrine and TTPs.	G – Yes, Y – Limited, R – No

¹ No. Extremely limited. TTPs for TIM and biological warfare agent vulnerability analysis are very limited.

² Limited. The JISE either has been furnished or has developed vulnerability analysis guidelines. However, such guidelines may not adequately address a JOA-wide TIM concern.

³ Limited. The JISE and operational staff have guidelines for conducting risk assessments. However, joint exercises/experiments need to be broadened to review the adequacy.³

⁴ Limited. The JISE has analytical tools used to evaluate plausible COAs. However, adequacy of these tools depends on adequacy and accuracy of the adversary information against which they are applied.

⁵ Limited. The JISE has the ability to exploit time-sensitive or priority-actionable intelligence activities. However, joint exercise/experiments and JPME do not adequately address TIM considerations in the vulnerability assessment process.

⁶ Yes. The JISE has the means to collaboratively perform assessments, to include video teleconferences, phoneconferences, etc.

⁷ Limited. The JISE has means to visualize impact of adversary CBRN employment against forces of interest, but TIM hazards are not necessarily included in this visualization.

⁸ No. The JISE is the operational and analytical/planning augmentation staff to the J-2. By definition, this element has the training and experience to assess adversary COAs. However, CBRN/TIM COA analysis is highly subjective, particularly with regard to enemy employment intent and capability in light of interdiction operations.

⁹ No. The JISE has doctrine and TTPs to conduct vulnerability assessments. However, assuming JOA TIM considerations are included in the vulnerability assessment, the JISE must decide which safety standards apply. OSHA chemical permissible exposure guidelines are much more restrictive than those of other nations.

¹⁰ No. While joint exercises/experimentation can provide feedback on the vulnerability analysis process, TIM vulnerability analysis remains problematic.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹³ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

8.2.3 Functional Solution Analysis

8.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Joint exercise/experiments and JPME have not adequately addressed JOA TIM vulnerability analysis.
Non-Materiel Solutions: *Training:* Develop joint exercise/experiments, which across the Global Information Grid (GIG) characterize the JOA TIM threat and situation. *Leadership:* Develop JPME courses that address JISE functions and CBRN/TIM threat and vulnerability analysis.
- 2. Deficiency:** Doctrine and TTPs for vulnerability assessments that include near and far term CBRN/TIM hazard effects, mitigation, and remediation are not standardized or promulgated.
Non-Materiel Solutions: *Doctrine:* Develop doctrine and TTPs for vulnerability assessments that include near- and far-term TIM hazard effects, mitigation, and remediation. *Training:* Develop formalized courses which instruct intelligence and CBRN specialists in TIM vulnerability assessment processes.
- 3. Deficiency:** Guidelines for JOA TIM vulnerability analysis are limited and lack standardization.
Non-Materiel Solutions: *Doctrine:* Develop standardized DoD TIM vulnerability analysis processes.
- 4. Deficiency:** Guidelines for conducting TIM risk assessments are not standardized.
Non-Materiel Solutions: *Doctrine:* Develop standardized DoD TIM risk assessment processes.
- 5. Deficiency:** Analytical tools used to evaluate plausible adversary COAs in relation to TIM considerations are inadequate.
Non-Materiel Solutions: *Doctrine:* Develop formal analytical processes to evaluate adversary COAs in relation to TIM considerations.
- 6. Deficiency:** Joint exercise/experiments outside the continental United States and JPME do not adequately address TIM hazards.
Non-Materiel Solutions: *Training:* Develop formal JPME courses which address TIM hazards.
- 7. Deficiency:** TIM hazards are not necessarily included in the JISE visualization of adversary COAs on forces of interest.
Non-Materiel Solutions: *Doctrine:* Develop formal TTPs which address TIM hazards and their impact on friendly and adversary COAs. *Training:* Develop formal JPME courses which address TIM hazards and their impact on friendly and adversary COAs.

- 8. **Deficiency:** CBRN/TIM COA analysis is highly subjective, particularly with regard to enemy employment intent and capability in light of interdiction operations.
Non-Materiel Solutions: *Doctrine:* Standardize CBRN/TIM COA analysis process.

- 9. **Deficiency:** There is no joint doctrine for establishing or applying TIM exposure standards.
Non-Materiel Solution: *Doctrine:* Develop joint doctrine to guide operationally focused risk management for determining TIM exposure limits for joint forces, including military personnel and eligible civilians.

- 10. **Deficiency:** Joint exercises/experimentation need to capture data and lessons learned concerning the efficacy of TIM vulnerability analysis doctrine and TTPs.
Non-Materiel Solutions: *Doctrine:* Exercise and capture lessons learned concerning the efficacy of TIM vulnerability analysis processes.

- 11. **Deficiency:** Doctrine and TTPs for vulnerability assessments which include near-and far-term TIM hazard effects, mitigation, and remediation are not promulgated beyond the industrial hygiene community.
Non-Materiel Solutions: *Doctrine:* The Office of the Command Surgeon should promulgate TIM health hazard effects, mitigation techniques, and remediation processes for use by U.S. forces deployed abroad. *Training:* Develop courses which include OSHA and U.S. Environmental Protection Agency standards in CBRN JPME.

8.2.3.2 IMA Assessment Summary

Table 8.2-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 8.2-2. OPSHA 2. IMA Assessment

Idea for Materiel Approach	Description
Analytical Tools	The anticipated initial operational capability (IOC) of the Joint Effects Model (JEM) Block I is in FY2006, and the IOC of the Joint Operational Effects Federation (JOEF) Block I, Increment I is in FY2008. The JEM will provide a single, validated capability to predict and track CBRN and TIM events and effects. The JOEF will provide an operational requirements modeling and simulation system which accurately predicts CBRN effects on personnel, equipment, and operations. Ensure that both consider pertinent aspects of CBRN/TIM immediate and long-term health hazards and permissible exposure limits.

8.3 Task OPSHA 3: Determine CBRND resources required to meet the JTF/JOA CBRND situation

8.3.1 Functional Area Analysis

8.3.1.1 Definition

To determine the CBRND unit, personnel, equipment, and logistics resources required for a specific JOA or JTF AOR. Determines the requirement for CBRND units and personnel throughout the JOA, ensuring the availability of appropriate units as well as personnel in the correct quantities and locations. Includes determination of required CBRND equipment, supplies and consumables throughout the JOA, including prepositioning and stockpiling. Logistical support of CBRND resources encompasses extended operations.

8.3.1.2 Derivation

UJTL (OP 2.2, OP 2.5, OP 5, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.3, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.5, OP 5.5.1, OP 5.5.8, OP 5.7, OP 5.7.5, OP 5.7.6, OP 7.1, OP 7.2, OP 7.3, OP 7.4, OP 7.5), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, Sense and Respond CONOPs, Sense and Respond Logistics: Co-evolution of an Adaptive Capability Document Concept.

8.3.1.2.1 Supported Task: STSHA 3

8.3.1.2.2 Lateral Tasks: OPSHA 2, OPSHA 6, OPSHA 7, OPSHA 8, OPSUST 8

8.3.1.2.3 Supporting Tasks: TASHA 10, TASHA 20

8.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. Limited military commitments from other nations. (C2.1.1.7)
2. No or outline mission preparation. (C2.1.3)
3. Marginal forces assigned. (C2.2.1)
4. Multiple competing apportionments. (C2.2.2)
5. Marginal forces allocated (distributed limited resources). (C2.2.3)
6. Low personnel capability. (C2.2.4)
7. Low military systems reliability. (C2.2.5.3)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)

10. No or partial TPFDD availability. (C2.5.1.1)
11. Negligible deployed supplies. (C2.8.2)
12. Slow pipeline responsiveness. (C2.8.3.1)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Limited international organization support. (C3.1.2.5)

8.3.2 Functional Needs Analysis**8.3.2.1 Capability and Deficiency Assessment Summary**

Table 8.3-1 discusses the standing JTF ability to determine CBRND resources required to meet the JTF/JOA CBRN situation. This is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current capability is assessed as “green.” The capability exists to perform this task with some slight deficiencies. Management of CBRND-specific materiel, personnel, and units will require a systematic, dedicated program to ensure that timely, focused, and sufficient assets are on hand by the time they are required.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The forecast should improve and remain “green” in the far term. Processes available to manage CBRN personnel and units will have real-time capability. JTTPs that specifically address management of joint CBRND materiel resources will be developed. JTTPs that specifically address management of joint CBRND materiel resources will be developed. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Table 8.3-1. OPSHA 3: Capability and Deficiency Assessment

Capability: Standing Joint Force Headquarters (Joint Force)	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	G ²	G ³	G ⁴	Y ⁵	Y ⁶	Y ⁷	G ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	G	G	G	Y	Y	G	G	G	Y
Far-Term Overall Capability¹¹	G	G	G	G ¹²	G ¹³	G	G	G	G ¹⁴

	FAA Measure	Scale
M1	CBRND staff cells have the ability to influence the flow of resources to the JTF/JOA.	G – Yes, Y – Limited, R – No
M2	Means exist to adjust the flow of resources to the JTF/JOA based on CBRND considerations.	G – Yes, Y – Limited, R – No
M3	Planning staffs have the training and experience to determine required adjustments to resources based on CBRND considerations.	G – Yes, Y – Limited, R – No
M4	Tools and processes are available to manage CBRND personnel and units.	G – Yes, Y – Limited, R – No
M5	Tools and processes are available to manage CBRND materiel resources.	G – Yes, Y – Limited, R – No
M6	CBRND logistics tracking system is sufficient.	G – Yes, Y – Limited, R – No
M7	Appropriate CBRND logistics management processes are in place.	G – Yes, Y – Limited, R – No
M8	Analytical tools are used to assess logistical demand.	G – Yes, Y – Limited, R – No
M9	All pertinent Sense, Shape, Shield, and Sustain factors are considered.	G – Yes, Y – Limited, R – No

¹ Limited. Doctrine, TTPs, and organizational structures exist to manage materiel. CBRN-specific materiel and resources are not managed as a separate class of supply.

² Yes. CBRND staff cells have the ability to influence the flow of resources to the JTF/JOA through multiple operations and logistics channels.

³ Yes. CBRN considerations can be applied to adjust the priority, sequencing, and flow of resources.

⁴ Yes. Operational and logistics planning staffs are trained to determine adjustments to resources based on a number of conditions. CBRN is just one of those conditions.

⁵ Limited. Processes are available to manage CBRN personnel and units, however not all tools have real-time capability.

⁶ Limited. Tools and processes to manage materiel resources exist. CBRN materiel and resources are not handled as a separate DoD class of supply. There are no JTTPs that specifically address management of joint CBRND materiel resources.

⁷ Yes. Military Traffic Management Command Transportation Engineering Agency has developed the Intelligent Road and Rail Information Server to track the real-time and near-real-time locations of any military shipments moving over land or water. The server is currently capable of accomplishing this anywhere in the world for all types of freight. Inventory information will be limited from a joint perspective, until the Joint Total Asset Visibility (JTAV) program is fully functional.

⁸ Yes. Automated systems to manage requisition, location (depot to DLA), shipment, inventory management, and unit-level receipt are in place.

⁹ Limited. Demand data are tracked by Line Item Number and Unit Identifier Code and can be programmed to highlight critical command-supported items. Limited tools exist to automatically determine CBRND resources needed based on a wide variety of scenarios and enemy COAs.

¹⁰ Limited. Aggressive application of active defensive, interdiction, and elimination measures could mitigate the requirement for a burgeoning surge demand and capability for CBRND resources.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Processes available to manage CBRN personnel and units, will have real-time capability.

¹³ JTTPs that specifically address management of joint CBRND materiel resources will be developed.

¹⁴ Aggressive application of active defensive, interdiction, and elimination measures will mitigate the requirement for a burgeoning surge demand and capability for CBRND resources.

8.3.3 Functional Solution Analysis

8.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No JTTPs specifically address joint CBRND resources required to meet the JTF/JOA CBRN situation.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs on determining joint CBRN resources required to meet the JTF/JOA CBRN situation. *Training:* Develop joint training on determining joint CBRN resources required to meet the JTF/JOA CBRN situation. *Leadership:* Develop joint leadership education course(s) on determining joint CBRN resources required to meet the JTF/JOA CBRN situation.
- 2. Deficiency:** No JTTPs exist for adjusting the flow of resources based specifically on CBRN conditions. However, the means to adjust flow of all resources does exist through operations, materiel, and personnel management sections.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that address adjusting the flow of resources based specifically on CBRN conditions.
- 3. Deficiency:** No JTTPs specifically address when or how to make a determination to adjust resources based on joint CBRND considerations.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that address when or how to make a determination to adjust resources based on joint CBRND considerations.
- 4. Deficiency:** No JTTPs specifically address influencing the flow of joint CBRN resources.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that specifically address influencing the flow of joint CBRN resources.
- 5. Deficiency:** No JTTPs specifically address a truly joint CBRND logistics management process.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that address a truly joint CBRND logistics management process.
- 6. Deficiency:** No JTTPs specifically address joint analytical tools to assess CBRND logistical demands.
Non-Materiel Solutions: *Doctrine:* Develop JTTPs that address joint analytical tools to assess CBRND logistical demands.
- 7. Deficiency:** Without active defense, interdiction, and elimination measures, mitigation, even preclusion for the CBRND Shield and Sustain domains, could not occur.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for active defense, interdiction, and elimination measures.

8.3.3.2 IMA Assessment Summary

Table 8.3-2. OPSHA 3: IMA Assessment

Idea for Materiel Approach	Description
Automated analytical tools	With fewer personnel available to perform resource determination, the JTF commander will rely increasingly on automated tools to determine CBRND unit, personnel, equipment, medical, and logistics resources.

8.4 Task OPSHA 4: Ensure JTF or joint force CBRND readiness

8.4.1 Functional Area Analysis

8.4.1.1 Definition

To ensure theater forces are prepared to accomplish assigned missions in a CBRN/TIM environment. Joint CBRND training, exercises, and rehearsals are key components to ensure force readiness for operations in a CBRN/TIM environment. Operational concepts and new systems are evaluated in realistic exercises and multinational environments. Forces are evaluated and assessed for effective CBRND task performance across the range of military operations and in a variety of physical environments. CBRND systems are evaluated for operational effectiveness and performance utility. Includes the effective documentation and management of lessons learned information to provide a historical record for trend analysis and a repository for the warfighting staffs to examine during development of training.

8.4.1.2 Derivation

UJTL (OP 1.3.1, OP 2.2, OP 2.2.1, OP 2.2.3, OP 2.2.3, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 5, OP 5.1.1, OP 5.1.2, OP 5.1.3, OP 5.1.6, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3.1, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.3.8, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.4.6, OP 5.7, OP 5.7.3, OP 5.7.6, OP 6.1.6, OP 6.2.1, OP 6.2.10, OP 7, OP 7.3, OP 7.4, OP 7.5), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.4.1.2.1 Supported Task: STSHA 4

8.4.1.2.2 Lateral Tasks: OPSHA 2, OPSHA 6, OPSHLD 4, OPSHLD 5, OPSHLD 6, OPSHLD 7, OPSHLD 8, OPSHLD 10

8.4.1.2.3 Supporting Task: TASHA 8

8.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No or outline mission preparation. (C2.1.3)
2. Marginal forces assigned. (C2.2.1)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Few modern military systems. (C2.2.5)

6. Few modern military simulation systems. (C2.2.5.5)
7. Poor joint staff integration. (C2.3.1.1)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Little or no intelligence dissemination and receipt. (C2.4.7)

Civil. N/A

8.4.2 Functional Needs Analysis

8.4.2.1 Capability and Deficiency Assessment Summary

Table 8.4-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any JTF HQ has a team of operational planners and information command and control specialists to include CBRND subject matter experts. This team of experts forms the backbone of the joint task force command structure. The Standing Joint Force Headquarters (Joint Force) is responsible for operational trouble spots, including CBRN issues and concerns. JTTPs and tools to evaluate and assess CBRND staffs, capabilities, systems, and concepts within an AOR are limited. Forces and staffs of other nations may or may not have training, equipment or experience to effectively conduct CBRND operations. Therefore the current assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

Table 8.4-1. OPSHA 4: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³
Near/Mid-Term Overall Capability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	G ¹⁴	G	G	G	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Tools and processes are available to evaluate and assess CBRND capability in theater.	G – Yes, Y – Limited, R – No
M2	Units and HQ staffs are routinely evaluated and assessed in performing CBRND tasks.	G – Yes, Y – Limited, R – No
M3	CBRND systems and concepts, both current and projected, are assessed and evaluated under realistic conditions.	G – Yes, Y – Limited, R – No
M4	CBRND operations are exercised with coalition partners.	G – Yes, Y – Limited, R – No
M5	CBRND staff cells and units have access to dedicated information technology to support training.	G – Yes, Y – Limited, R – No
M6	HQ/unit exercises are conducted under simulated CBRN/TIM conditions.	G – Yes, Y – Limited, R – No
M7	Adequate training tools are available.	G – Yes, Y – Limited, R – No
M8	CBRND specialists/staffs are trained to perform required CBRND tasks.	G – Yes, Y – Limited, R – No
M9	Forces/staffs of other nations are trained in CBRND operations.	G – Yes, Y – Limited, R – No
M10	CBRND staff cells conduct training and rehearsals.	G – Yes, Y – Limited, R – No
M11	An accessible, digital information repository system is available.	G – Yes, Y – Limited, R – No
M12	Information repository is available to all operating forces.	G – Yes, Y – Limited, R – No

¹ There are few training events that specifically address training forces/staffs of other nations for anticipated CBRND operations.

² Limited. Staff has tools and processes to evaluate and assess CBRND capabilities in theater. However, the current system is Service-specific. There are no JTTPs that specifically address tools and processes to evaluate and assess joint CBRND capability.

³ Limited. Any joint force staff can routinely evaluate and assess CBRND tasks, but the current system is Service-specific. There are no JTTPs and familiarization training that specifically addresses evaluating and assessing joint CBRND tasks.

⁴ Limited. Any joint force staff can assess and evaluate systems under realistic conditions, but the current system is Service-specific. There are no JTTPs or familiarization training that specifically address assessing joint CBRND systems and concepts, both current and projected, under realistic conditions.

⁵ Limited. Any joint force staff has the ability to exercise with coalition partners, but there are few exercises that specifically address CBRND operations with coalition partners.

⁶ Limited. Any joint force staff has access to information technology to support training, but the current system is Service-specific. There are no JTTPs or familiarization training that specifically address CBRND staff cells and units having access to dedicated information technology to support training.

⁷ Limited. Any joint force staff has the ability to exercise under CBRN/TIM conditions, but there are few exercises that specifically address the full spectrum of CBRN/TIM conditions.

⁸ Limited. Any joint force staff has the training, but the current system is Service-specific. There are no JTTPs or familiarization training that specifically address joint force CBRND readiness.

⁹ Limited. Any joint force staff has CBRND specialists/staffs trained to perform CBRND tasks, but there are few JTTPs and familiarization training that specifically address the CBRND specialists/staff task on joint force CBRND readiness.

¹⁰ Limited. Any joint force staff has the ability to train forces/staffs of other nations, but there are few training events that specifically address training forces/staffs of other nations for anticipated CBRND operations. Political constraints inhibit training forces/staffs of other nations on CBRN operations.

¹¹ Limited. Any joint force staff has the tools to conduct training and rehearsals, but there are limited JTTPs and familiarization training that specifically address joint force CBRND readiness.

¹² Limited. Any joint force staff has access to digital information repository, but the units must know how to access it, through the GIG. There are limited JTTPs and familiarization training that specifically addresses accessing the digital information repository.

¹³ Limited. Any joint force staff has access to digital information repository, but the units must know how to access it, through the GIG. There are limited JTTPs and familiarization training that specifically addresses accessing the digital information repository.

¹⁴ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

8.4.3 Functional Solution Analysis

8.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Limited JTTPs and familiarization training that specifically address joint CBRND readiness
Non-Materiel Solutions: *Doctrine:* Develop JTTPs on joint CBRN readiness requirements to meet the JTF/JOA CBRN situation. JTTPs must address processes to evaluate and assess joint CBRND capability, tasks, systems and concepts, both current and projected, under realistic conditions. JTTPs must also address CBRND staff cells and units having access to dedicated information technology to support training. Develop techniques addressing CBRND specialist/staff tasks for assessing joint force CBRND readiness and for accessing the digital information repository for CBRND information. *Training:* Develop joint training on joint CBRN readiness requirements to meet the JTF/JOA CBRN situation. *Leadership:* Expand joint leadership education course(s) on the joint CBRN readiness requirements to meet the JTF/JOA CBRN situation
- 2. Deficiency:** There are few exercises that specifically address CBRND operations with coalition partners or the full spectrum of CBRN/TIM conditions.
Non-Materiel Solutions: *Training:* Develop exercises that specifically address CBRND operations with coalition partners and introduce the full spectrum of CBRN/TIM conditions.

8.4.3.2 IMA Assessment Summary

N/A

8.5 Task OPSHA 5: Coordinate JTF/JOA CBRND information systems and processes

8.5.1 Functional Area Analysis

8.5.1.1 Definition

To ensure that JTF/JOA CBRND information systems and processes allow joint forces to effectively conduct operations in a CBRN/TIM environment. Provides hazard prediction and effects modeling for situational awareness, response management, preparation, and planning within the operating area. Operates an Integrated Detection Network (IDN) to enable commanders to “detect to warn” and take effective countermeasures while on the move. Includes determining that IDN capabilities provide complete coverage where required throughout the JOA. Ensures the ability to monitor and identify a CBRN/TIM hazard prior to and after an attack or release other than attack (ROTA) incident has occurred. Includes providing warning to everyone who might be affected by the hazard, rapidly giving units time to assume protective posture and initiate avoidance actions. Ensures the smooth integration and rapid dissemination of CBRND information across the GIG within the JOA. Includes providing access to or availability of the appropriate C4ISR and CBRND information systems throughout the JOA to include small units on independent operations.

8.5.1.2 Derivation

UJTL (OP 2.2, OP 2.2.1, OP 2.2.3, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 2.5, OP 2.5.3, OP 5, OP 5.1.1, OP 5.1.2, OP 5.1.3, OP 5.2, OP 5.2.1, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.3.9, OP 5.4, OP 5.4.4, OP 5.4.5, OP 5.5.1, OP 5.5.2, OP 5.5.5, OP 5.5.7, OP 5.5.8, OP 5.7, OP 5.7.3, OP 5.7.6, OP 6.1.5, OP 6.1.6, OP 7, OP 7.1, OP 7.2, OP 7.3, OP 7.4, OP 7.5), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.5.1.2.1 Supported Task: STSHA 5

8.5.1.2.2 Lateral Task: OPSUST 10

8.5.1.2.3 Supporting Tasks: TASHA 17, TASHA 28, TASHA 29, TASHA 30, TASHA 31

8.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No preexisting arrangements. (C2.1.1.2)

2. Negligible personnel experience. (C2.2.4.5)
3. Low military systems reliability. (C2.2.5.3)
4. Few modern military simulation systems. (C2.2.5.5)
5. Some or no interoperability. (C2.2.6)
6. Partial joint staff integration. (C2.3.1.1)
7. Poor multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)
11. Little or no intelligence dissemination and receipt. (C2.4.7)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Limited international organization support. (C3.1.2.5)
3. Poor information management. (C3.3.7.4)

8.5.2 Functional Needs Analysis

8.5.2.1 Capability and Deficiency Assessment Summary

Table 8.5-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The Standing Joint Task Force Headquarters was assessed in light of fielding Block I of JWARN. Since JWARN full operational capability will not be met until FY2007/FY2008, all standards were assessed as limited capability resulting in a current assessment of “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

Projected CBRN specific information systems will continue to evolve to enhance warfighter needs. The anticipated fielding of JOEF/JEM and capabilities they will provide are sufficient to evaluate the far term “green.”

Table 8.5-1. OPSHA 5: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁵	Y ¹⁶
Near/Mid-Term Overall Capability	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	G ¹⁷	G	G	G	G	G	G	G	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Hazards effects models and tools are adequate and available at all appropriate levels for assessment.	G – Yes, Y – Limited, R – No
M2	JOA is adequately covered by the IDN.	G – Yes, Y – Limited, R – No
M3	Sensors managed at all echelons are networked to the IDN.	G – Yes, Y – Limited, R – No
M4	Sufficient doctrine and TTPs exist for effective IDN operation.	G – Yes, Y – Limited, R – No
M5	Joint forces are adequately trained to effectively operate the IDN.	G – Yes, Y – Limited, R – No
M6	All operation centers are networked to IDN.	G – Yes, Y – Limited, R – No
M7	IDN successfully tracks and monitors the hazard.	G – Yes, Y – Limited, R – No
M8	Means exist to disseminate routine, essential and critical CBRN/TIM threat intelligence rapidly.	G – Yes, Y – Limited, R – No
M9	Means exist to compile and display information on CBRN/TIM events that occurs throughout the theater.	G – Yes, Y – Limited, R – No
M10	Means exist to present information on the operational impact of a CBRN/TIM event.	G – Yes, Y – Limited, R – No
M11	Coalition and joint CBRND IDNs provide automated warning and reporting.	G – Yes, Y – Limited, R – No
M12	CBRND information is easily disseminated onto the GIG.	G – Yes, Y – Limited, R – No
M13	CBRND data and information formats are interoperable across the coalition and interagency.	G – Yes, Y – Limited, R – No
M14	Required participants are able to exchange information through planning, assessment and management tools.	G – Yes, Y – Limited, R – No
M15	CBRND information is processed using existing C4ISR assets.	G – Yes, Y – Limited, R – No

¹ Limited. JWARN doctrine (TTPs) and training are being developed as the different modules and blocks are being fielded.

² Limited. JWARN is available within the JOA to make assessment and decision making based on the hazards effects.

³ Limited. JWARN is not yet able within the JOA to interface with the GCCS.

⁴ Limited. JWARN is not yet able within the JOA to interface with the GCCS.

⁵ Limited. JWARN doctrine and TTPs are being developed as the different modules and blocks are being fielded.

⁶ Limited. JWARN training is being conducted (new equipment training) and developed as the different modules and blocks are being fielded.

⁷ Limited. JWARN is not yet able within the JOA to interface with the GCCS.

⁸ Limited. JWARN is available within the JOA and can successfully track and monitor the hazard.

⁹ Limited. JWARN is available within the JOA and can disseminate routine, essential, and critical CBRN threat intelligence rapidly but is not yet integrated into GCCS.

¹⁰ Limited. JWARN is available within the JOA and can compile and display information on CBRN events that occurs throughout the theater.

¹¹ Limited. JWARN is available within the JOA and to present information on the operational impact of a CBRN event.

¹² Limited. JWARN is available within the JOA and can provide automated warning and reporting to the coalition and joint forces.

¹³ Limited. JWARN is available within the JOA but only interfaces with the GCCS, manually.

¹⁴ Limited. JWARN is available within the JOA and allows CBRND data and information formats to be interoperable across the coalition and interagency environment.

¹⁵ Limited. JWARN is available within the JOA and is able to exchange information through planning, assessment, and management tools.

¹⁶ Limited. JWARN is available within the JOA and CBRND information is manually processed using existing C4ISR assets.

¹⁷ In the far term, enhancements to and integration of JWARN into GCCS and DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

8.5.3 Functional Solution Analysis

8.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** JWARN is available but is currently limited to manual input and retrieval.
Non-Materiel Solutions: *Doctrine:* JWARN doctrine (TTPs) will need to be developed and updated as each module is fielded. *Training:* JWARN training will need to be developed and updated as each module is fielded. Exercises and experiments could provide valuable insight and feedback on JWARN capabilities. *Leadership:* JWARN leadership education will need to be developed and updated as each module is fielded.

8.5.3.2 IMA Assessment Summary

N/A

8.6 Task OPSHA 6: Provide JTF/JOA CBRND plans and policy

8.6.1 Functional Area Analysis

8.6.1.1 Definition

To provide plans and command policy to all JTF/JOA forces. Includes formulating and providing the JTF commander's intent and CBRND planning guidance for operational planning. Considers all Sense, Shape, Shield, and Sustain factors. Includes C4ISR, personnel, logistical, and medical planning considerations. Staffs collaboratively plan for CBRND actions to ensure prepared and ready forces, adequate CBRND force allocation, and timely response and mitigation. Includes ensuring that planners and staffs possess the appropriate tools to plan, assess, and manage, as well as access to automated workspace tools that are integrated and interoperable with existing C4ISR systems. Includes development of plans for assigned restoration, interdiction, or elimination operations.

8.6.1.2 Derivation

UJTL (OP 1.2.4.5, OP 1.2.4.7, OP 1.2.4.8, OP 1.3.1, OP 1.4.4, OP 2.2, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 2.5, OP 3.2.5.3, OP 5, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.1, OP 5.3.2, OP 5.3.7, OP 5.3.9, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5.1, OP 5.5.5, OP 5.5.8, OP 5.7, OP 7.1, OP 7.2, OP 7.3, OP 7.4, OP 7.5), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense.

8.6.1.2.1 Supported Task: STSHA 6

8.6.1.2.2 Lateral Tasks: OPSHA 2, OPSHA 3, OPSHA 4, OPSHA 7, OPSHA 8, OPSHA 9, OPSHA 11, OPSHA 12, OPSHLD 1, OPSUST 5

8.6.1.2.3 Supporting Tasks: TASHA 7, TASHA 15, TASHA 21, TASHA 23, TASHA 32

8.6.1.3 Condition

1. Perform this task under conditions of:

Physical. N/A

Military

1. Restrictive mission instructions. (C2.1.1)
2. No preexisting arrangements. (C2.1.1.2)
3. Negligible personnel experience. (C2.2.4.5)
4. Some or no interoperability. (C2.2.6)
5. Poor joint staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)
7. Negligible theater intelligence access. (C2.4.4)

Civil. N/A

8.6.2 Functional Needs Analysis

8.6.2.1 Capability and Deficiency Assessment Summary

Table 8.6-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any JTF HQ has a team of operational planners and information command and control specialists to include a CBRN staff cell. This team of experts forms the backbone of the joint task force command structure. CBRN staff planners will support the joint planning process concentrating across the five operational functions as defined by the Joint Operation Planning and Execution System (Vol. I, threat identification and assessment, strategy determination, course of action development, detailed planning, and implementation). Utilization of a common information structure/tools will enable an adaptive/collaborative planning process during the development of operational plans to include theater-level nuclear, chemical, biological, and radiological plans. Restoration and elimination operations are concepts that planning staffs will continue to mature, given specific threats within their respective AORs and therefore could not be rated fully capable. The military decision-making process is a formal concept that is universally accepted, and therefore plans and planning guidance should incorporate considerations for all eventualities. However, as recent operations have shown, CBRND-specific considerations had shortfalls. Therefore, the measures concerning CBRND plans and planning guidance were rated as limited resulting in an overall current capability assessment of “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, DOTLMPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

Table 8.6-1. OPSHA 6: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	Y ⁸
Near/Mid-Term Overall Capability	Y	Y	Y	Y	G	Y	Y
Far-Term Overall Capability	G ⁹	G	G	G	G	G	G

	FAA Measure	Scale
M1	Process exists to formulate CBRND planning guidance.	G – Yes, Y – Limited, R – No
M2	Planning staffs have the training and experience to effectively plan for CBRND operations.	G – Yes, Y – Limited, R – No
M3	Plans address all pertinent Sense, Shape, Shield and Sustain issues.	G – Yes, Y – Limited, R – No
M4	Doctrine and TTPs are sufficient for effective CBRND planning.	G – Yes, Y – Limited, R – No
M5	Standing plans are adaptable to dynamically changing CBRND situations.	G – Yes, Y – Limited, R – No
M6	Operational and analytical/planning staffs have the training and experience to effectively plan for restoration operations.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to effectively plan for interdiction or elimination operations.	G – Yes, Y – Limited, R – No

¹ Limited. Institutional training for planning staffs is available. Institutional training that is focused on planning for restoration operations and CBRN consequence management is limited.

² Limited. Any joint force staff has the ability to formulate planning guidance, but there are few JTTPs and education and training that specifically address formulating CBRND planning guidance.

³ Limited. Any joint force staff has the training and experience to plan operations, but there are few JTTPs and education and training that specifically address CBRND operations.

⁴ Limited. Any joint force staff has the ability to develop plans, but there are few JTTPs that specifically address the process to select all pertinent Sense, Shape, Shield, and Sustain issues.

⁵ Limited. There is doctrine and JTTPs that specifically addresses JTF/JOA CBRND planning, but given the broad range of CBRN/TIM threats worldwide, each SFJHQ still needs to develop its own TTPs for CBRN planning.

⁶ Yes. Standing plans are adaptable to dynamically changing CBRN situations.

⁷ Limited. Any joint force operational and analytical/planning staff has the training and experience to effectively plan, but there are few JTTPs and courses that specifically address restoration operations.

⁸ Limited. Any joint force operational and analytical/planning staff has the training and experience to effectively plan, but there are few JTTPs and courses that specifically address interdiction/elimination operations.

⁹ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

8.6.3 Functional Solution Analysis

8.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Few JTTPs specifically address formulating CBRND planning guidance.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on formulating CBRND planning guidance for the JOA. *Training:* Expand joint training on formulating CBRND plans and policy for the JOA.

2. **Deficiency:** Few JTTPs specifically address CBRND operations.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on planning CBRND restoration and interdiction/elimination operations for the JOA. *Training:* Develop joint training on planning CBRND restoration and interdiction/elimination operations for the JOA.
Leadership: Develop joint leader education course(s) on CBRND restoration and elimination operations for the JOA.

3. **Deficiency:** Few JTTPs specifically address the process to select all pertinent Sense, Shape, Shield, and Sustain issues and incorporate them into plans.
Non-Materiel Solutions: *Doctrine:* Develop joint doctrine on the process to select and incorporate into plans all pertinent Sense, Shape, Shield, and Sustain issues. *Training:* Develop joint training on the process to select all pertinent Sense, Shape, Shield, and Sustain issues. *Leadership:* Develop joint education course(s) on the process to select all pertinent Sense, Shape, Shield, and Sustain issues

4. **Deficiency:** Given the broad range of CBRN/TIM threats worldwide, each standing force joint headquarters (SFJHQ) still needs to develop its own TTPs for CBRN planning.
Non-Materiel Solutions: *Doctrine:* Each SFJHQ must develop procedures to incorporate JOA-specific CBRN/TIM threats into plans and policy.

8.6.3.2 IMA Assessment Summary

Table 8.6-2. OPSHA 6. IMA Assessment

Idea for Materiel Approach	Description
Automated analytical tools	With fewer personnel available to perform resource determination, the JTF commander will rely increasingly on automated tools to develop CBRND plans.

8.7 Task OPSHA 7: Coordinate CBRND aspects of JOA medical operations

8.7.1 Functional Area Analysis

8.7.1.1 Definition

To coordinate CBRND aspects of JTF/JOA medical operations. Provides medical monitoring and assessing of personnel and military working animals (MWAs) needed to ready JTF/JOA elements for deployment and sustained operations. Manages the processing of CBRN/TIM casualties throughout the JOA. Conducts medical tracking of CBRN/TIM exposed and affected personnel and MWAs, monitoring and assessing of personnel and MWAs for exposure to CBRN/TIM agents, and generation of medical COAs and TTPs, as well as event tracking. Also includes providing and assessing medical COAs.

8.7.1.2 Derivation

UJTL (OP 1.6, OP 2.2, OP 2.2.1, OP 4.4.3, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.2, OP 5.3.9, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5.8, OP 6.2.10, OP 7, OP 7.2, OP 7.3, OP 7.4, OP 7.5), Protection Joint Functional Concept, Transformation Planning Guidance, Military Transformation: A Strategic Approach.

8.7.1.2.1 Supported Task: STSHA 7

8.7.1.2.2 Lateral Tasks: OPSHA 3, OPSHA 6, OPSHA 12, OPSHLD 3, OPSHLD 13, OPSHLD 14

8.7.1.2.3 Supporting Tasks: TASHA 12, TASHA 13, TASHA 14

8.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. No or outline mission preparation. (C2.1.3)
3. Low personnel capability. (C2.2.4)
4. Poor personnel nutrition and health. (C2.2.4.1)
5. Negligible personnel experience. (C2.2.4.5)
6. Limited staff expertise. (C2.3.1.3)
7. Highly restricted information exchange. (C2.3.1.8)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)

2. Limited international organization support. (C3.1.2.5)
3. High health risk. (C3.3.1.5)
4. Insignificant science and technology. (C3.3.7)

8.7.2 Functional Needs Analysis

8.7.2.1 Capability and Deficiency Assessment Summary

Table 8.7-1 discusses the only capability to coordinate CBRND aspects of JOA medical operations that enable the performance of the task to the designated standard.

Current Capability and Deficiency

Any operational-level headquarters has the capability to assess, train, and manage medical issues in relation to medical operations in a CBRN environment. Medical screening is adequate and appropriate for this capability. Automated disease outbreak tracking systems are generally available at the strategic national level, and therefore the operational-level medical health care providers need a reachback capability. However, there are some slight deficiencies in establishing quarantine protocols across the joint force and in conducting risk assessments and tracking of exposed personnel. The overall capability is currently “green.”

Projected Near/Mid-Term Capability and Deficiency

No foreseeable changes in capability in the near/mid term.

Projected Far-Term Capability and Deficiency

Improvements in DOTMLPF in the far term will raise the overall capability.

Table 8.7-1. OPSHA 7: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	G ²	G ³	G ⁴	Y ⁵	Y ⁶	G ⁷	Y ⁸	Y ⁹	G ¹⁰
Near/Mid-Term Overall Capability	G	G	G	Y	Y	G	Y	Y	G
Far-Term Overall Capability	G ¹¹	G	G	G	G ¹²	G	G	G	G

	FAA Measure	Scale
M1	Personnel are screened for deployment eligibility.	G – Yes, Y – Limited, R – No
M2	Medical records are assessed for medical indicators.	G – Yes, Y – Limited, R – No
M3	Standards for personnel health and fitness are effective for potential CBRN/TIM environments.	G – Yes, Y – Limited, R – No
M4	Casualties (U.S., host nation, and third-country nationals), both human and MWA, restricted by medical/veterinary isolation/quarantine are identified.	G – Yes, Y – Limited, R – No
M5	System for tracking the status of CBRN medical information exists.	G – Yes, Y – Limited, R – No
M6	JOA medical threats are identified and appropriate counter-measures are instituted.	G – Yes, Y – Limited, R – No
M7	CBRND health risk assessment estimate is available.	G – Yes, Y – Limited, R – No
M8	Units potentially or actually exposed/contaminated by CBRN/TIM or ROTA events are identified and tracked.	G – Yes, Y – Limited, R – No
M9	Non-DoD sources are accessed for information.	G – Yes, Y – Limited, R – No

¹ Limited. There are limited JTTPs to specifically address this task.

² Yes. Personnel are screened before deployment.

³ Yes. Most joint force medical staffs can sufficiently assess records.

⁴ Yes. DoD-wide standards for general military personnel health and fitness are well documented and sustained, but medical linkage to health criteria for CBRN should be developed.

⁵ Limited. Most joint force medical/veterinary personnel are proficient at quarantine protocol. However, coordination across the joint services medical community (as well as host nations/coalition partners) for identifying, screening, isolating, and quarantining infected personnel should be improved, including the use of automated disease outbreak tracking systems. These systems should be fed into the J-2, CBRN, and preventive-medicine experts to provide population indicators of biological weapons use in AOR.

⁶ Limited. The capability to track chemical, biological, radiological, nuclear, and high-yield explosive medical information is only as good as the capability to track deployed medical personnel information, which is a work in progress, but is far from being solved.

⁷ Yes. National medical assets can identify potential medical threats and institute limited medical countermeasures.

⁸ Limited. TIMs health risk assessment requires a broad analysis of chemical and toxic material production/storing capabilities in the area of operations. A database of global to local TIM hazards does not currently exist. However, expertise can be made available to the joint force to conduct a health risk assessment based on regional hazards.

⁹ Limited. Most joint force staffs can track adequately those units actually or potentially exposed to CBRN/TIM. However, real-time/near-real-time understanding of the geographical location of units on the battlefield, tied to automated plume prediction technology, is necessary.

¹⁰ Yes. Reachback capabilities exist for multiple medical need analyses.

¹¹ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

¹² When the Theater Medical Information Program and Common Hardware/Software II are deployed and other information systems are integrated with these systems, the “green” rating for this measure will be justified.

8.7.3 Functional Solution Analysis

8.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Coordination across the joint services medical community (as well as host nations/coalition partners) for identifying, screening, isolating, and quarantining infected personnel should be improved.
Non-Materiel Solutions: *Doctrine:* Doctrine and training on early identification for nonstandard and novel chemical/biological threats needs to be implemented. *Training:* Doctrine and training on early identification for nonstandard and novel chemical/biological threats needs to be implemented.
2. **Deficiency:** A database of global to local TIM hazards does not currently exist.
Non-Materiel Solutions: None
3. **Deficiency:** Lack of real-time/near-real-time understanding of the geographical location of units on the battlefield tied to automated plume prediction technology.
Non-Materiel Solutions: None
4. **Deficiency:** There is limited JTTPs to specifically address coordinating CBRND/TIM aspects of JOA medical operations.
Non-Materiel Solutions: *Doctrine:* Improvement in environmental health and safety training of deploying forces is needed. JTTPs for medical management of TIM casualties needs to be improved, or some form of reachback capability needs to be implemented for health care professionals to conduct adequate assessments, diagnoses, and treatment.

8.7.3.2 IMA Assessment Summary

Table 8.7-2. OSHA 7: IMA Assessment

Idea for Materiel Approach	Description
Automated analytical tools	With fewer personnel available to perform casualty estimation and COA generation and assessment, the JTF commander will rely increasingly on automated tools.
Automated database	Development of an automated global database/software program of CBRN/TIM hazards, or provide joint force medical personnel reachback capability to national medical and occupational safety and health databases.
Automated tool	Development of automated plume prediction technology tied to real-time geospatial unit location is necessary.

8.8 Task OPSHA 8: Coordinate JTF/JOA CBRND operations

8.8.1 Functional Area Analysis

8.8.1.1 Definition

To provide overall coordination of JTF/JOA CBRND operations. Preparatory activities are coordinated with affected joint forces, coalition partners, and appropriate nongovernmental and indigenous organizations. JTF/JOA staffs collaboratively manage the preparation of joint and coalition forces for CBRND operations within the battlespace. Data from assessments are used to evaluate and determine CBRND requirements and status based on policy, plans, and commander's intent. Multiple CBRN/TIM events could occur in the same time frame throughout the JOA. Rapid and effective response and mitigation coordination is required. CBRN/TIM event information provided in the COP is used to formulate appropriate actions and taskings. Uses planning and analysis tools to evaluate force responses to CBRN/TIM attacks against specific sites, positions, maneuvers, and missions. Includes development of TTPs to ensure effective and efficient execution of CBRND tasks. Provides sensor employment strategy. Includes management of theater restoration and elimination operations.

8.8.1.2 Derivation

UJTL (OP 1.3.1, OP 1.6, OP 2.2.1, OP 2.2, OP 2.4.1.1, OP 2.4.1.2, OP 4.4.3, OP 4.4.5, OP 4.7, OP 4.7.2, OP 4.7.8, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.3, OP 5.3.2, OP-5.3.4, OP 5.3.6, OP-5.3.7, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5.8, OP 5.7, OP 5.7.4, OP 6.1.6, OP 6.2.1, OP 6.1.6, OP 6.2.10, OP 7, OP 7.1, OP 7.2, OP 7.3, OP 7.4), Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.8.1.2.1 Supported Task: STSHA 8

8.8.1.2.2 Lateral Tasks: OPSHA 3, OPSHA 6, OPSHLD 2, OPSUST 9, OPSUST 11, OPSUST 12, OPSUST 13

8.8.1.2.3 Supporting Tasks: TASHA 9, TASHA 11, TASHA 18, TASHA 19, TASHA 24

8.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. No preexisting arrangements. (C2.1.1.2)
2. No or outline mission preparation. (C2.1.3)

3. Few modern military systems. (C2.2.5)
4. Few modern military simulation systems. (C2.2.5.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Partial multinational integration. (C2.3.1.2)
7. Limited staff expertise. (C2.3.1.3)
8. Negligible deployed supplies. (C2.8.2)

Civil

1. Uncooperative interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support. (C3.1.2.3)
3. Uncertain international organization support. (C3.1.2.5)
4. Restrictive Presidential and/or Secretary of Defense decisions. (C3.1.3)

8.8.2 Functional Needs Analysis**8.8.2.1 Capability and Deficiency Assessment Summary**

Table 8.8-1 discusses the capability that currently exists to perform the task to the designated standards. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any joint force has the ability to determine the requirements of units and personnel to support CBRND operations; source those requirements through time-phased force and deployment data (TPFDD) adjustment; determine the requirement of CBRND systems and equipment to support CBRND operations; coordinate CBRND operations, including transport, logistics, communications, and CBRND unit employment considerations; and follow doctrine and TTPs. There are deficiencies in all current measures that result in a capability rating of “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

Table 8.8-1. OPSHA 8: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹
Near/Mid-Term Overall Capability	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	G ¹⁰	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Required CBRND units and personnel are available.	G – Yes, Y – Limited, R – No
M2	Required CBRND systems and equipment are available.	G – Yes, Y – Limited, R – No
M3	All pertinent Sense, Shape, Shield, and Sustain information is considered.	G – Yes, Y – Limited, R – No
M4	Coordination of CBRND operations includes transport, logistics, communications, and CBRND unit employment considerations.	G – Yes, Y – Limited, R – No
M5	Doctrine and TTPs for JOA CBRND coordination are available.	G – Yes, Y – Limited, R – No
M6	JTF/JOA staffs are adequately trained to effectively coordinate CBRND operations.	G – Yes, Y – Limited, R – No
M7	JTF/JOA exercises or experimentation provide feedback on efficacy of coordination of JOA CBRND operations.	G – Yes, Y – Limited, R – No
M8	Exercise comments are incorporated into coordinated doctrine and TTPs.	G – Yes, Y – Limited, R – No

¹ Limited. Doctrine is based on theoretical rather than practical experience.

² Limited. joint force has the ability to determine the requirements of units and personnel to support CBRN operations. Sourcing those requirements is a TPFDD issue and is adjusted based on capability needs. The CBRN staff provides input, but does not develop the TPFDD.

³ Limited. joint force has the ability to determine the requirement of CBRN systems and equipment to support CBRN operations. Availability of required CBRND systems and equipment is a logistics issue and must be tracked from depot to end user. This tracking is a materiel management issue requiring designation and highlighting reportable end items, durable, and expendable items that are critical for sourcing a CBRND capability. Asset visibility within DoD normally is limited to end items and some durables. A system to track all CBRND-specific materiel may be required.

⁴ Limited. joint force has the ability to address all pertinent Sense, Shape, Shield, and Sustain issues, but until *UJTL 5.0* takes effect, the Sense, Shape, Shield, Sustain domains may not be recognized by the joint force.

⁵ Limited. joint force has the ability to coordinate CBRND operations. This coordination includes transport, logistics, communications, and CBRND unit employment considerations, but planning factors for logistics and transportation may not support real-world requirements following a CBRN event. Therefore, the three capabilities listed in the capabilities statement are sequential.

⁶ Limited. joint force has the ability to follow doctrine and TTPs for JOA CBRND coordination. There are limited joint exercises/experiments that address CBRN coordination within a JOA. Limited exercises produce few lessons learned. Few lessons learned result in incomplete or hypothetical doctrine and TTPs.

⁷ Limited. Staff who maintain CBRND specializations can assist in planning and executing CBRND operations. However, these specialists are limited in number and depth.

⁸ Limited. Joint exercises/ experiments are limited in number and scope. Feedback from these CBRND exercises/experiments are limited to the data have been captured. Without an effective data capture instrument, efficacy of JOA CBRND operations coordination is questionable.

⁹ Limited. Comments incorporated into doctrine and TTPs are restricted to those which have been captured and entered into JULLS.

¹⁰ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

8.8.3 Functional Solution Analysis

8.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The CBRN Staff provides input but does not develop the TPFDD.
Non-Materiel Solutions: *Doctrine:* Develop criteria for TPFDD planning considerations that include CBRN requirements and needs.
- 2. Deficiency:** A system to track all CBRND systems and equipment may be required.
Non-Materiel Solutions: *Doctrine:* Develop a system or method to track all CBRND systems equipment.
- 3. Deficiency:** Until *UJTL 5.0* takes effect, the Sense, Shape, Shield, Sustain domains may not be recognized by the joint force.
Non-Materiel Solutions: *Doctrine:* Develop CBRN doctrine, TTPs, and planning factors resulting from lessons gleaned from joint exercises/experiment covering the action required under the operational elements of Sense, Shape, Shield, and Sustain. *Organization:* Review force structure. Within end strength constraints, consider adjusting force structure as a result of lessons learned from joint exercises/experiments. *Training:* Develop training support packages that incorporate lessons learned from joint exercises/experiments. *Leadership:* Develop leadership education and JPME course(s) that incorporate lessons learned from joint exercises/experiments.
- 4. Deficiency:** Planning factors for logistics and transportation may not support real-world requirements following a CBRN event.
Non-Materiel Solutions: *Doctrine:* Review available data and lessons learned from historical, wide-area events to validate logistical planning factors. Such events could include natural disasters, large TIM releases, terrorist activity, and testing historically conducted by the United States and the former Soviet Union.
- 5. Deficiency:** Limited exercises produce few lessons learned. Few lessons learned result in incomplete or hypothetical doctrine and TTPs.
Non-Materiel Solutions: *Doctrine:* Develop a JMSEL for joint exercises/experiments that address coordination of CBRND operations within a JOA. *Training:* Develop training for joint exercises/experiments that address coordination of CBRND operations within a JOA.
- 6. Deficiency:** These specialists are limited in number, and depth.
Non-Materiel Solutions: *Doctrine:* Develop JMSEL for joint exercises/experiments that address coordination of CBRND operations within a JOA. *Training:* Develop training for joint exercises/experiments that address coordination of CBRND operations within a JOA.

7. Deficiency: Joint exercises/experiments are limited in number and scope. Feedback from these CBRND exercises/experiments is limited to the data have been captured. Without an effective data capture instrument, efficacy of JOA CBRND operations coordination is questionable.

Non-Materiel Solutions: *Doctrine:* Develop guidance and JTTPs that address capture of CBRND lessons learned from exercises. *Training:* Develop framework for capturing CBRND lessons learned in exercises.

8. Deficiency: Doctrine for CBRND operations to the extent practical is based on actual experience. However, much CBRND doctrine is predicated on theoretical modeling and simulation.

Non-Materiel Solutions: *Doctrine:* Actively pursue a joint lessons learned program that captures CBRND lessons from exercises/experiments and real-world events. Incorporate all lessons into JULLS. *Training:* Actively pursue a joint lessons learned program that captures CBRND lessons from exercises/experiments and real-world events. Incorporate all lessons into JULLS.

8.8.3.2 IMA Assessment Summary

N/A

8.9 Task OPSHA 9: Provide Shape country assistance teams to support TEP

8.9.1 Functional Area Analysis

8.9.1.1 Definition

To provide Shape country assistance teams to support the Theater Engagement Plan (TEP) that has been provided by the combatant commander. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. The TEPs for Shape considerations are executed by special teams and units that demonstrate Shape capability or provide Shape-related training to selected countries.

8.9.1.2 Derivation

UJTL (OP 7.3, OP 4.7.1, ST 8.1.2), CJCSM 3113.01a.

8.9.1.2.1 Supported Task: STSHA 9

8.9.1.2.2 Lateral Tasks: OPSENS 8, OPSHA 6, OPSUST 7

8.9.1.2.3 Supporting Task: N/A

8.9.1.3 Condition

Perform this task under conditions of:

Physical. NA

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Negligible personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3)

8.9.2 Functional Needs Analysis

8.9.2.1 Capability and Deficiency Assessment Summary

Table 8.9-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts has the skill to provide Shape country assistance teams to support the TEP, but there are some deficiencies that negatively impact on their ability to do so, resulting in a current capability assessment of “red.”

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception that DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. The overall capability will remain “red” in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. Several projected initiatives will raise the far-term projection of the JTF capability to “green.” Steps will be taken to establish and equip country assistance teams. JTTPs that addresses a Shape country assistance team support to TEP will be developed. Restoration exercises and experiments focused on Shape country assistance teams will be conducted. Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

Table 8.9-1. OPSHA 9: Capability and Deficiency Assessment

Capability: Operational-Level HQ	M1	M2	M3	M4
Current Overall Capability¹	R ²	G ³	R ⁴	Y ⁵
Near/Mid-Term Overall Capability⁶	R	G	R	Y
Far-Term Overall Capability⁷	G ⁸	G	G ⁹	G ¹⁰

	FAA Measure	Scale
M1	Shape country assistance teams are properly manned, trained, and equipped.	G – Yes, Y – Limited, R – No
M2	Valid requests for Shape security assistance are met.	G – Yes, Y – Limited, R – No
M3	Procedures and checklists are developed to facilitate the ability to provide Shape country assistance teams to support TEPs.	G – Yes, Y – Limited, R – No
M4	Joint exercises provide feedback on Shape country assistance teams.	G – Yes, Y – Limited, R – No

¹ No specific doctrine has been developed.

The linkage of Shape and Shape country assistance teams is not integrated into leader education. This task is not a standard part of training.

² No. While any joint force staff can train and equip a country assistance team, none have ever been established. There has been no training or equipment developed that specifically addresses the training and equipment requirements for a Shape country assistance team.

³ Yes. Any joint force staff can process and honor requests for a country assistance team. There is currently no experience base, however.

⁴ No. Any joint force staff can develop procedures and checklist for a country assistance team, but there are no TTPs that addresses a Shape country assistance team support to TEPs.

⁵ Limited. Few if any restoration exercises or experiments focused on Shape country assistance teams have been conducted.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁸ Steps will be taken to establish and equip country assistance teams.

⁹ JTTPs that addresses a Shape country assistance team support to TEPs will be developed.

¹⁰ Restoration exercises and experiments focused on Shape country assistance teams will be conducted.

8.9.3 Functional Solution Analysis

8.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Shape country assistance teams requirements not defined.
Non-Materiel Solutions: *Doctrine:* No one has developed an operational concept for Shape country assistance teams, and specific guidance (technical or procedural) on how to approach this task has not been provided. Develop TTPs, organizational structure, training, leadership education, and equipment for Shape country assistance teams to support TEPs.
2. **Deficiency:** Prototype country assistance teams not organized.
Non-Materiel Solutions: *Organization:* Develop organizational table of distribution and allowances for Shape country assistance teams to support TEPs.
3. **Deficiency:** Training not adequate.
Non-Materiel Solutions: *Training:* Develop training for Shape country assistance teams to support TEPs.
4. **Deficiency:** Leader education inadequate.
Non-Materiel Solutions: **Deficiency:** *Leadership:* Develop JPME classes for Shape country assistance teams to support TEPs.
5. **Deficiency:** Joint exercises need to incorporate and provide feedback on Shape operation country assistance teams.
Non-Materiel Solutions: *Training:* Develop and refine Shape exercises for a JTF that will provide feedback on efficacy of Shape country assistance teams. Incorporate lessons learned from into future exercises and TTPs.

8.9.3.2 IMA Assessment Summary

N/A

8.10 Task OPSHA 10: Provide JOA CBRN/TIM weapons information to the combatant commander

8.10.1 Functional Area Analysis

8.10.1.1 Definition

To obtain information and data from all sources that provide information about the CBRN/TIM weapons situation in the JOA. These data are provided to the combatant commander.

8.10.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

8.10.1.2.1 Supported Task: STSHA 1

8.10.1.2.2 Lateral Tasks: OPSHA 2, OPSUST 1, OPSUST 2

8.10.1.2.3 Supporting Task: TASHA 25

8.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Negligible intelligence database. (C2.4.2)
2. Negligible theater intelligence access. (C2.4.2)
3. Conventional and terrorist threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

8.10.2 Functional Needs Analysis

8.10.2.1 Capability and Deficiency Assessment Summary

Table 8.10-1 discusses a capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The organizational structure of a subordinate joint force's intelligence element is determined by the JFC based on the situation and mission. All subordinate joint force J-2s, however, will at a minimum require a core element of analytical and administrative capabilities. Most situations will require augmentation of joint force intelligence capabilities through the deployment and integration of theater intelligence elements into a joint intelligence support element with a Terrorism/CBRN Analysis cell. Capabilities of the JISE include order-of-battle analysis; identification of adversary CBRN weapons systems; analysis of adversary command, control, communications, and computers; targeting support; collection management; and maintenance of a 24-hour watch. The ability of the JISE to perform this task is dependent on the completeness and accuracy of the Sense data that provide situational awareness of the CBRN/TIM weapons situation in the JOA. The ability of the JISE to shape these data into JOA CBRN/TIM weapon situational understanding for the combatant commander is hampered by this dependence on Sense input and by lack of doctrine and TTPs, resulting in an overall current assessment of "yellow."

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term except that DOTLMPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, the success of intelligence initiatives and DOTLMPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a "green" rating.

Table 8.10-1. OPSHA 10: Capability and Deficiency Assessment

Capability: JISE	M1	M2	M3	M4
Current Overall Capability¹	Y²	Y³	Y⁴	Y⁵
Near/Mid-Term Overall Capability⁶	Y	Y	Y	Y
Far-Term Overall Capability	G⁷	G	G	G⁸

	FAA Measure	Scale
M1	CBRN/TIM weapon capabilities in JOA are detected and identified.	G – Yes, Y – Limited, R – No
M2	Intelligence on enemy CBRN/TIM weapon systems is accurate.	G – Yes, Y – Limited, R – No
M3	CBRN/TIM weapons information is provided to the combatant commander.	G – Yes, Y – Limited, R – No
M4	Fidelity of information on CBRN/TIM agents and delivery means is assured.	G – Yes, Y – Limited, R – No

¹ This task is not integrated into experimentation and exercises. Red teaming is not adequately employed to expose methodologies and assessments to scrutiny and alternate analysis.

² The JISE has a dedicated Terrorism/CBRN Analysis cell but is dependent on the completeness and thoroughness of the CBRN and intelligence and exploitation data it receives.

³ The JISE has a dedicated Terrorism/CBRN Analysis cell but is dependent on the accuracy of the intelligence and exploitation data it receives.

⁴ Nothing precludes providing CBRN weapons information to the combatant commander. Proper techniques for setting forth the JISE’s findings in such a way as to make clear to the combatant commander what is certain knowledge and what is reasoned judgment (and within the realm of the judgments what varying degrees of certitude lie behind each key assessment) are not available.

⁵ In the event of terrorist possession of or use of CBRN, it may be difficult or impossible to have absolute assurance about fidelity of information concerning weapons systems or the attack. In the case of a biological attack or attacks involving TIM, it may be difficult to determine whether it is a natural disease outbreak or an accident. In the event of use not involving U.S. forces or allies, it may be difficult to assess fidelity of required information due to information access constraints. Techniques and procedures to facilitate this fidelity assurance process when it involves terrorists or non-U.S. allies and to detect or identify attacks may not be adequate. Methods and procedures for accurately reporting CBRN attacks against U.S. forces are mature and effective, but methods and procedures for accurately reporting third-party, terrorist, and TIM attacks may not be adequate.

⁶ DOTLMPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ In the far term, the success of intelligence initiatives and DOTLMPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

⁸ In the far term, the success of intelligence and international cooperation initiatives and DOTLMPF enhancements across the board made possible by focused experimentation and lessons learned from operations/exercises should improve CBRN/TIM agent and delivery means information fidelity assurance to a “green” rating.

8.10.3 Functional Solution Analysis

8.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The JISE Terrorism/CBRN Analysis cell is dependent on the completeness and thoroughness of the CBRN intelligence and exploitation data it receives.
Non-Materiel Solutions: *Organization:* Ensure that intelligence and collection and exploitation organizations are staffed and equipped to enable them to provide the most complete and thorough CBRN/TIM weapon intelligence data possible.
- 2. Deficiency:** The JISE Terrorism/CBRN Analysis cell is dependent on the accuracy of the intelligence and exploitation data it receives.
Non-Materiel Solutions: *Organization:* Ensure that intelligence and collection and exploitation organizations are staffed and equipped to enable them to provide the most accurate CBRN/TIM weapon intelligence data possible.
- 3. Deficiency:** Proper techniques for setting forth the JISE's key CBRN/TIM weapons findings in such a way as to make clear to the combatant commander what is certain knowledge and what is reasoned judgment (and within the realm of the judgments what varying degrees of certitude lie behind each key CBRN/TIM weapons assessment) are not available.
Non-Materiel Solutions: *Doctrine:* Develop comprehensive methodologies and techniques for setting forth the JISE's key CBRN/TIM weapons findings in such a way as to make clear to the combatant commander what is certain knowledge and what is reasoned judgment (and within the realm of the judgments what varying degrees of certitude lie behind each key CBRN/TIM weapons assessment). *Training:* Ensure that rigorous training is developed to test the techniques for setting forth the JISE's key CBRN/TIM weapons findings.
- 4. Deficiency:** This task is not integrated into experimentation and exercises.
Non-Materiel Solutions: *Training:* Ensure that this task is incorporated into experimentation so that concepts can be tested and improved. Integrate lessons learned into exercises and TTPs.
- 5. Deficiency:** Red teaming is not adequately employed to expose methodologies and assessments to scrutiny and alternate analysis.
Non-Materiel Solutions: *Organization:* Employ red teaming to test the Shape capabilities to provide situational understanding about CBRN weapons systems to the combatant commander.
- 6. Deficiency:** This task is not integrated into JPME
Non-Materiel Solutions: *Leadership:* Develop JPME courses that address JISE functions of CBRN/TIM threat analysis and integrate into all intelligence and CBRN education systems.

8.10.3.2 IMA Assessment Summary

N/A

8.11 Task OPSHA 11: Establish JOA cooperative CBRN/TIM detection policies, procedures, and networks

8.11.1 Functional Area Analysis

8.11.1.1 Definition

To link JOA active systems (e.g., Space and Air Defense Radar) with passive detectors (such as BIDS) to produce a JOA cooperative CBRN/TIM detection network. Builds a seamless web from the JTF capabilities down to individual tactical detectors within the JOA battlespace to provide a means of detecting both delivery vehicles and agents.

8.11.1.2 Derivation

UJTL (OP 7.5, OP 2.2.2).

8.11.1.2.1 Supported Task: STSHA 10

8.11.1.2.2 Lateral Task: OPSHA 6

8.11.1.2.3 Supporting Tasks: TASHA 26, TASHA 27

8.11.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

8.11.2 Functional Needs Analysis

8.11.2.1 Capability and Deficiency Assessment Summary

Table 8.11-1 discusses the only capability that will be able to accomplish some of the standards that are listed in the task. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

While any operational-level staff can develop policies and procedures specific and unique to its operational circumstances, this task asks much more. This task is not normally a function of an operational commander, and we recommend that the word “network” be removed until actual networked capabilities are fielded. This capability must be developed and facilitated by strategic national assets and passed to the field commander as a vetted operational capability package. The current assessment is “red” based on the fact that cooperative linkages between various systems capabilities, although proposed, have not yet been coordinated.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. The far-term forecast is for improvement to “yellow.” A joint force has the ability to establish CBRN/TIM detection policies within the JOA. As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with Global Positioning System [GPS] linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.), JOA cooperative CBRN/TIM detection policies, procedures, and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation and exercises before full capability is realized.

Table 8.11-1. OPSHA 11: Capability and Deficiency Assessment

Capability: Joint Force	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	G ⁶	R ⁷
Near/Mid-Term Overall Capability	R	R	R	R	G	R
Far-Term Overall Capability	Y ⁸	Y	Y	Y	G	Y

	FAA Measure	Scale
M1	JOA cooperative CBRN/TIM detection policy is established.	G – Yes, Y – Limited, R – No
M2	JOA cooperative CBRN/TIM detection procedures are established.	G – Yes, Y – Limited, R – No
M3	JOA cooperative CBRN/TIM detection networks are established.	G – Yes, Y – Limited, R – No
M4	Policies and procedures have been established with component commands.	G – Yes, Y – Limited, R – No
M5	Existing policies and procedures are updated regularly.	G – Yes, Y – Limited, R – No
M6	Joint exercises/experimentation provide feedback on efficacy of policies and procedures.	G – Yes, Y – Limited, R – No

¹ Limited. Conceivably, any joint force could incorporate cooperatively linked detection technologies; however, the capability does not currently exist, therefore, effective DOTMLPF is irrelevant.

² A joint force has the ability to establish CBRN/TIM detection policies within the JOA. However, cooperative linkages between various systems capabilities, although proposed, have not yet been coordinated. Since no linkages currently exist between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.), no JOA cooperative CBRN/TIM detection policies are required.

³ Any joint force CBRN cell has the ability to establish CBRN/TIM detection procedures within the JOA. However, distributed, cooperative CBRN/TIM detection capabilities do not currently exist, and JOA cooperative CBRN detection procedures are not established.

⁴ Any joint force communications cell has the ability to establish networks within the JOA. However, cooperative linkages between various system capabilities do not currently exist; therefore, cooperative CBRN/TIM detection networks need not be established.

⁵ Any joint force has the ability to establish policies and procedures. However, cooperative linkages between various system capabilities do not exist currently; therefore, policies and procedures need not be established.

⁶ Any joint force has the ability to update policies and procedures regularly.

⁷ Since the capability to establish cooperative linkages between various detection technologies does not currently exist, exercises and experiments to provide feedback are not yet necessary.

⁸ A joint force has the ability to establish CBRN/TIM detection policies within the JOA. As cooperative linkages between various systems capabilities are coordinated and established between various detection technologies (e.g., BIDS, phased-array radars, standoff motion detectors, passive monitors, vehicular-embedded detectors with GPS linkages and automatic position reporting, individual detectors networked to centralized data servers, etc.), JOA cooperative CBRN/TIM detection policies, procedures, and networks will be established in limited fashion. All supporting and required DOTMLPF enhancements will be initiated, but it will take years of experimentation and exercises before full capability is realized.

8.11.3 Functional Solution Analysis

8.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of CBRN/TIM detection network capabilities.
Non-Materiel Solutions: None
- 2. Deficiency:** Since the capability to establish cooperative linkages between various detection technologies does not currently exist, proposals and concepts must be tested in exercises and experiments to provide feedback and test hypotheses.
Non-Materiel Solutions: *Doctrine:* Develop ideas, proposals, and concepts for cooperatively linked detection technologies. *Training:* Before concepts for cooperatively linked detection technologies can be fully developed and tested, exercises and experiments will be necessary to refine and test concept hypotheses.
- 3. Deficiency:** The capability of cooperatively linked detection technologies does not currently exist; therefore, effective DOTMLPF has not been established.
Non-Materiel Solutions: *Doctrine:* Before cooperatively linked detection technologies reach IOC, effective doctrine and JTTPs should be developed. *Organization:* Before cooperatively linked detection technologies reach IOC, organizational requirements and changes should be developed and executed. *Training:* Before cooperatively linked detection technologies reach IOC, effective training for operational-level staffs should be developed. *Leadership:* Before cooperatively linked detection technologies reach IOC, leader education should be developed and integrated into the Joint Forces Staff College. *Personnel:* Before cooperatively linked detection technologies reach IOC, personnel requirements need to be identified. *Facilities:* Before cooperatively linked detection technologies reach IOC, facility needs must be identified.

8.11.3.2 IMA Assessment Summary

Table 8.11-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 8.11-2. OPSHA 11: IMA Assessment

Idea for Materiel Approach	Description
Networked detection system.	Development of cooperative linkages between various proponent and service detection and sensing technologies is required. Concepts must first be developed based on proposed linkages that will provide effective, integrated CBRN/TIM detection capabilities. These concepts must be explored through experimentation and then cooperative linkages established and tested. The entire package should be developed as a system. As each Service develops detection or sensing technologies, they should be analyzed for inclusion into the CBRN/TIM cooperative detection network and modifications (if required) be mandated for the Service systems.

8.12 Task OPSHA 12: Determine operational effects and impacts due to CBRN/TIM hazards

8.12.1 Functional Area Analysis

8.12.1.1 Definition

To determine operational effects and impacts due to CBRN/TIM hazards on the JTF or any joint forces in the JOA from a standpoint of operational implications. Uses shared awareness and shared understanding of the characterized JOA CBRN/TIM threat and situation for determination of operational effects and impacts. Provides for input into COA analysis. Allows military leaders to develop a clear understanding of the current and predicted CBRN/TIM situation's impact on JOA operations in near-real time.

8.12.1.2 Derivation

UJTL (OP 2.2, OP 2.2.1, OP 2.5, OP 2.4.1, OP 2.5.1, OP 2.4, OP 2.4.1.1, OP 2.4.2.1, OP 2.5, OP 2.5.3, OP 5.1.1, OP 5.1.2, OP 5.2, OP 5.2.1, OP 5.3, OP 5.3.9, OP 5.4.2, OP 5.4.5, OP 5.7, OP 5.7.6, OP 6.1.6, OP 6.2.10, OP 7), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

8.12.1.2.1 Supported Task: STSHA 8

8.12.1.2.2 Lateral Tasks: OPSHA 2, OPSHA 6, OPSHA 7, OPSUST 3, OPSUST 4

8.12.1.2.3 Supporting Task: TASHA 22

8.12.1.3 Condition

1. Perform this task under conditions of:

Physical

1. Immediate, delayed, or potential long-term atmospheric weapons effects. (C1.3.3)

Military

1. Restrictive mission instructions. (C2.1.1)
2. No preexisting arrangements. (C2.1.1.2)
3. No or outline mission preparation. (C2.1.3)
4. Few modern military systems. (C2.2.5)
5. Few modern military simulation systems. (C2.2.5.5)
6. Poor joint staff integration. (C2.3.1.1)
7. Poor multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)
9. Highly restricted information exchange. (C2.3.1.8)
10. High information volume. (C2.3.1.9)

11. Negligible intelligence database. (C2.4.2)
12. Negligible theater intelligence access. (C2.4.4)
13. Little or no certitude of data. (C2.4.6)
14. Negligible deployed supplies. (C2.8.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support. (C3.1.2.3)
3. Restrictive Presidential and/or Secretary of Defense decisions. (C3.1.3)
4. Uncertain international organization support. (C3.1.2.5)
5. Low internationalism. (C3.2.6.5)
6. High health risk. (C3.3.1.5)
7. Unspecified TIM present in the civilian sector. (C3.3.7.5)

8.12.2 Functional Needs Analysis

8.12.2.1 Capability and Deficiency Assessment Summary

Table 8.12-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

Any operational-level staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to determine operational effects and impacts due to CBRN/TIM hazards, but there are some deficiencies that negatively impact on their accuracy and the speed they will be able to operate, resulting in a current assessment of “yellow.”

Projected Near/Mid-Term Capability and Deficiency

JEM will dramatically improve effects modeling by FY2006, and JOEF will provide and interactive operational effects modeling capability/tool by FY2008. The overall assessment will improve to “green.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will maintain all measures at a “green” rating.

Table 8.12-1. OPSHA 12: Capability and Deficiency Assessment

Capability: Operational-Level Unit Staff	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability⁵	G	G	G
Far-Term Overall Capability	G ⁶	G	G

	FAA Measure	Scale
M1	CBRND staff, cells, and units have access to dedicated information technology resources to determine/provide input on operational effects and impacts due to CBRN/ TIM hazards.	G – Yes, Y – Limited, R – No
M2	Operations staffs are able to use data developed by CBRND staffs or automated systems/tools to help them determine operational impacts due to CBRN/TIM hazards.	G – Yes, Y – Limited, R – No
M3	Means are available to provide determinations of operational effects and impacts due to CBRN/TIM hazards to COA assessments and planners.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. The linkage of CBRN/TIM hazards and operational risk assessment is not integrated into leader education. This task is not a standard part of exercises or training.

² Any operational-level CBRN staff cell has access to information technology to help determine/provide input on operational effects and impacts due to CBRN/TIM hazards. There is also a callback capability to DTRA. But there will be no specific tools until JEM (FY2006) and JEOF (FY2010) are IOC.

³ Any operations staff can use data developed by the CBRN staff, but there will be no specific tools until JEM (FY2006) and JEOF (FY2010) are IOC.

⁴ Any operational-level staff can develop means (procedures and checklists), but there are no TTPs that specifically and comprehensively address the impact of CBRN/TIM hazards on operational objectives.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ In the far term, DOTMLPF enhancements across the board made possible by focused experimentation and lessons learned from exercises will continue to improve all measures.

8.12.3 Functional Solution Analysis

8.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Automated systems/tools are lacking.
Non-Materiel Solutions: None
2. **Deficiency:** No TTPs specifically and comprehensively address the impact of CBRN/TIM hazards on operational objectives.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that specifically and comprehensively address the impact of CBRN/TIM hazards on operational objectives.
3. **Deficiency:** No doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* Develop doctrine that specifically and comprehensively addresses the impact of CBRN/TIM hazards on operational objectives, outlines roles and responsibilities, and provides guidance on how the staff should work together to address this issue.
4. **Deficiency:** The linkage of CBRN/TIM hazards and operational risk assessment is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Ensure that the linkage of CBRN/TIM hazards and operational risk assessment is integrated into leader education.
5. **Deficiency:** This task is not a standard part of exercises or training
Non-Materiel Solutions: *Training:* Integrate the linkage of CBRN/TIM hazards and operational risk assessment into training and exercises.

8.12.3.2 IMA Assessment Summary

N/A

CHAPTER 9. TACTICAL SHAPE TASKS

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9.0 Tactical Shape

9.0.1 Introduction

At the tactical (TA) level of war, battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. Thirty-two tactical shape (SHA) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA). Two tasks were combined during the FAA review process, and one task was moved into Tactical Shape from Tactical Sense.

This chapter, detailing the Tactical Shape (TASHA) area, restates relevant information from the CBRND Defense (CBRND) FAA, including a description of each of the 32 TASHA tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis, and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPF: doctrine, organization, training, leadership and education, personnel, and facilities. If there is no non-materiel solution to the deficiencies, or if the non-materiel solutions do not fully correct the deficiencies, materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and evaluated in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near- to far-term resolution to identified deficiencies within the individual capabilities.

The TASHA tasks can best be summarized as “battlespace management.” Giving the on-site commanders and staff the tools needed to perform their jobs with respect to CBRND is essential. The need for speed in the areas of CBRN/ toxic industrial material (TIM) release sensing, reporting, analyzing, and warning is paramount. Current doctrine and training include the tools necessary to manage the CBRN aspects of the battlespace; however, these tools are slow, awkward to use, and often inaccurate. One important shortfall identified by this analysis is the lack of coordination and collaboration among the Services and other agencies and within each Service.

Shape is composed predominantly of processes for the collection, processing, correlation, compilation, analysis, decisioning, and dissemination of CBRND data and information. Materiel provides the infrastructure for this progression, but in and of itself, does not replace the existing processes—it enables or supplements. The current progression is predominantly manually performed. Improvements with assistive automated structures and systems incorporate many of these many processes, enabling decision makers and planners to achieve rapid situational awareness for action. These automated systems permit the collection of greater breadth and depth than achievable with strictly manual means. The integration of networked sensors and

interoperable information management structures support the characterization and shared awareness of the CBRN situation. The fusion of data coupled with visualization and decisioning tools provide the commander and staff with the ability to assess possible COAs and impacts. Decisions and information can be rapidly and accurately shared with relevant entities, establishing shared awareness and shared understanding, and will inevitably increase speed of command and mission effectiveness in a CBRN environment. Unlike the three other areas of CBRND (Shield, Sustain, and Sense), Shape is the process and ability of changing raw information and data into final action through shared awareness and understanding applying the combination of information technology and the training, skills, experience, and knowledge of commanders, staffs, and supporting entities.

9.0.2 FNA Summary

Table 9.0-1 summarizes the overall current and projected capability to perform the TASHA tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “red.” This assessment is based on the almost total lack of automated tools to analyze CBRND information and disseminate the resulting analysis to the proper command elements to affect the outcome of conflicts. If funding for developmental joint programs continues, specific capabilities in the TASHA area will increase, but overall capability is projected to remain “yellow” during the mid and far term. Most, if not all of the identified materiel shortcomings associated with TASHA tasks have previously been identified and are being addressed in currently planned programs.

Metrics are applied to the identified measures within each task and are value scaled. Capabilities are evaluated against the metric scale and assigned an appropriate value for the appropriate defined time period. The value “0” is the lowest value of the scale and generally means the measure is nonexistent or absent and is “red” on the color scale. “Inadequate” or “insufficient,” depending upon the metric, is usually assigned a value ranging 1–3 for the measure and also is “red.” “Partially capable,” as defined by the metric, is 4–7 and “yellow” on the scale; while fully “capable” ranges 8–10 and is “green.” The values for each capability within the determined time period (current, near/mid term, and far term) are averaged for the number of measures assessed. The values are rounded off with half a point or higher rounded to the next higher number, and less than half a point rounded down. Colors are then applied using “red” for 0–3, “yellow” for 4–7, and “green” for 8–10. This process is reapplied for each task in the current and far term to determine the overall task capability in the table below. The overall TASHA capability is determined by assigning 0 to “red,” 1 to “yellow,” and 2 to “green” codes. The values for each of the tasks, by time period, are summed and divided by the total number of tasks. The values are rounded off with half a point or higher rounded to the next higher number and less than half a point rounded down.

Table 9.0-1. Tactical Shape Summary FNA Findings

CBRN Tactical Shape Task Number	CBRN Tactical Shape Task Title	Capability		
		Current	Near/Mid Term	Far Term
TASHA 1	Conduct intelligence operations among the indigenous population in the local area.	●	●	●
TASHA 2	Process local or immediate CBRN/TIM threat intelligence information and data.	●	●	●
TASHA 3	Disseminate CBRN threat intelligence for local or immediate battlespace use.	●	●	●
TASHA 4	Conduct immediate or local battlefield threat assessment.	●	●	●
TASHA 5	Conduct immediate or local battlespace vulnerability assessment.	●	●	●
TASHA 6	Conduct immediate or local battlespace risk assessment.	●	●	●
TASHA 7	Conduct collaborative response and mitigation planning for a CBRN attack or TIM release.	●	●	●
TASHA 8	Conduct unit and individual CBRND training and rehearsal.	●	●	●
TASHA 9	Track the processing of CBRN/TIM casualties and exposed personnel and MWA.	●	●	●
TASHA 10	Manage CBRN personnel and unit resources to ensure effective CBRND task accomplishment.	●	●	●
TASHA 11	Correlate observations of the indigenous population for indicators of CBRN/TIM attack or release.	●	●	●
TASHA 12	Conduct medical surveillance based on syndromic information and data across the battlespace.	●	●	●
TASHA 13.	Conduct veterinary surveillance of MWA and indigenous animal population throughout the battlespace.	●	●	●
TASHA 14	Conduct surveillance of food and water supplies throughout the battlespace.	●	●	●
TASHA 15	Conduct CBRND preparations.	●	●	●
TASHA 16	Conduct CBRN hazard prediction and effects modeling.	●	●	●
TASHA 17	Operate an IDN to “detect to warn” and provide continuous hazard status.	●	●	●
TASHA 18	Provide CBRN tactical situational awareness throughout the battlespace via the COP.	●	●	●

CBRN Tactical Shape Task Number	CBRN Tactical Shape Task Title	Capability		
		Current	Near/Mid Term	Far Term
TASHA 19	Provide CBRN tactical and CBRN warning, reporting, and alarming throughout the local or immediate battlespace.	●	●	●
TASHA 20	Manage CBRN resources to ensure effective CBRND task accomplishment.	●	●	●
TASHA 21	Conduct immediate or local battlespace CBRN/TIM incident COA assessment for maneuvering forces.	●	●	●
TASHA 22	Provide CBRN attack or TIM release impact assessment throughout the local or immediate battlespace.	●	●	●
TASHA 23	Conduct immediate or local battlespace CBRN/TIM incident COA assessment for fixed sites.	●	●	●
TASHA 24	Conduct CBRND response and mitigation.	●	●	●
TASHA 25	Provide tactical CBRN/TIM weapons information to the combatant commander.	●	●	●
TASHA 26	Establish battlespace CBRND information integration and connectivity.	●	●	●
TASHA 27	Ensure the means to collaboratively plan, assess, and manage.	●	●	●
TASHA 28	Ensure CBRND information and data.	●	●	●
TASHA 29	Coordinate the allocation and access to C4ISR assets to support battlespace CBRND operating requirements.	●	●	●
TASHA 30	Initiate CBRN/TIM event history archiving.	●	●	●
TASHA 31	Provide CBRN lessons learned and attack/release information.	●	●	●
TASHA 32	Prepare for the WMD elimination mission.	N/A	N/A	N/A
OVERALL		●	●	●

9.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The materiel approaches address both current and non-developed technologies for possible material solutions.

9.0.3.1 DOTMLPF

The main DOTLFP shortfalls identified in this chapter are centered on the perishable nature of trained skills in the area of managing CBRND operations. Some of the deficiencies can be partially solved with non-materiel solutions, while others require a materiel solution. Non-materiel solutions include the need for personnel to be trained on the latest automated tools as they become available. The capabilities of the medical and veterinary communities to help with CBRND operations by identifying, predicting, and treating warfighters for CBRN/TIM exposure needs to be fully integrated into tactics, techniques, and procedures (TTPs). Commanders (and the services) must look at available resources and determine how they can be best used to meet operational requirements. As the future battlespace develops, we will become more dependant on automated/electronic tools, thus command staff elements will need better access to Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) assets to contribute to the Common Operating Picture (COP) to keep the commander informed and ultimately affect the outcome. Existing doctrine needs to be implemented and updated where applicable. Leaders need to train force elements on observation and reporting indicators to include the training of staff to ensure information is relayed. Doctrine, policy, and, in turn, future leaders need to be trained on assets and capabilities. Changes may impact on the structure of military units (organizations) and personnel qualifications

9.0.3.2 IMA

Materiel solutions for TASHA include the development of automated processes (e.g., detection and warning) and tools (e.g., accurate downwind-hazard prediction and archived technical information) to aid the CBRN staff in providing the most accurate information to the commander so he will be enabled to make the right decisions to better the outcome of the battle. Near- to mid-term capabilities must provide the ability to support all CBRN operations outlined in the joint and multi-Service publications with automated programs. Additional quantities of C4ISR terminals/assets may be needed to address increased demand for hands-on time to use the new automated tools to their fullest capabilities. The need for rapid access to experts and data was also identified in the analysis.

Table 9.0-2 summarizes possible material approaches that address the remaining materiel requirements of the doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) assessment. These approaches are in various stages of development; therefore, some are more readily applicable than others. The IMAs identified in this analysis cover a wide array of concepts, but they can be organized into a system of systems approach. Ultimately, all of the identified potential solutions must feed processed data information into the C4ISR system to add to the COP so that commanders can make the best-informed decisions based on the most current situation. There are 26 distinct IMAs in the TASHA area. The analysis of TASHA tasks and measures often lead to the same or similar IMAs for different measures. A number of the IMAs focus procurements and modifications to current systems; this fact will impact program objective memorandum (POM) decisions and require setting priorities as they relate to these programs and others.

Table 9.0-2. Tactical Shape Ideas for Materiel Approaches

Materiel Approach	Description
Automated CBRN training system	Develop automated and interactive CBRN training system for individual and unit training, including training and exercise scenarios, evaluation and certification criteria, and automated tools to assist and complement individual and unit CBRN training.
Automated field CBRN intelligence system	Develop automated system for field application for the collection, compilation, and correlation of CBRN intelligence data.
Automated medical interface to COP	Develop automated modifications to existing and developing medical patient tracking systems to specifically track the status and treatment of CBRN/TIM casualties and link this information to CBRND automated systems and the COP.
CBRN staff cell C4ISR equipment	Procure and field dedicate C4ISR equipment to CBRN staff cells enabling connectivity with the COP and the performance of their responsibilities and tasks.
CBRN staff collaboration tools	Develop automated system among and between CBRND specialists and other functions (e.g., operations, logistics) to allow collaboration between these functional areas and link to the COP.
Collect, exchange and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates nuclear, biological, and chemical (NBC) reports, including downwind-hazard plots and overlays, and verify receipt of reports and plots. Transmission of data uses existing communication nets.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Data fusion	Develop a capability to automatically perform data fusion. "Data fusion" is combining automatically correlated information with data that refines the information or presents it in an intuitive format. Fused data in many cases will arrive later than real- or near-real-time data.
Enhanced C4ISR systems	Expand existing and programmed C4ISR systems capabilities to support increasing demands upon resources.
Event history archive	Develop a system that accepts manual and automatic CBRN/TIM event data input, then modifies, retrieves, displays, archives, and transfers data (e.g., intelligence, location of attack, source and sensor information) to repositories.
Field CBRN information resource	Develop a field resource system that will provide and search archived information for CBRN/TIM agents, effects, treatments, etc.

Hazard prediction tool	Develop a U.S. Department of Defense (DoD)-approved model for CBRN and TIM hazard-prediction capabilities, incorporating physics-based functionalities. The model acquires and integrates information from appropriate databases (i.e., terrain, structures, environmental, meteorological, intelligence, unit, population, etc.) to accurately predict, map, and graphically portray the hazard in near-real time.
Hazard status template	Develop a system that merges collected data and predictions of agent travel to provide hazard status.
IDN interface for sensors	Ensure developmental CBRN sensors include ability to interface with an Integrated Detection Network (IDN). Develop adaptors to interface existing CBRN sensors to the IDN.
Information assurance	Develop a CBRND system that processes and transmits information in accordance with information assurance defense in depth standards, including certification and accreditation in accordance with DoD and Chairman of the Joint Chiefs of Staff (CJCS) guidance.
Lessons-learned databases	Develop/consolidate databases for operational and training lessons learned.
Link to COP	Develop a CBRND information system resident in standard C4ISR systems with interface with geographical information system (GIS) to provide input to the COP.
Link to geographic information system	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to the COP.
Link to logistics systems	Develop an automated interface that tracks CBRND supplies and equipment and their status and condition through existing DoD logistics systems.
Management of databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.
Medical prediction/collaboration tools	Develop automated tools to model the spread and persistency of communicable diseases that interface with the COP to provide collaboration and accurate information for decision making.
Medical surveillance system enhancement—indigenous population surveillance	Develop automated modifications to existing and developing medical surveillance systems for the collection, correlation, processing, and reporting of CBRN event indicators within indigenous populations.

Modeling and simulation	Develop a DoD-approved and standardized model for CBRN and TIM hazard-prediction capabilities that incorporates physics-based functionalities. The model acquires information from databases (i.e., terrain, structures, environmental, meteorological, intelligence, unit and population) to display graphical output and map the hazard in near-real time. Develop a system including embedded training capable of simulating operational scenarios.
Modifications to medical information systems	Develop automated modifications to existing and developing medical patient tracking systems (e.g., DMSS, MAT, TMIP, etc.) to specifically track the status and treatment of CBRN/TIM casualties and link this information to CBRND automated systems.
Modifications to veterinary information system	Develop automated modifications to existing and developing veterinary tracking systems to collect and disseminate food- and water-testing information, collect/collate and process veterinary CBRN information, track the status of military working animal (MWA) isolation and quarantine operations, and link this information to medical automated systems and the COP.
Query sensor status	Develop a system capable of automatically requesting sensor status (health) of networked sensors.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, support, and lessons learned.
Risk factor template	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities and threat assessments.
Simulants accurately depicting threat contaminants	Develop a system that collects and analyzes simulant data and distinguishes simulants from real agents to be used in modeling and simulation.
Simulation and models	Develop a system enabling operational commanders to display current operational picture and to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly courses of action (COAs), CBRN employment, and TIM release other than attack (ROTA).
Veterinary automated tools	Develop automated tools that, on a systematic (routine) basis, automatically trigger testing of food and water supplies.

9.1 Task TASHA 1: Conduct intelligence operations among the indigenous population in the local area

9.1.1 Functional Area Analysis

9.1.1.1 Definition

Encompasses conducting active collection of CBRN and TIM intelligence in the local area and among the indigenous population. Elements of information are essential for exploitation intelligence for elimination operations and intelligence preparation of the battlespace. Intelligence, security, and CBRN specialist personnel, along with general warfighters who perform the tasks. Includes liaison with indigenous civil and service organizations, nongovernmental organizations (NGOs), and coalition forces. Also encompasses the identification of CBRN weapons development, deployment, and use. Routine military activities can identify indicators in the operating area and among indigenous populations. Key indicator examples are rapidly changing health among animal and human populations, increased anxiety among the population, and abandoned weapon storage or processing sites. Security patrols, civil affairs convoys, etc., can make these observations. Specific searches and investigations can also provide relevant information. This task also includes identifying TIM stockpiles or storage sites. Bulk quantities can be located in industrial areas, rail yards, and storage areas. Sampling and evidentiary processes must be considered. The focus is on identifying indicators for a pending or in-process attack and exploiting these observations in support of elimination operations.

9.1.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Protection Joint Functional Concept.

9.1.1.2.1 Supported Task: OPSHA 1

9.1.1.2.2 Lateral Tasks: TASENS 14, TASUST 30

9.1.1.2.3 Supporting Task: N/A

9.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited staff expertise. (C2.3.1.3)
2. Negligible intelligence database. (C2.4.2)
3. Difficult theater intelligence access. (C2.4.4)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Significant TIM present in the civilian sector. (C3.3.7.5)

9.1.2 Functional Needs Analysis

9.1.2.1 Capability and Deficiency Assessment Summary

Table 9.1-1 discusses individual capabilities to perform this task to the designated standards. The current capability, “collection of information, items, and observation of activities among indigenous population,” applies two components to perform this task. These are reports and observations of regular/routine military activities such as convoys and patrols and weapons of mass destruction (WMD) evidence collection activities performed by specialized units. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

CBRN/TIM threat intelligence is available to meet some of the needs of tactical commanders as part of standard intelligence information processing. Credibility of human sources is always difficult to ascertain. Deficiencies include absence of ability to penetrate indigenous populations and the adversary, need for adaptable doctrine (procedures and processes), and perishability of training.

Projected Near/Mid-Term Capability and Deficiency

No change is currently projected for this task.

Projected Far-Term Capability and Deficiency

No change is currently projected for this task.

Table 9.1-1. TASHA 1: Capability and Deficiency Assessment

Capability: Local Intelligence Operations	M1	M2	M3	M4
Current Overall Capability	6 ¹	3 ²	6 ³	8 ⁴
Near/Mid-Term Overall Capability	6	5	6	8
Far-Term Overall Capability	6	8	6	8

	FAA Measure	Scale
M1	There is sufficient confidence in the accuracy of local intelligence collected.	8–10: Confidence in accuracy and timeliness of local intelligence is high. Intelligence is collected and correlated from multiple sources, and source automated information systems are interoperable. 4–7: Limited confidence in accuracy and timeliness of local intelligence. Predominantly manual processes collect and correlate local intelligence from sources and may be restricted in the number of sources assessed. 1–3: Low confidence in accuracy and timeliness of local intelligence. Predominantly manual processes collect and correlate local intelligence from internal sources and are restricted in the number of sources assessed. 0: No confidence in accuracy and timeliness of the collected and processed local intelligence.
M2	Mechanism exists to process CBRN/TIM threat intelligence rapidly to meet needs of tactical commanders.	8–10: Highly integrated dedicated system provides accurate, timely, and current CBRN/TIM threat intelligence. 4–7: Dedicated systems are in place to process CBRN/TIM threat intelligence against tactical commander priority intelligence requirements (PIRs). 1–3: In-place dedicated systems are inadequate to process CBRN/TIM threat intelligence against tactical commander PIRs. 0: Dedicated CBRN/TIM threat intelligence mechanisms do not exist for processing threat intelligence.
M3	There is sufficient training to identify indicators.	8–10: All force personnel are trained to identify CBRN/TIM threat indicators. Specialized collection functions are established in standard operational units for WMD investigation and evidentiary processes. 4–7: Selected specialized personnel and functions are trained to identify CBRN/TIM threat indicators. Limited training is provided to the general force. Temporary specialized collection functions are established as determined necessary for specific functions. 1–3: Selected specialized personnel are trained to identify CBRN/TIM threat indicators and perform all collection functions. 0: CBRN/TIM threat indicator training is nonexistent.
M4	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Processes exist for the collection, correlation, verification, and exploitation of CBRN intelligence from diverse sources, including national means, interagencies, patrols, convoys, drones, international and national NGOs, local authorities, and populace. These processes are largely manual and require both experience and training for effective application. Manual skills are perishable and require continuing training and skills growth. Information source systems are either not interoperable/accessible or possess limited interoperability/accessibility. There exist insufficient adaptable procedures and processes to support the nontraditional battlefield. Confidence in collected information is a function of ability to penetrate adversaries and indigenous populations, source reliability, and the correlation and verification of collected information with other sources.

² Doctrine and C4ISR systems are in place for the processing of CBRN intelligence. Process is predominantly manual, time-consuming, and labor-intensive. Information sources are either not interoperable or possess limited interoperability. CBRN intelligence and indicators must compete for resources and processing. Availability of information may be delayed due to lack of dedicated C4ISR capabilities for CBRN information collection, processing, and interpretation.

³ Limited training is provided to intelligence specialists for the processing and interpretation of CBRN indicators. Similarly, limited training is provided to CBRN specialists for the processing and interpretation of CBRN intelligence indicators. However, the general force is not adequately trained on the observation, identification, and reporting of CBRN intelligence and potential indicators. Specialized units are formed for specific WMD evidence search operations but are generally dissolved upon completion of the specific mission. These highly mission-specific units are composed of personnel selected from pertinent specialties. Specialty personnel may also be attached to selected units for specific missions. However, a standard operational unit does not exist that is trained and dedicated for this purpose. Consistent training and refresher training is not performed of the force during general training in preparation and conduct of operations.

⁴ Effective doctrine, policies, and TTPs exist for the manual performance of this task with limited automated support. Consistent training and refresher training is not performed of the force during general training in preparation and conduct of operations.

9.1.3 Functional Solution Analysis

9.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Lack of adaptable procedures and processes.
Non-Materiel Solutions: *Doctrine:* Develop and refine adaptable procedures and processes. *Training:* Ensure adequate training programs for observation and collection skills. *Leadership:* Leaders need to ensure adherence to procedures and processes. *Personnel:* Develop penetration procedures and doctrine.
2. **Deficiency:** Absence of ability to obtain reliable CBRN/toxic industrial chemical (TIC)/TIM data from local population.
Non-Materiel Solutions: *Doctrine:* Ensure adequate personnel are assigned to tasks. *Organization:* Provide liaison with civil affairs units and ensure collaboration between NBC, intelligence, and civil affairs units. *Training:* Ensure training of penetration and interaction skills. *Leadership:* Leaders need to be trained to address the associated issues. *Personnel:* Ensure availability of personnel with the ability to work with indigenous populations or to penetrate them.
3. **Deficiency:** Lack of ability to penetrate the adversaries.
Non-Materiel Solutions: *Doctrine:* Refine procedures and practices for interagency coordination and collaboration. *Organization:* Ensure coordination collaboration with involved agencies; joint, interagency, multinational. *Training:* Ensure training of penetration skills, investigative skills. *Leadership:* Leaders need to be trained to address the associated issues. *Personnel:* Ensure the availability of personnel with the ability to investigate and/or penetrate the adversaries.
4. **Deficiency:** Need to ensure continued vigilance of procedures and processes.
Non-Materiel Solutions: *Doctrine:* Need to ensure doctrine is available for identifying indicators and the information processing of those indicators. *Training:* Ensure training is conducted to ensure indicator awareness and the processing of associated information. *Leadership:* Leaders need to maintain vigilance and ensure training is conducted.
5. **Deficiency:** Lack of thorough training for troops conducting routine military activities around or among indigenous population.
Non-Materiel Solutions: *Training:* Ensure general training of troops to operate effectively and intelligently among the indigenous populations with adversarial elements. *Leadership:* Ensure adequate training of the troops.

9.1.3.2 IMA Assessment Summary

N/A

9.2 Task TASHA 2: Process local or immediate CBRN/TIM threat intelligence information and data

9.2.1 Functional Area Analysis

9.2.1.1 Definition

Includes compiling, correlating, and processing intelligence information and data gathered in the local battlespace and from the indigenous population regarding processed CBRN/TIM threat intelligence, including information and data from joint and coalition forces in the local or immediate battlespace and indigenous sources on adversary CBRN intent, objectives, availability of weapons, actual capacity to employ weapons, expected tactics, potential targets, development efforts, and willingness or historic propensity to employ CBRN weapons. Threat assessments, planning, and preparations are supported through this task.

9.2.1.2 Derivation

UJTL (TA 2.4.1, TA 5, TA 5.2.1, TA 7), Protection Joint Functional Concept.

9.2.1.2.1 Supported Task: OPSHA 1

9.2.1.2.2 Lateral Task: N/A

9.2.1.2.3 Supporting Task: N/A

9.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Abundant modern military systems. (C2.2.5)
3. High interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Restricted information exchange. (C2.3.1.8)
6. High information volume. (C2.3.1.9)
7. Marginal intelligence database. (C2.4.2)
8. Moderate certitude of data. (C2.4.6)
9. Intelligence dissemination and receipt fully exists. (C2.4.7)

Civil

Limited foreign government support. (C3.1.2.3)

9.2.2 Functional Needs Analysis**9.2.2.1 Capability and Deficiency Assessment Summary**

Table 9.2-1 discusses individual capabilities to perform this task to the designated standards. The current capability, “Processing of Local Intelligence,” applies to the range of activities for the compiling, correlation, and processing of local intelligence within the local battlespace. Intelligence obtained from national means, patrols, convoys, drones, international and national NGOs, local authorities and populace, and other sources is integrated to identify the CBRN/TIM threat, adversary CBRN intent and objectives, WMD availability, potential targets, adversary developmental efforts, and adversary willingness to employ WMD. The task supports threat assessment and force planning/preparation. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

CBRN/TIM threat intelligence is available to meet some of the needs of tactical commanders as part of standard intelligence information processing. The capability is improving as a result of improvements resulting from current conflicts. Interoperability within and among services continues to improve. Deficiencies include absence of ability to process real-time, actionable information and pass to the “shooter;” need for adaptable doctrine (procedures and processes); and perishability of training/skills. Overall capability is marginal.

Projected Near/Mid-Term Capability and Deficiency

No change is currently projected for this task.

Projected Far-Term Capability and Deficiency

No change is currently projected for this task.

Table 9.2-1. TASHA 2: Capability and Deficiency Assessment

Capability: Processing of Local Intelligence	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	6 ¹	5 ²	5 ³	5 ⁴	6 ¹	2 ⁵	8 ⁶
Near/Mid-Term Overall Capability	6	8	5	5	7	4	8
Far-Term Overall Capability	6	9	5	5	7	6	8

	FAA Measure	Scale
M1	There is confidence in the collected CBRN/TIM threat intelligence.	8–10: Confidence in accuracy and timeliness of CBRN/TIM threat intelligence is high. Intelligence is actionable/of high value. Intelligence is collected and correlated from multiple sources and source automated information systems are interoperable. 4–7: Limited confidence in accuracy and timeliness of CBRN/TIM threat intelligence. Predominantly manual processes collect and correlate intelligence from sources and may be restricted in the number of sources assessed. 1–3: Low confidence in accuracy and timeliness of local threat intelligence. Predominantly manual processes collect and correlate local intelligence from internal sources and are restricted in the number of sources assessed. 0: No confidence in accuracy and timeliness of the collected and processed CBRN/TIM threat intelligence.
M2	Multiple sources are integrated and deconflicted.	8–10: Automated systems integrate and deconflict information from multiple sources accurately and rapidly require little or no manpower. 4–7: Multiple sources are integrated and deconflicted using manual means, are limited to available trained resources, and are inadequate to rapidly correlate information from a large number of multiple sources. 1–3: Limited number of sources are integrated and deconflicted using manual means, are limited to available trained resources, and are inadequate to rapidly correlate information from multiple sources. 0: No capability to integrate and deconflict multiple sources.
M3	Sufficient processes are used to compile and correlate CBRN/TIM threat intelligence.	8–10: Automated systems compile and correlate CBRN/TIM threat intelligence from multiple sources accurately and rapidly require little or no manpower. 4–7: CBRN/TIM threat intelligence is compiled and correlated predominantly using manual means, is limited to available trained resources, and is inadequate to rapidly compile and correlate CBRN/TIM threat intelligence from a large number of multiple sources. 1–3: CBRN/TIM threat intelligence is compiled and correlated predominantly using manual means, is limited to available trained resources, and is inadequate to rapidly compile and correlate CBRN/TIM threat intelligence from multiple sources. 0: No capability to compile and correlate CBRN/TIM threat intelligence from multiple sources.
M4	All known CBRN/TIM intelligence collection requirements are met	8–10: The commander’s PIRs and other known CBRN/TIM intelligence/indicators from all sources are accurately and rapidly assessed and presented on a continuing and current basis by automated systems. 4–7: CBRN/TIM intelligence collection requirements identified by the commander’s identified PIRs for known CBRN/TIM are met using predominantly manual and time-intensive means, are limited to available trained resources, and may not assess intelligence available from a large number of multiple sources. 1–3: CBRN/TIM intelligence collection requirements identified by the commander’s identified PIRs for known CBRN/TIM are met using predominantly manual and time-intensive means, are limited to available trained resources, and may not assess intelligence available from multiple sources. 0: CBRN/TIM intelligence collection requirements are not met.

M5	Previously unknown and opportunistic intelligence is integrated into the processing.	<p>8–10: Previously unknown and opportunistic intelligence is collected and correlated from multiple sources by automated systems, including local observations and reports, and source information systems are interoperable.</p> <p>4–7: Predominantly manual processes collect and correlate previously unknown and opportunistic intelligence from sources, including local observations and reports, and may be restricted in the number of sources assessed.</p> <p>1–3: Predominantly manual processes collect and correlate previously unknown and/or opportunistic intelligence from internal sources and are restricted in the number of sources assessed.</p> <p>0: Local observations and reports are not included in the CBRN/TIM threat intelligence process.</p>
M6	Sufficient numbers of experienced analysts are available for CBRN/TIM threat intelligence processing.	<p>8–10: CBRN/TIM threat intelligence analysts are trained, experienced, and available in adequate quantities to conduct CBRN/TIM threat intelligence collection, compilation, correlation, and assessment from multiple and diverse sources in a timely and accurate manner or to perform oversight and evaluation of in place CBRN/TIM threat intelligence processing automated systems performing all these functions for all operational and routine requirements.</p> <p>4–7: Limited numbers of CBRN/TIM threat intelligence analysts are trained, experienced, and available to conduct CBRN/TIM threat intelligence processing from a significant number of sources for operational requirements.</p> <p>1–3: Limited numbers of CBRN/TIM threat intelligence analysts are trained, experienced, and available to conduct CBRN/TIM threat intelligence processing from a number of sources for operational requirements.</p> <p>0: CBRN/TIM threat intelligence analysts are not trained, experienced or are in numbers insufficient to process intelligence available from a large number of sources and meet operational requirements for the processing of CBRN/TIM threat intelligence.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹-Processes exist for the collection, correlation, verification, and exploitation of CBRN intelligence from diverse sources, including national means, patrols, convoys, drones, international and national NGOs, local authorities, and populace. These processes are largely manual and require both experience and training for effective application. Manual skills are perishable and require continuing training and skills growth. Information source systems are either not interoperable or possess limited interoperability. There exist insufficient adaptable procedures and processes to support the nontraditional battlefield. Confidence in collected information is a function of ability to penetrate adversaries and indigenous populations; source reliability; and the correlation and verification of collected information with other sources.

²-Integration and deconfliction of information is predominantly conducted using manual processes and is time- and labor-intensive. Information is correlated based upon the value of the information and credibility and reliability of sourcing and is dependent upon the availability and number/types of sources. Manual processes currently dictate limits upon the level of information actually correlated and sources applied. Manual skills are perishable and require continuing training and skill growth.

³-Compilation and correlation of CBRN/TIM threat intelligence is predominantly conducted using manual processes and is time- and labor-intensive. Information is compiled and correlated based upon the value of the information and credibility and reliability of sourcing and is dependent upon the availability and number/types of sources. Manual processes currently dictate limits upon the level of information actually processed and sources applied. Manual skills are perishable and require continuing training and skill growth. There is limited ability to perform combat risk assessment and for automated threat report generation and dissemination.

⁴-Processes exist for the identification and attainment of CBRN/TIM intelligence identified in the commander’s PIRs. These processes are largely manual and time-consuming and require both experience and training for their effectiveness. The manual processes, time constraints, and limited number of assessment processing personnel places a ceiling upon the CBRN/TIM intelligence collection requirements which can be rapidly satisfied. Manual skills are perishable and require continuing training and skill growth.

⁵-Sufficient numbers of trained and experienced analysts are available for CBRN/TIM threat intelligence processing. Experience obtained from ongoing operations will wane over time. Manual skills are perishable and require continuing training and skill growth. Numbers of trained and experienced analysts are inadequate to meet most operational

requirements and for the processing of CBRN/TIM threat intelligence from a large number of sources. Consistent training and refresher training is not performed of the force during general training in preparation and conduct of operations.

⁶ -Current DOTLPF adequately addresses the collection and processing of CBRN/TIM threat intelligence using predominantly manual means. Limited ability to perform combat risk assessment. However, lessons learned during operations in the Balkans and the Middle East are applied by units assigned to these locations. Personnel from the individual Service battle laboratories do visit field units to identify and collect unit developed techniques and adaptations for subsequent review. Consistent training and refresher training is not performed of the force during general training in preparation and conduct of operations.

9.2.3 Functional Solution Analysis

9.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of adaptable procedures and processes. Absence of ability to penetrate indigenous populations. Limited interoperability.
Non-Materiel Solutions: *Doctrine:* Develop penetration procedures and doctrine. *Organization:* Ensure liaison with civil affairs units. Develop collaboration and systems interoperability between NBC, medical, intelligence, and civil affairs units. *Training:* Ensure training of penetration and interaction skills. *Leadership:* Train leaders to address the associated issues. *Personnel:* Ensure availability of personnel with the ability to work with indigenous populations or to penetrate them.
- 2. Deficiency:** Lack of ability to penetrate the adversaries.
Non-Materiel Solutions: *Doctrine:* Refine procedures and practices for interagency coordination and collaboration. *Organization:* Ensure coordination collaboration with involved agencies; joint, interagency, multinational. *Training:* Ensure training of penetration skills, investigative skills. *Leadership:* Train leaders to address the associated issues. *Personnel:* Ensure the availability of personnel with the ability to investigate and/or penetrate the adversaries.
- 3. Deficiency:** Perishable skills require retraining and growth in skills. Limited ability to automate threat report generation and dissemination. Limited ability for combat risk assessment.
Non-Materiel Solutions: *Training:* Ensure training programs for basic and refresher skill development. *Personnel:* Ensure availability of personnel with skills and experience.
- 4. Deficiency:** Inadequate intelligence information processing and collection activities.
Partial Non-Materiel Solutions: *Doctrine:* Ensure doctrine is available for the processing of intelligence information on the CBRN Threat. *Organization:* Ensure adequate units are available to conduct collection activities.
- 5. Deficiency:** Consistent training and refresher training required in general training during preparation of operations and during the conduct of operations.
Non-Materiel Solutions: *Training:* Ensure training is completed. *Leadership:* Ensure attentiveness to training.

9.2.3.2 IMA Assessment Summary

Table 9.2-4 is an idea for material approach and a corresponding description of the idea addressing the deficiency for field automated capabilities to process intelligence information.

Table 9.2-4. TASHA 2: Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Inadequate intelligence information processing and collection activities	Automated field CBRN intelligence system	Develop automated system for field application for the collection, compilation, and correlation of CBRN intelligence data.

9.3 Task TASHA 3: Disseminate CBRN threat intelligence for local or immediate battlespace use

9.3.1 Functional Area Analysis

9.3.1.1 Definition

Provide processed local or immediate battlespace CBRN threat intelligence for development of threat assessments and for a clear understanding of the current and predicted CBRN situation. For elimination operations and operations in a high CBRN threat environment, the information disseminated results in immediate action. Timely dissemination ensures effective warning and tasking.

9.3.1.2 Derivation

UJTL TA 2.4.1, TA 5, TA 5.2.1, TA 7, Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance.

9.3.1.2.1 Supported Task: OPSHA 1

9.3.1.2.2 Lateral Task: N/A

9.3.1.2.3 Supporting Task: N/A

9.3.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Abundant modern military systems. (C2.2.5)
2. Marginal intelligence database. (C2.4.2)
3. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.3.2 Functional Needs Analysis

9.3.2.1 Capability and Deficiency Assessment Summary

Table 9.3-1 discusses individual capabilities to perform this task to the designated standards. The current capability, “CBRN Threat Intelligence Dissemination,” addresses the timely dissemination of processed CBRN threat intelligence to ensure effective warning and implementation of associated activities. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities

and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Current DOTLPF adequately addresses the dissemination of CBRN/TIM threat intelligence using existing tactical communications systems and requires manual determination and action for accomplishment. Plans and procedures are developed during preparation for the dissemination of CBRN threat intelligence indicators to requiring centers. Commander guidance and operational situations dictate dissemination parameters. Existing and projected DoD information systems and infrastructure will allow for the discovery and dissemination of intelligence information. Manual ATP-45 format messages are created when automated warning systems are unavailable. However, existing communications systems are not fully interoperable and are dependent upon the systems available to elements of the Joint Task Force (JTF). Implementation and cross-element, particularly between Service components and with coalition partners, is dependent upon the attentiveness and awareness of the intelligence and operations centers in the mixed communications network. CBRND exercises do not specifically challenge and evaluate the dissemination of CBRN/TIM intelligence to requiring need-to-know centers. The dissemination of information is generally viewed as an inherent component of other criteria and is, therefore, a subsumed function/activity.

Projected Near/Mid-Term Capability and Deficiency

Joint Warning and Reporting Network (JWARN) (Increment 1, initial operational capability [IOC]) is projected for initial fielding in the mid term to operational units. DOTLPF must continue to evolve as systems, tactics, and situations change. Developmental “born joint” DoD information systems will be compliant with the four elements of the Net Ready Key Performance Parameter (NR-KPP) ensuring interoperability, information assurance, integration to the appropriate community of interest as well as the Global Information Grid (GIG) architecture. Substantial upgrades to legacy systems are required to include Defense Information Systems Agency (DISA) standards and net-centric capabilities. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of intelligence and operations center staffs to ensure effective dissemination of identified CBRN intelligence to requiring need-to-know centers until the legacy systems are either replaced or modified for compliance. CBRND exercise criteria and standards remain an area of concern. Interoperability barriers that limit collaboration between the DoD and other government organizations and coalition partners must be addressed through formalized agreements and standard operating procedures (SOPs).

Projected Far-Term Capability and Deficiency

Joint developmental information systems programs are scheduled to field prior to the far term. All systems are to be in compliance with the joint staff-mandated NR-KPP and will fully support DoD interoperability across the Services.

Table 9.3-1. TASHA 3: Capability and Deficiency Assessment

Capability: CBRN Threat Intelligence Dissemination	M1	M2	M3	M4
Current Overall Capability	8 ¹	6 ²	3 ³	8 ⁴
Near/Mid-Term Overall Capability	8	7	3	8
Far-Term Overall Capability	8	8	3	8

	FAA Measure	Scale
M1	Means exist and are employed to disseminate CBRN/TIM intelligence to all concerned.	8–10: Means exist and are employed for the dissemination of CBRN threat intelligence to all need-to-know centers. 4–7: Limited means exist and is employed for the dissemination of CBRN threat intelligence to most need-to-know centers. 1–3: Existing means and employment are inadequate for the dissemination of CBRN threat intelligence to requiring need-to-know centers. 0: Means do not exist for the dissemination of CBRN threat intelligence to requiring need-to-know centers.
M2	Indicator-based warnings are rapidly disseminated.	8–10: Plans, procedures, and means exist for the dissemination of indicator-based warnings to all need-to-know centers. 4–7: Plans, procedures, and means are limited for the rapid dissemination of indicator-based warnings to most need-to-know centers. 1–3: Plans, procedures, and means are limited for the dissemination of indicator-based warnings to most need-to-know centers 0: Plans, procedures, and/or means do not exist for the dissemination of indicator-based warnings to requiring need-to-know centers.
M3	Dissemination of CBRN/TIM intelligence challenged during exercises.	8–10: The rapid and accurate dissemination of CBRN/TIM intelligence to requiring need-to-know centers is a specific and integral CBRN exercise challenge criteria. 4–7: Dissemination of CBRN/TIM intelligence to requiring need-to-know centers is identified in CBRN exercise challenge criteria but is not specifically evaluated. 1–3: The dissemination of CBRN/TIM intelligence to requiring need-to-know centers is an inherent component of selected CBRN exercise challenge criteria but is not separately evaluated 0: The dissemination of CBRN/TIM intelligence to requiring need-to-know centers is not evaluated.
M4	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Existing DoD communication infrastructure systems and JWARN, where available, are used to disseminate CBRN intelligence and warnings. Manual ATP-45 format messages are created when automated warning systems are unavailable. However, existing communications systems are not fully interoperable and are dependent upon systems available to elements of the JTF. Attentiveness is required to ensure the effectiveness of the intelligence and operations centers in this mixed communications environment. Net-centric operations and mandatory DISA standards address interoperability and the interchange of information among elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. Remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term.

² Plans and procedures are developed during preparation for the dissemination of CBRN threat intelligence indicators to requiring centers. Implementation and cross-element, particularly between Service components and with coalition partners, is dependent upon the attentiveness and awareness of the intelligence and operations centers in the mixed communications network. Commander guidance and operational situations will dictate dissemination parameters. Interoperable and net-centric automated systems will enhance the interchange of information between elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers.

³ CBRND exercises do not specifically challenge and evaluate the dissemination of CBRN/TIM intelligence to requiring need-to-know centers. The dissemination of information is generally viewed as an inherent component of other criteria and is, therefore, a subsumed function/activity. CBRN/TIM intelligence development and dissemination is not generally exercised and evaluated. Time constraints, lack of process familiarity by evaluators, and other factors usually remove intelligence operations challenges for CBRN exercises and evaluations and replace with scripted and prepackaged intelligence inputs provided directly by the evaluators.

⁴ Current DOTLPF adequately addresses the dissemination of CBRN/TIM threat intelligence using existing tactical communications systems and requires manual determination and action for accomplishment. DOTLPF will need to continue to evolve as systems, tactics, and situations change.

9.3.3 Functional Solution Analysis

9.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Attentiveness required ensuring effectiveness of the intelligence and operation centers.

Non-Materiel Solutions: *Doctrine:* Intelligence and operations centers procedures are required to promote attentiveness and awareness for the effectiveness of CBRN/TIM intelligence dissemination to all requiring need-to-know centers. *Training:* Training is required ensuring proficiency of intelligence and operations center personnel in the identification of requiring need-to-know centers and the dissemination of CBRN/TIM intelligence. *Leadership:* Leaders must ensure training attain and maintain capabilities and performance levels ensuring the effective dissemination of CBRN/TIM intelligence to all requiring need-to-know centers.
- 2. Deficiency:** Limited automation ability. Attentiveness required ensuring capability for rapid dissemination.

Non-Materiel Solutions: *Doctrine:* Intelligence and operations centers procedures are required to promote attentiveness and awareness for the effectiveness of CBRN/TIM intelligence dissemination to all requiring need-to-know centers. *Training:* Training is required ensuring proficiency of intelligence and operations center personnel in the identification of requiring need-to-know centers and the dissemination of CBRN/TIM intelligence.
- 3. Deficiency:** Training exercises do not adequately challenge CBRN intelligence transmission.

Non-Materiel Solutions: *Doctrine:* CBRN exercise criteria specifically challenge and establish evaluation standards for the dissemination of CBRN intelligence. *Training:* Training exercises must include scenarios challenging CBRN intelligence dissemination.

9.3.3.2 IMA Assessment Summary

N/A

9.4 Task TASHA 4: Conduct immediate or local battlespace threat assessment

9.4.1 Functional Area Analysis

9.4.1.1 Definition

Based on local or mission-relevant threat information, plausible adversary intent and objectives are formulated for CBRN agents or TIM use. The threat specific to the mission, maneuver, or site is assessed, including TIM ROTA potential. The assessment includes adversary targeting, potential CBRN weapon configurations, employment schemes, objectives and intent. The development of a shared common picture of the immediate threat affords the commander the ability to maximize assessment visibility for the timely and effective preparations against any potential adversary's CBRN threat actions.

9.4.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Protection Joint Functional Concept.

9.4.1.2.1 Supported Tasks: OPSHA 1, OPSHA 2

9.4.1.2.2 Lateral Task: N/A

9.4.1.2.3 Supporting Task: N/A

9.4.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. High interoperability. (C2.2.6)
2. Marginal intelligence database. (C2.4.2)
3. Growing theater intelligence organization. (C2.4.3)
4. Intelligence dissemination and receipt fully exists. (C2.4.7)

Civil

1. Significant TIMs present in the civilian sector. (C3.3.7.5)

9.4.2 Functional Needs Analysis

9.4.2.1 Capability and Deficiency Assessment Summary

Table 9.4-1 discusses individual capabilities to perform this task to the designated standards. Capability is currently manual processes for local threat assessments. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Current processes are predominantly manual with limited automation. Process is labor- and time-consuming and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error. Data may not always be available for newly defined threats. Although limited simulation tools are available, these are not generally in use by operating forces. Existing DoD communication infrastructure systems and JWARN, where available, are used to disseminate CBRN intelligence and warnings. Manual ATP-45 format messages are created when automated warning systems are unavailable. However, existing communications systems are not fully interoperable and are dependent upon systems available to elements of the JTF. Attentiveness is required to ensure the effectiveness of the intelligence and operations centers in this mixed communications environment. Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN threat assessment. Consistent formal and refresher training on immediate or local battlefield CBRN threat assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations.

Projected Near/Mid-Term Capability and Deficiency

The mid-term fielding of JWARN (Increment 1 – IOC), the Joint Operational Effects Federation (JOEF), and the Joint Effects Model (JEM) are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs and with the capability to refine cell specialist skills as part of local training and exercising/evaluations. Net-centric operations and mandatory DISA standards address interoperability and the interchange of information among elements. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. However, interoperability may not exist with coalition partner and host-nation systems. Further, the degree of interoperability between JTF element systems is dependent upon the extent of DISA standard and net-centric capable compliant replacement or modified legacy systems fielded by the Services in support of operations. DOTLPF will need to continue to evolve as systems, tactics, and situations change.

Projected Far-Term Capability and Deficiency

Full fielding of JWARN, JOEF, and JEM is projected to be completed in the early far term. Continued fielding of DISA standard and net-centric capable systems to operational units enhances the capability to conduct CBRN/TIM threat information collection, dissemination, and interchange. All legacy systems are projected to either be replaced by, or be in compliance with, DISA standards and fully support net-centric operations in the far term.

Table 9.4-1. TASHA 4: Capability and Deficiency Assessment

Capability: Processes for Evaluating Adversary Course of Action	M1	M2	M3	M4	M5
Current Overall Capability	4 ¹	3 ²	4 ¹	5 ³	8 ⁴
Near/Mid-Term Overall Capability	5	3	6	6	8
Far-Term Overall Capability	5	3	8	8	8

	FAA Measure	Scale
M1	Analytical processes are used to evaluate plausible adversary COAs.	8–10: Automated systems substantially or fully perform analytical processing of CBRN/TIM threat intelligence to evaluate plausible adversary COAs, including adversary CBRN employment or TIM ROTA. 4–7: Analytical processes for the evaluation of plausible adversary COAs (including CBRN employment) is performed predominantly using manual means and is limited to available trained resources and the quality of selected assessed data. 1–3: Evaluation of plausible adversary COAs is performed using manual means and is limited to available trained resources and the quality of selected assessed data. 0: No capability to perform analytical processes for the evaluation of plausible adversary COAs.
M2	Means exist and are employed to process CBRN/TIM threat intelligence rapidly to meet needs of operational commanders.	8–10: Means exist and are employed for the rapid and accurate processing and dissemination of CBRN threat intelligence. 4–7: Limited means exist and is employed for the processing and dissemination of CBRN threat intelligence. 1–3: Existing means and employment are inadequate for the dissemination of CBRN threat intelligence to requiring need-to-know centers. 0: Means do not exist or employment is inadequate for the processing and dissemination of CBRN threat intelligence.
M3	Threat assessment is used to prepare for plausible CBRN attacks and TIM ROTA.	8–10: Automated systems substantially or fully perform analytical processing of CBRN/TIM threat intelligence to evaluate plausible adversary COAs, including adversary CBRN employment or TIM ROTA. 4–7: Analytical processes for the evaluation of plausible adversary COAs (including CBRN employment) are performed predominantly using manual means and is limited to available trained resources and the quality of selected assessed data. 1–3: Evaluation of plausible adversary COAs is performed using manual means and is limited to available trained resources and the quality of the selected assessed data. 0: No capability to perform analytical processes for the evaluation of plausible adversary COAs.
M4	Staffs have sufficient training and experience to conduct the threat assessment.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of CBRN/TIM threat assessment. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN threat assessment. 1–3: CBRN/TIM threat assessment training is inadequate to support operations. 0: CBRN/TIM threat assessment training to support operations is nonexistent.
M5	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ JOEF and JEM will address TIM hazards listed in ITF-40 with the specific capabilities articulated in the corresponding capability document. Process is labor- and time-consuming and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error. Data may not always be available for newly defined threats. TIM threat assessment evaluation processes are currently nonexistent for operational forces and data are limited to civilian HAZMAT and ITF-40 sources. Although limited simulation tools are available for CBRN, these are not generally in use by operating forces. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. JOEF and JEM will be initially fielded in the mid term with full fielding early in the far term. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined.

² Doctrine and C4ISR systems are in place for the processing of CBRN intelligence. Process is predominantly manual, time-consuming, and labor-intensive. Information sources are either not interoperable or possess limited interoperability. CBRN intelligence and indicators must compete for resources and processing. Availability of information may be delayed due to lack of dedicated C4ISR capabilities for CBRN information collection, processing, and interpretation.

³ Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN threat assessment. Consistent formal and refresher training on immediate or local battlefield CBRN threat assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability. Although current manual processes are adequate, as the availability of more sources of data become available for use, manual process will have to be automated and will require training.

⁴ Current DOTLPF adequately addresses the conduct of CBRN/TIM threat assessment using existing largely manual processes and locally devised checklists for accomplishment. DOTLPF instituting and supporting rapid and secure reachback capabilities for joint CBRN expert support and assistance, and CBRND information, plans, procedures, and lessons learned does not exist DOTLPF will need to continue to evolve as systems, tactics, and situations change.

9.4.3 Functional Solution Analysis

9.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Absence of refined automated processes.
Partial Non-Materiel Solutions: *Doctrine:* Doctrine is required for automated processes.
2. **Deficiency:** Lack of staff training programs.
Partial Non-Materiel Solutions: *Training:* Formal and refresher training is required.
Personnel: Special attention to assigning experienced personnel where needed is required.
3. **Deficiency:** Inadequate recurring staff training.
Partial Non-Materiel Solutions: *Training:* Reoccurring staff training is required.

9.4.3.2 IMA Assessment Summary

Table 9.4-2 is a list of ideas for material approaches and a corresponding description of each idea. The material approaches identified focus on the development and fielding of automated processes and tools for CBRND. Table 9.4-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.4-2. TASHA 4: Materiel Approaches

Idea for Materiel Approach	Description
Simulation and models	Develop a system enabling operational commanders to display current operational picture and to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database system	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Field CBRN information resource	Develop a field resource system that will provide and search archived information for CBRN/TIM agents, effects, treatments, etc.
Reachback capability	Develop a system providing the ability to rapidly and securely reachback and contact CBRN experts and obtain CBRN information and lessons learned. If necessary, develop plans and procedures.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities and threat assessments.

Table 9.4-3. TASHA 4: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Simulation and Models</p>	<p>Database System</p>	<p>Field Information Resource</p>	<p>Reachback capability</p>	<p>Risk Factor Templates</p>
<p>Absence of refined automated processes</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Lack of staff training programs</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>
<p>Inadequate recurring training</p>	<p>X</p>	<p>X</p>			<p>X</p>

9.5 Task TASHA 5: Conduct immediate or local battlespace vulnerability assessment**9.5.1 Functional Area Analysis****9.5.1.1 Definition**

Local commanders perform vulnerability assessments based on adversary and threat profiles for their respective area of operation. A vulnerability assessment is a continuous process encompassing a local intelligence preparation of the battlespace; detailed threat assessment; and determination of the capability to avoid or protect against contamination, sustain operations, and restore full mission capability. Includes an evaluation of the causative impact of local adversary COAs. Also includes identifying and assessing the impact on affected units, missions, and tasks. Assessment results are used to plan and prepare future operations and correlate with other local security and force protection means. Likely targets and attack means are identified via this task.

9.5.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.5.1.2.1 Supported Task: OPSHA 2

9.5.1.2.2 Lateral Task: N/A

9.5.1.2.3 Supporting Task: N/A

9.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited modern military systems. (C2.2.5)
3. High interoperability. (C2.2.6)
4. Poor joint staff integration. (C2.3.1.1)
5. Marginal intelligence database. (C2.4.2)
6. Difficult theater intelligence access. (C2.4.4)
7. Moderate certitude of data. (C2.4.6)

Civil. N/A

9.5.2 Functional Needs Analysis

9.5.2.1 Capability and Deficiency Assessment Summary

Table 9.5-1 discusses individual capabilities to perform this task to the designated standards. Current (manual) capability includes commercial off-the-shelf (COTS) and government off-the-shelf (GOTS) equipment with JOEF, on standard C4ISR equipment, as the future capability to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Current processes are predominantly manual with limited automation. Process is labor- and time-consuming, and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using Doctrine and locally devised checklists. The process is slow and prone to human error. Data may not always be available for newly defined threats. Although limited simulation tools are available, these are not generally in use by operating forces. Existing DoD communication infrastructure systems and JWARN, where available, are used to disseminate CBRN intelligence and warnings. Manual ATP-45 format messages are created when automated warning systems are unavailable. There is insufficient visibility of CBRND in the COP. However, existing communications systems are not fully interoperable and are dependent upon systems available to elements of the JTF. Attentiveness is required to ensure the effectiveness of the intelligence and operations centers in this mixed communications environment. Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN threat assessment. Consistent formal and refresher training on immediate or local battlefield CBRN threat assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations.

Projected Near/Mid-Term Capability and Deficiency

The mid-term initial fielding of JWARN (Increment 1 – IOC), JOEF, and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs and provides the capability to refine cell specialist skills as part of local training and exercising/evaluations. Net-centric operations and mandatory DISA standards address interoperability and the interchange of information among elements. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. However, interoperability may not exist with coalition partner and host-nation systems. Further, the degree of interoperability between JTF element systems is dependent upon the extent of DISA standard and net-centric capable compliant replacement or modified legacy systems fielded by the Services in support of operations. DOTLPF will need to continue to evolve as systems, tactics, and situations change.

Projected Far-Term Capability and Deficiency

Joint developmental information systems, including JOEF, JEM, and JWARN programs, are scheduled to field prior to the far term. All systems will be in compliance with the joint staff mandated NR-KPP and will fully support DoD interoperability across the services.

Table 9.5-1. TASHA 5: Capability and Deficiency Assessment

Capability: Processes for Assessing Vulnerability	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability	6 ¹	6 ²	7 ³	4 ⁴	2 ⁵	5 ⁶	4 ⁷	8 ⁸
Near/Mid-Term Overall Capability	7	7	8	5	5	5	4	8
Far-Term Overall Capability	8	8	8	6	8	5	4	8

	FAA Measure	Scale
M1	Vulnerability assessment is useful.	8–10: Vulnerability assessment utility is high and is based upon standardized automated system processing, analysis, and evaluation with trained staff review and involvement. 4–7: Vulnerability assessment utility exists but widely varies between units and staffs; depends on manual processes; and relies on the experience, training, and availability of the performing staff and the quality of selected assessed information. 1–3: Vulnerability assessment utility is low and unable to support operations. 0: Vulnerability assessment utility is nonexistent and unable to support operations.
M2	Analytical tools are used to evaluate plausible adversary COAs.	8–10: Automated systems substantially or fully perform analytical processing of CBRN/TIM threat intelligence to evaluate plausible adversary COAs, including adversary CBRN employment or TIM ROTA. 4–7: Analytical process for the evaluation of plausible adversary COAs (including CBRN employment) is performed predominantly using manual means and is limited to available trained resources and the quality of selected assessed data. 1–3: Evaluation of plausible adversary COAs are performed using manual means and is limited to available trained resources and the quality of the selected assessed data. 0: No capability to perform analytical processes for the evaluation of plausible adversary COAs.
M3	Vulnerability assessment process exploits time-sensitive or priority actionable CBRN/ TIM intelligence.	8–10: Time-sensitive or priority-actionable CBRN/TIM intelligence is exploited in the vulnerability assessment process, and the process provides for update and assessment as new intelligence is received. 4–7: Time-sensitive or priority-actionable CBRN/TIM intelligence is included in the initial vulnerability assessment process. Update and reassessment as new intelligence is received are inadequate. 1–3: Time-sensitive or priority-actionable CBRN/TIM intelligence is included in the vulnerability assessment process. Update and reassessment as new intelligence is received are absent. 0: Time-sensitive or priority-actionable CBRN/TIM intelligence is not exploited in the vulnerability assessment process.
M4	Means available to collaboratively perform assessments.	8–10: Electronic collaborative workspaces with automated tools exist and are predominantly applied for evaluation, assessment, planning, and decisioning processes. 4–7: Manual collaborative processes are predominantly applied for the evaluation, assessment, planning, and decisioning processes. 1–3: Collaborative processes are inadequate for the conduct of evaluation, assessment, planning, and decisioning processes. 0: Collaborative processes do not exist for the conduct of evaluation, assessment, planning, and decisioning processes.

M5	Means exist to visualize the extent of Adversary COAs on forces of interest.	<p>8–10: Standardized modeling and simulation (M&S) capability exists to assess and visualize adversary COAs (both CBRN and TIM) and their effects, is applied by all operating forces and staffs, is integrated into the COP, and continuously refreshes as new information is drawn from interoperable sources.</p> <p>4–7: Operating force staffs possess M&S capability and resources to perform M&S visualization of adversary COAs (CBRN or TIM) and their effects, is commonly applied by operating forces and staffs, is integrated into the COP, and refreshes as new information is processed.</p> <p>1–3: Visualization is inadequate of adversary COAs and their effects.</p> <p>0: Visualization of adversary COAs and their effects are nonexistent.</p>
M6	Operational and analytical/planning staffs have the training and experience to effectively assess adversary CBRN COAs.	<p>8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of CBRN COA assessment.</p> <p>4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the processing and conduct of adversary CBRN COA assessment.</p> <p>1–3: Adversary CBRN COA assessment training is inadequate to support operations.</p> <p>0: Adversary CBRN COA assessment training is nonexistent.</p>
M7	There are sufficient doctrine and TTPs for effective vulnerability assessments.	<p>8–10: Doctrine, policies, procedures, and TTPs are adequate for effective vulnerability assessments and are actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations.</p> <p>4–7: Doctrine, policies, procedures, and TTPs for vulnerability assessment exist but are predominantly manual and are periodically revised to exploit technologies and operational changes.</p> <p>1–3: Doctrine, policies, procedures, and TTPs are inadequate for the conduct of vulnerability assessments</p> <p>0: Doctrine, policies, procedures, and TTPs for vulnerability assessments are nonexistent.</p>
M8	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Utility is dependent upon the experience, training, and availability of the necessary staff, as well as the quality and accessibility of information. Current capability is achieved using doctrine and locally devised checklists. The process is predominantly manual and prone to errors and omissions. JOEF and JEM are envisioned as providing forces with the tools to perform vulnerability assessments with higher levels of utility. These systems will be initially fielded in the mid term. The JOEF is projected to include analytical tools for the evaluation of COAs and conduct of assessments. Refinement and development of additional analytical tools that draw information from diverse sources operating using GIG Enterprise Services will further enhance the value and application of JOEF. Visualization through modeling and simulation is projected to be accomplished using JEM providing rapid recognition and attainment of situational awareness. JOEF and JEM are programmed to link with the COP via GIG Enterprise Service. JOEF and JEM will require dedicated automated resources. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term.

² Current processes are predominantly manual with limited automation. Process is labor- and time-consuming and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error and omissions. Data may not always be available for newly defined threats and possible countermeasures. TIM vulnerability assessment evaluation processes are currently nonexistent for operational forces and data are limited to civilian HAZMAT and ITF-40 sources. Although limited simulation tools are available for CBRN, these are not

generally in use by operating forces. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. Additionally, they may be also used to assess actual events and for training. JOEF and JEM will be initially fielded in the mid term with full fielding completed early in the far term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined. The JOEF is projected to include analytical tools for the evaluation of COAs. Refinement and development of additional tools for COA that draw information from diverse sources operating using GIG Enterprise Services will further enhance the value and application of JOEF. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. Visualization through modeling and simulation is projected to be accomplished using JEM. JOEF and JEM are programmed to link with the COP via GIG Enterprise Service.

³ Effective exploitation of time-sensitive or priority-actionable CBRN/TIM intelligence in processing is currently dependent upon the training, experience, and availability of performing personnel. Staff capabilities and performance will vary between units and levels of command from marginal to excellent. In all cases, exploitation in the process is human dependent and therefore subject to errors, omissions, and subjective evaluation. JOEF is projected to include analytical tools for the evaluation of plausible adversary COAs and the conduct of assessments. JOEF is programmed for initial fielding in the mid term with full fielding completed early in the far term. On-going collection of information and adjustments are projected to be integral to the system. Refinement and development of additional analytical tools that draw information from diverse sources operating using GIG Enterprise Services will further enhance the value and application of JOEF. JOEF is programmed to link with the COP via GIG Enterprise Service. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. The efficiency and utility of the system will be influenced by emerging C4ISR systems and processes residing on and using the GIG Enterprise Service.

⁴ Assessments currently require collaboration using traditional means such as telephone calls, personal visits, mail routing, e-mail, and other similar means. There is an absence of electronic collaborative workspaces within which differing functions and activities are able to cooperatively assist the evaluation, assessment, planning, and decisioning process without time delay and the need for physical presence. Automated tools could effectively enhance and be enhanced by these electronic rooms. Collaborative workspaces support net-centric operations. These workspaces are inevitable with the increasing utility of automation and information sharing.

⁵ Insufficient simulation capability in available automated assessment tools or completely unavailable for manual vulnerability assessment. Currently available modeling and simulation tools are limited to HPAC- and VLSTRACK-based systems designed for graphics-enhanced systems. COTS M&S tools, such as ADASHI, provide limited capabilities but are not DISA certified. Current M&S tools, additionally, are not interoperable and are not linked within the COP. They must be manually data entered and manipulated. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. Additionally, they may be also used to assess actual events and for training. JOEF and JEM will be initially fielded in the mid term with full fielding completed early in the far term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined. JOEF is projected to include analytical tools for the evaluation of COAs and will draw information from diverse sources operating using GIG Enterprise Services. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. Visualization through modeling and simulation is projected to be accomplished using JEM. JOEF and JEM are programmed to link with the COP via GIG Enterprise Service.

⁶ Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN vulnerability assessment. Consistent formal and refresher training on immediate or local battlefield CBRN vulnerability assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. However, supporting and requiring DOTLRF is necessary to ensure attainment and maintenance of capability.

⁷ Doctrine, policies, procedures, and TTPs exist and are sufficient for the manual performance of effective vulnerability assessment. The same is not true for current, emerging, and projected automated and simulated based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

⁸ Current DOTLRF adequately address the conduct of CBRN/TIM vulnerability assessment using existing largely manual processes and locally devised checklists for accomplishment. DOTLRF will need to evolve as systems, tactics, and situations change.

9.5.3 Functional Solution Analysis

9.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Absence of interactive assessment tools that work within GIG Enterprise Services.
Non-Materiel Solutions: None
- 2. Deficiency:** Current modeling and simulation do not rapidly predict CBRN and TIM impacts to support operations and planning.
Non-Materiel Solutions: None
- 3. Deficiency:** Lack of CBRN automated assessment tools within an electronic collaborative workspace in which automated assessment tools can be applied.
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of a thorough simulation-based assessment tool.
Non-Materiel Solutions: None
- 5. Deficiency:** Too few experienced, highly skilled personnel are available for staffs.
Non-Materiel Solutions: *Training:* Consistent formal and recurring refresher training programs to attain and maintain staff proficiency is required. *Personnel:* Priority needs to be given to developing and assigning adequate numbers of experienced and skilled personnel to the appropriate battle staffs.
- 6. Deficiency:** Absence of easy-to-use automated vulnerability assessment tools.
Non-Materiel Solutions: None
- 7. Deficiency:** Absence of doctrine and TTPs for emergent automated and simulation based assessment tools.
Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs must maintain relevance and currency in the changing operational environment; exploit the full range of technologies available, emerging, and projected through the doctrine revision and life cycle; and provide for active and timely revisions to fully take advantage of changes in tactics, systems, and situations.

9.5.3.2 IMA Assessment Summary

Table 9.5-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches identified point to CBRND automated tools as well as interfacing to existing and developmental C4ISR systems and providing for active collaboration between units, commands, services and coalitions. Table 9.5-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.5-4. TASHA 5: Materiel Approaches

Idea for Materiel Approach	Description
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, TIM ROTA impacts, and friendly force vulnerabilities.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reachback and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Link to GIS	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to the COP.

Table 9.5-5. TASHA 5: IMA Assessment

Identified Gaps / Ideas for Material Approaches (IMA)	Simulations and Models	Database	Reachback Capability	Risk Factor Templates	Link to GIS
Absence of tools that work within GIG Enterprise Services.				X	X
Absence of real-time assessment simulations to support operations and planning	X	X	X	X	X
Lack of electronic collaborative workspace, in which automated assessment tools can be applied.					X
Lack of thorough simulation based assessment tool that interactively links with the COP.	X	X	X	X	X
Absence of easy-to-use automated assessment tools.	X	X	X	X	X

9.6 Task TASHA 6: Conduct immediate or local battlespace risk assessment

9.6.1 Functional Area Analysis

9.6.1.1 Definition

Based on the vulnerability assessment of TASHA 5, plausible risks are assessed and prioritized. Probability and likely time of occurrence, along with potential impact and persistency are salient risk factors. This is a dynamic evaluation of the operational situation, which leads to a determination of the potential risk to operational capabilities and mission accomplishment given the potential CBRN/TIM threat. CBRN/TIM-based risks are correlated with all other operational risks. Staffs at the relevant echelons assess the potential impact of the risk assessment on affected JTF elements.

9.6.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.6.1.2.1 Supported Task: OPSHA 2

9.6.1.2.2 Lateral Task: TASUST 24

9.6.1.2.3 Supporting Task: N/A

9.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited modern military systems. (C2.2.5)
3. High interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Marginal intelligence database. (C2.4.2)
6. Difficult theater intelligence access. (C2.4.4)
7. Moderate certitude of data. (C2.4.6)

Civil. N/A

9.6.2 Functional Needs Analysis

9.6.2.1 Capability and Deficiency Assessment Summary

Table 9.6-1 discusses capabilities to perform this task to the designated standards. Current (manual) capabilities to conduct battlespace risk assessment are limited to COTS and GOTS equipment. JWARN, JEM and JOEF, when fielded, will improve the capability. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Current processes are predominantly manual with limited automation. Process is labor- and time-consuming, and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error. Data may not always be available for newly defined threats. Although limited simulation tools are available, these are not generally in use by operating forces. Existing DoD communication infrastructure systems and JWARN, where available, are used to disseminate CBRN intelligence and warnings. Manual ATP-45 format messages are created when automated warning systems are unavailable. There is insufficient visibility of CBRND in the COP. However, existing communications systems are not fully interoperable and are dependent upon systems available to elements of the JTF. Attentiveness is required to ensure the effectiveness of the intelligence and operations centers in this mixed communications environment. Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN threat assessment. Consistent formal and refresher training on immediate or local battlefield CBRN threat assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations.

Projected Near/Mid-Term Capability and Deficiency

The mid-term initial fielding of JWARN (Increment 1 – IOC), JOEF, and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs and risks to friendly forces and operations and provide the capability to refine cell specialist skills as part of local training and exercising/evaluations. Net-centric operations and mandatory DISA standards address interoperability and the interchange of information among elements. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. However, interoperability may not exist with coalition partner and host-nation systems. Further, the degree of interoperability between JTF element systems is dependent upon the extent of DISA standard and net-centric capable compliant replacement or modified legacy systems

fielded by the Services in support of operations. DOTLPF will need to continue to evolve as systems, tactics, and situations change. Availability of trained and experienced personnel is essential to effective CBRN/TIM operations.

Projected Far-Term Capability and Deficiency

Full fielding of JWARN, JOEF, and JEM is projected to be completed in the early far term. Continued fielding of DISA standard and net-centric capable systems to operational units enhances the capability to conduct CBRN/TIM threat information collection, dissemination, and interchange. All legacy systems are projected to either be replaced by, or be in compliance with, DISA standards and fully support net-centric operations in the far term.

Table 9.6-1. TASHA 6: Capability and Deficiency Assessment

Capability: Risk Assessment—COTS/GOTS	M1	M2	M3	M4	M5	M6
Current Overall Capability	6 ¹	6 ²	5 ³	4 ⁴	2 ⁵	8 ⁶
Near/Mid-Term Overall Capability	7	7	5	4	5	8
Far-Term Overall Capability	8	8	5	4	8	8

	FAA Measure	Scale
M1	Risk assessment is useful.	8–10: Risk assessment utility is high and is based upon standardized automated system processing, analysis, and evaluation with trained staff review and involvement. 4–7: Risk assessment utility exists but widely varies between units and staffs and is dependent upon manual processes dependent reliant upon the experience, training, and availability of the performing staff and the quality of selected assessed information. 1–3: Risk assessment utility is low and unable to support operations. 0: Risk assessment utility is low or nonexistent and unable to support operations.
M2	Analytical tools are used to perform a risk assessment.	8–10: Automated systems substantially or fully perform analytical processing for execution of risk assessment. 4–7: Analytical process for conduct of risk assessment is performed predominantly using manual means and is limited to available trained resources and the quality of the selected assessed data. 1–3: Evaluation assessments of risks are performed using manual means and are limited to available trained resources and the quality of the selected assessed data. 0: No capability to perform analytical processes for the performance of risk assessment.
M3	Operational and analytical/ planning staffs have the training and experience to effectively assess risk base on adversary CBRN COAs.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of risk assessment associated with adversary CBRN COAs. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the conduct of risk assessment associated with adversary CBRN COAs. 1–3: Adversary CBRN COA assessment training is inadequate to support operations. 0: Training on risk assessment for adversary CBRN COAs is nonexistent.
M4	There are sufficient doctrine and TTPs for effective risk assessments.	8–10: Doctrine, policies, procedures, and TTPs are adequate for effective risk assessments and is actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations. 4–7: Doctrine, policies, procedures, and TTPs for risk assessment exist but are predominantly manual and are periodically revised to exploit technologies and operational changes. 1–3: Doctrine, policies, procedures, and TTPs are inadequate for the conduct of risk assessments 0: Doctrine, policies, procedures, and TTPs for risk assessments are nonexistent.

M5	Means exist to visualize the extent of adversary COAs on forces of interest.	<p>8–10: Standardized M&S capability exists to assess and visualize adversary COAs (both CBRN and TIM) and their effects, is applied by all operating forces and staffs, is integrated into the COP, and continuously refreshes as new information is drawn from interoperable sources.</p> <p>4–7: Operating force staffs possess M&S capability and resources to perform M&S visualization of adversary COAs (CBRN or TIM) and their effects, is commonly applied by operating forces and staffs, is integrated into the COP, and refreshes as new information is processed.</p> <p>1–3: Visualization is inadequate of adversary COAs and their effects.</p> <p>0: Visualization of adversary COAs and their effects are nonexistent.</p>
M6	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Utility is dependent upon the experience, training, and availability of the necessary staff, as well as the quality and accessibility of information. Current capability is achieved using doctrine and locally devised checklists. The process is predominantly manual and prone to errors and omissions. JOEF and JEM are envisioned as providing forces with the tools to perform risk assessments with higher levels of utility. These systems will be initially fielded in the mid term with full fielding completed early in the far term. JOEF is projected to include analytical tools for the evaluation of COAs and conduct of assessments. Refinement and development of additional analytical tools that draw information from diverse sources operating using GIG Enterprise Services will further enhance the value and application of JOEF. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. Visualization through modeling and simulation is projected to be accomplished using JEM providing rapid recognition and attainment of situational awareness. JOEF and JEM are programmed to link with the COP via the GIG Enterprise Service. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services.

² Current processes are predominantly manual with limited automation. Process is labor- and time-consuming, and dependent upon the training, experience, and availability of performing personnel as well as the quality of the assessed data. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error and omissions. Data may not always be available for newly defined threats and possible countermeasures. TIM risk assessment evaluation processes are currently nonexistent for operational forces and data are limited to civilian HAZMAT and ITF-40 sources. Although limited simulation tools are available for CBRN, these are not generally in use by operating forces. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. Additionally, they may be also used to assess actual events and for training. JOEF and JEM will be initially fielded in the mid term with full fielding completed early in the far term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined. The JOEF is projected to include analytical tools for the evaluation of COAs. Refinement and development of additional tools for COA that draw information from diverse sources operating using GIG Enterprise Services will further enhance the value and application of JOEF. Visualization through modeling and simulation is projected to be accomplished using JEM. JOEF and JEM are programmed to link with the COP via the GIG Enterprise Service. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term.

³ Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN risk assessment. Consistent formal and refresher training on immediate or local battlefield CBRN risk assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

⁴ Doctrine, policies, procedures, and TTPs exist are sufficient for the manual performance of effective risk assessment. This is not true for current, emerging, and projected automated and simulated based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

⁵ Insufficient simulation capability in available automated assessment tools or completely unavailable for manual risk assessment. Currently available modeling and simulation tools are limited to HPAC- and VLSTRACK-based systems designed for graphics-enhanced systems. COTS M&S tools, such as ADASHI, provide limited capabilities but are not DISA certified. Current M&S tools, additionally, are not interoperable and are not linked within the COP. They must be manually data entered and manipulated. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. Additionally, they may be also used to assess actual events and for training. JOEF and JEM will be initially fielded in the mid term with full fielding completed early in the far term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined. The JOEF is projected to include analytical tools for the evaluation of COAs and will draw information from diverse sources operating using GIG Enterprise Services. Visualization through modeling and simulation is projected to be accomplished using JEM. The efficiency and utility of JOEF and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JOEF and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. JOEF and JEM are programmed to link with the COP via GIG Enterprise Service.

⁶ Current DOTLPP adequately address the conduct of CBRN/TIM vulnerability assessment using existing largely manual processes and locally devised checklists for accomplishment. DOTLPP will need to evolve as systems, tactics, and situations change.

9.6.3 Functional Solution Analysis

9.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Absence of tools that work within GIG Enterprise Services.
Non-Materiel Solutions: None
- 2. Deficiency:** Too few experienced, highly skilled personnel are available for staffs.
Non-Materiel Solutions: *Training:* Consistent formal and recurring refresher training programs to attain and maintain staff proficiency is required. *Personnel:* Give priority to developing and assigning adequate numbers of experienced and skilled personnel to the appropriate battle staffs.
- 3. Deficiency:** Absence of automated assessment tools that interoperate with the C4I infrastructure.
Non-Materiel Solutions: None
- 4. Deficiency:** Lack of a thorough simulation-based assessment tool.
Non-Materiel Solutions: None

9.6.3.2 IMA Assessment Summary

Table 9.6-2 is a list of ideas for material approaches and a corresponding description of each idea. Suggested approaches cover the additional automation and CBRND tools needed to accomplish this task, interfaces to the GIG, and developing the necessary simulations to aid in decision making. Table 9.6-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.6-4. TASHA 6: Materiel Approaches

Idea for Materiel Approach	Description
Simulation and models	Develop a system that will enable operational commanders to display current operational picture and to efficiently execute “what if” scenarios and facilitate the evaluation of risk assessments.
Databases	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reachback and contact CBRN experts and obtain CBRND plans, procedures, information, support, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.

Table 9.6-5. TASHA 6: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Simulating and Models</p>	<p>Databases</p>	<p>Reachback Capability</p>	<p>Risk Factor Templates</p>	<p>Link to GIS</p>
<p>Absence of tools that work within GIG Enterprise Services</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>
<p>Absence of easy-to-use automated assessment tools</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	
<p>Lack of thorough simulation based assessment tool that interactively links with the COP</p>	<p>X</p>	<p>X</p>		<p>X</p>	<p>X</p>

9.7 Task TASHA 7: Conduct collaborative response and mitigation planning for a CBRN attack or TIM release

9.7.1 Functional Area Analysis

9.7.1.1 Definition

Staff planners collaboratively plan for CBRND actions to ensure prepared and ready forces, adequate CBRN force allocation, and timely response and mitigation. Includes access to planning tools, data repositories, and automated resources necessary to perform planning functions. Also includes collaboration among coalition and joint force elements at the appropriate echelons. Force protection, operations, logistics, medical, intelligence, and personnel considerations are critical in the planning process. Includes consideration of Shape, Sustain, Sense, and Shield planning factors. Includes planning for far-term contingencies, future and current operations, exercises and training. The operating premise is flexible response to ensure the means for staff elements to collaboratively plan in a dynamic, operational environment throughout the local or immediate battlespace. Plans are updated based on the operational situation.

9.7.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.7.1.2.1 Supported Task: OPSHA 6

9.7.1.2.2 Lateral Task: TASUST 25

9.7.1.2.3 Supporting Task: N/A

9.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Precipitating and stormy weather. (C1.3.1.3)

Military

1. Minimal mission instructions. (C2.1.1)
2. Partial preexisting arrangements. (C2.1.1.2)
3. Partially completed mission preparation. (C2.1.3)
4. Some or no interoperability. (C2.2.6)
5. Partial joint staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)

7. High information volume. (C2.3.1.9)

Civil. N/A

9.7.2 Functional Needs Analysis

9.7.2.1 Capability and Deficiency Assessment Summary

Table 9.7-1 discusses individual capabilities to perform this task to the designated standards. Current planning capabilities are limited, and dependent on the skills of NBC specialists, predominantly manual processes, and doctrine. Increased automation and enhanced doctrine will improve this capability. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Doctrine, policies, procedures, and TTPs provide the capability to plan for, respond to, and conduct mitigation of CBRN attacks and TIM releases. Though predominantly manual in nature, they do provide the commander and staff with a reasonable ability to consider CBRND activities and functions. Deficiencies include the need for the development of skilled and knowledgeable staff planners and NBC specialists, the provision of mandatory formal and recurrent refresher training of these personnel, the lack of automated tools and processes supporting planning and operational activities/functions, and collaboration and integration/interoperability with coalition partners and other authorized entities. Doctrine, policies, procedures, and TTPs must incorporate changes in systems, tactics, and situations reflective of not only that of the current force but considering both emerging and projected changes with potential to impact and enhance operations.

Projected Near/Mid-Term Capability and Deficiency

No change is currently projected for this task.

Projected Far-Term Capability and Deficiency

No change is currently projected for this task.

Table 9.7-1. TASHA 7: Capability and Deficiency Assessment

Capability: Collaborative Response and Mitigation Planning for a CBRN Attack or TIM	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	5 ¹	8 ²	4 ³	5 ⁴	2 ⁵	3 ⁶	8 ⁷
Near/Mid-Term Overall Capability	5	8	4	5	4	4	8
Far-Term Overall Capability	6	9	4	5	7	7	8

	FAA Measure	Scale
M1	Plans address all pertinent Sense, Shape, Shield, and Sustain issues.	8–10: Automated processes, templates, and collaborative spaces ensure all relevant issues and needs are addressed. Planners and CBRN specialists are highly trained and knowledgeable and possess access to needed reference material and impacting information. 4–7: Manual processes are predominantly applied to address pertinent CBRND issues and are dependent upon the training, skill, experience, and knowledge of planning participants. 1–3: Manual processes are predominantly applied to address interest issues and are dependent upon the training, skill, experience, and knowledge of planning participants and supporting staff. 0: Processes are inadequate or do not exist for the identification and planning of pertinent CBRND issues, and/or planning participants do not possess adequate training, skill, experience, and knowledge to perform the task.
M2	Disseminated plans are effective.	8–10: Plan utility is high and based upon collected information, available data, and capabilities of the force. 4–7: Plan utility is limited and meets most needs of the force. 1–3: Plan utility is low and unable to support and/or direct operations. 0: Plan utility is low or nonexistent and unable to support and/or direct operations.
M3	Planning staffs have the training and experience to effectively plan for CBRND operations.	8–10: All intelligence, operations, and CBRND staff personnel are formally trained, receive recurring refresher training, and possess experience in planning for CBRND operations. 4–7: Limited training is provided, is inconsistent, and/or is administered only as needed to prepare for operations to intelligence, operations, and CBRN cell specialists in planning for CBRND operations. 1–3: CBRND operations planning training is inadequate to support operations. 0: CBRND operations planning training is nonexistent.
M4	Doctrine and TTPs are sufficient for effective planning.	8–10: Doctrine, policies, procedures, and TTPs are adequate for effective CBRND planning and is actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations. 4–7: Doctrine, policies, procedures, and TTPs for CBRND planning exist but are predominantly manual and are periodically revised to exploit technologies and operational changes. 1–3: Doctrine, policies, procedures, and TTPs are inadequate for the conduct of CBRND planning 0: Doctrine, policies, procedures, and TTPs for CBRND planning are nonexistent.

M5	An interoperable, collaborative planning process is in place for all relevant echelons within joint force, coalition, and other relevant organizations.	<p>8–10: Secure, interoperable, and interactive electronic processes and workspaces with automated tools exist and are predominantly applied by all relevant echelons of the joint force, coalition partners, and other authorized entities.</p> <p>4–7: Collaborative and interoperable manual planning processes are predominantly applied by most planning staffs of the joint force, coalition partners, and other authorized entities. Collaboration is performed via formal and informal review and comments of drafted material, on-site representation, and/or voice discussions.</p> <p>1–3: Collaborative planning processes are inadequate or are not collaborative or interoperable within or between elements of the joint force, coalition partners, and other authorized entities.</p> <p>0: Collaborative planning processes do not exist.</p>
M6	Standing plans are adaptable to dynamically changing situations.	<p>8–10: Plans, processes, and systems facilitate the rapid ability to adjust plans and operations to dynamically changing conditions and situations and to effectively disseminate the adjustments as needed to meet operational requirements.</p> <p>4–7: Plans are designed to provide a measure of flexibility to meet changing situations. Although they may be manual in nature, processes facilitate the dissemination of information to operational elements for required taskings. Although plan segments may be overcome by events and require subsequent corrective action, the overall plan remains applicable and supportive of operations.</p> <p>1–3: Developed plans are inadequate or unable to facilitate rapid adaptation to meet dynamically changing and challenging operational circumstances. Preoperations plans are applied as guides providing overall intent and goals. Plans may be overcome by events and operational guidance is reliant upon the experience and knowledge of the staff and commander.</p> <p>0: Developed plans are inadequate or unable to facilitate rapid adaptation to meet dynamically changing and challenging operational circumstances and cannot be applied as guides providing overall intent and goals. Plans are easily and rapidly overcome by events and operational guidance is fully reliant upon the experience and knowledge of the staff and commander.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Manual processes exist and are applied by staff planners and NBC specialist. However, the breadth and depth of planning for CBRND issues is dependent upon the knowledge, skills, and experience of the participants in the planning process.

² Plan utility is usually high and based upon the collective knowledge, skills, and experience of planning participants drawing upon data, information, and doctrine pertinent to the anticipated operation.

³ Training is generally limited to when essential and required, or as necessary to prepare for operations.

⁴ Doctrine exists for the manual performance of CBRND planning and is revised periodically through change sheets to reflect necessary changes in operations, tactics, and concepts.

⁵ Planning processes do not adequately support and address the collaborative and interoperable planning processes with coalition partners and other authorized entities. Such partners and entities may lack necessary advanced C4ISR systems and capabilities. There frequently exists training differentials between U.S. and coalition partner forces further complicating the development of effective and collaborative relationships.

⁶ Plans are frequently developed in general terms to incorporate flexibility. Frequently, events and circumstances progress rapidly and demand the focused attention of the staff to adjust operations. In these circumstances, formal plans are changed based upon the experience and knowledge of the staff and commander and are based upon the plan's overall intent and goals. Taskings are disseminated as determined to meet perceived needs based upon available and recognized information. However, these changes are often in reaction to events and may not consider longer-term implications until tempo permits

⁷ Current DOTLPP adequately address the conduct of CBRN/TIM planning, response, and mitigation using existing largely manual processes and locally devised checklists for accomplishment. DOTLPP will need to evolve as systems, tactics, and situations change.

9.7.3 Functional Solution Analysis

9.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Inadequate emphasis upon continued training and proficiency development.
Non-Materiel Solutions: *Training:* Continued formal and recurrent refresher training of staffs and NBC specialists is required. Develop exercises and evaluations closely simulating battlefield situations, circumstances, and tempo challenge and enhance acquired skills. *Leadership:* Leaders must emphasize continued training of staffs and NBC specialists are required.
2. **Deficiency:** Insufficient access and availability to automated tools.
Partial Non-Materiel Solutions: *Doctrine:* Doctrine is required for automated processes.
3. **Deficiency:** Insufficient training.
Non-Materiel Solutions: *Training:* Specialized formal and recurrent refresher training program is required for staff. *Leadership:* Leaders must emphasize continued training of staffs and NBC specialists required.
4. **Deficiency:** Insufficient availability of experienced personnel.
Non-Materiel Solutions: *Personnel:* Special attention is required to ensure availability of experienced and trained personnel to staffs.
5. **Deficiency:** Insufficient doctrine and TTPs to ensure effective integrated, interoperable, and collaborative planning in a Net Centric operational environment.
Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs must maintain relevance and currency in the changing operational environment; exploit the full range of technologies available, emerging, and projected through the doctrine revision and life cycle; and provide for active and timely revisions to fully take advantage of changes in tactics, systems, and simulations.
6. **Deficiency:** Inadequate enhancement and adjustment of the planning process.
Non-Materiel Solutions: *Doctrine:* Doctrine, the planning process, and enabling tools must exploit the full range of technologies available, emerging, and projected so as to enhance the effectiveness of plans and, concurrently, operations. *Training:* Staff training must include collaborative response for response and mitigation activities.
7. **Deficiency:** Lack of planning with coalition partners.
Non-Materiel Solutions: *Doctrine:* Doctrine, the planning process, and enabling tools must exploit the full range of technologies available, emerging, and projected so as to enhance the effectiveness of plans and, concurrently, operations. Processes and systems

must support interoperability and collaboration with coalition partners and other relevant entities.

9.7.3.2 IMA Assessment Summary

Table 9.7-4 is a list of ideas for material approaches and a corresponding description of each idea. The approach focuses on automated CBRND tools, processes, and their linkages to enhance operational capabilities, increase force effectiveness, and promote greater interoperability and integration of elements.

Table 9.7-4. TASHA 7: Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Insufficient access and availability to automated tools.	Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios to facilitate the evaluation and selection of response and mitigation activities.
	Databases	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
	Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
	Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
	Link to GIS	Develop a system resident in standard C4ISR systems with interface with GIS to provide input to the COP.

9.8 Task TASHA 8: Conduct unit and individual CBRND training and rehearsal

9.8.1 Functional Area Analysis

9.8.1.1 Definition

Includes CBRND training and rehearsal for local or immediate actions to ensure readiness. Encompasses special training rehearsals by CBRN response teams, units, and staff cells. Non-CBRN personnel and units train to protect, avoid, and mitigate against attack effects. Tabletop and simulated exercises are useful for gaming plausible actions in a contaminated environment. Special attention is given to incorporating CBRND actions into local war games, evaluations, rehearsals, and exercises for all units.

9.8.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.8.1.2.1 Supported Task: OPSHA 4

9.8.1.2.2 Lateral Task: N/A

9.8.1.2.3 Supporting Task: N/A

9.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces assigned. (C2.2.1)
3. Partial personnel capability. (C2.2.4)
4. Limited personnel experience. (C2.2.4.5)

Civil. N/A

9.8.2 Functional Needs Analysis

9.8.2.1 Capability and Deficiency Assessment Summary

Table 9.8-1 discusses individual capabilities to perform this task to the designated standards. Capabilities include CBRN staff cells and units, non-CBRND personnel and units trained and rehearsed to operate in a CBRN environment through the application of challenging exercises

and evaluations, realistic training tools, and comprehensive doctrine. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

The ability to conduct realistic training is currently limited due to operations tempo and lack of adequate resources. Training tools are predominantly manual in nature and are limited. CBRN/TIM specialists are trained to perform their tasks and sufficient CBRND equipment and material is available for the conduct of training and exercises. Current deficiencies include limited available time for CBRND training due to other demands on the unit; lack of adequate simulants, simulations, and models; and lack of accurate centralized CBRND data.

Projected Near/Mid-Term Capability and Deficiency

The application of the programmed JWARN (Increment 1 – IOC), JOEF, and JEM will provide the ability to conduct simulated CBRN/TIM environment operations to a greater degree of realism. The initial fielding of these systems is projected in the mid term. Projected deficiencies continue to include limitations due to routine operations tempo, insufficient simulants, and inadequate CBRND Staff resources. The lack of DOTLPF supporting automated CBRND processes is a deficiency associated with the fielding of automated CBRND systems.

Projected Far-Term Capability and Deficiency

Full fielding of JWARN, JOEF, and JEM is projected to be completed in the early far term.

Table 9.8-1. TASHA 8: Capability and Deficiency Assessment

Capability: CBRN Training and Rehearsal for Local or Immediate Actions to Ensure Readiness	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability	4 ¹	1 ²	4 ³	8 ⁴	5 ⁵	4 ⁶	2 ⁷	5 ⁸	8 ⁹
Near/Mid-Term Overall Capability	4	1	5	8	5	4	6	5	8
Far-Term Overall Capability	4	1	7	8	5	4	8	5	8

	FAA Measure	Scale
M1	CBRN staff cell and units have access to dedicated information technology to support training.	8–10: CBRN staff cell and units possess dedicated information technology resources and tools for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements. 4–7: CBRN staff cell and units are able to access shared information technology resources and tools for operational requirements and training 1–3: CBRN staff cell and units possess limited access to shared information technology resources for operational requirements and training 0: CBRN staff cell and units do not possess access to information technology to support operations and training.
M2	Unit exercises are conducted under simulated CBRN/TIM conditions.	8–10: Challenging, comprehensive, and recurring unit exercises are conducted under simulated CBRN/TIM conditions and all unit activities, functions, and personnel (civilian and military) fully participate and are evaluated. Sustained operations are emphasized. 4–7: Recurring unit exercises are conducted under simulated CBRN/TIM conditions and all unit military personnel and activities, as well as critical civilian personnel and activities, fully participate and are evaluated. Sustained operations are emphasized. 1–3: Recurring unit exercises are conducted under simulated CBRN/TIM conditions and most military personnel and activities, and selected areas of critical functions manned by civilian personnel, participate and are evaluated. Requirements of routine operations may not permit the participation of all unit military personnel and activities. 0: Recurring unit exercises are not conducted under simulated CBRN/TIM conditions
M3	Adequate training tools are available.	8–10: The full range of training tools are applied to CBRND training of all personnel as applicable to their tasks. Tools include simulations, virtual reality technologies, simulants, training aids, and other means to effectively recreate a CBRN/TIM environment without the hazards. 4–7: Limited training tools are available for application to CBRND training of personnel. Applied tools partially recreate a CBRN/TIM environment (without the hazards), but not to a substantial degree. 1–3: Training tools are inadequate for CBRND training of personnel 0: Training tools are not available for CBRND training of personnel.

M4	CBRN/TIM specialists are trained to perform specific CBRND tasks.	<p>8–10: CBRN/TIM specialists are formally trained and receive recurrent training on the conduct of specific CBRND tasks. Supporting augmentation personnel are fully trained and receive recurrent refresher training on the conduct of their assigned CBRND tasks and duties.</p> <p>4–7: CBRN/TIM specialists are trained and prepared to conduct their assigned CBRND tasks and responsibilities. Augmentation personnel are not fully trained on the conduct of their assigned CBRND tasks and duties.</p> <p>1–3: CBRN/TIM specialists are trained and prepared to conduct their assigned CBRN tasks and responsibilities. Augmentation personnel are not trained to conduct their assigned CBRND tasks and duties.</p> <p>0: CBRN/TIM specialists are not trained and prepared to conduct their assigned CBRND tasks and responsibilities.</p>
M5	CBRND staff cells conduct training and rehearsals.	<p>8–10: Challenging, comprehensive, and recurring unit exercises are conducted under simulated CBRN/TIM conditions and CBRND staff cells fully participate and are evaluated. Sustained operations are emphasized.</p> <p>4–7: Unit exercises are conducted under simulated CBRN/TIM conditions and CBRND staff cells generally participate and may be evaluated.</p> <p>1–3: Unit exercises are conducted under simulated CBRN/TIM conditions and CBRND staff cells generally participate but are not evaluated.</p> <p>0: Unit exercises do not incorporate simulated CBRN/TIM conditions and CBRND staff cells are not exercised.</p>
M6	Basic CBRND training is routinely conducted for individuals.	<p>8–10: All unit personnel, civilian and military, receive mandatory introductory and recurrent refresher CBRND training supporting survival and sustained operations in a CBRN/TIM environment.</p> <p>4–7: Recurrent training is required of all military personnel and critical civilian personnel to support survival and sustained operations in a CBRN/TIM environment.</p> <p>1–3: Recurrent training is performed of military personnel and selected civilian personnel as determined needed. Requirements of routine operations may not permit the participation of all military and/or critical civilian personnel.</p> <p>0: Recurrent training is not performed for survival and operations in a CBRN/TIM environment</p>
M7	Hazards effects models and tools are adequate and available for training purposes.	<p>8–10: Standardized M&S capability exists to assess and visualized adversary COAs (both CBRN and TIM) and their effects, is applied by all operating forces and staffs, is integrated into the COP, continuously refreshes as new information is drawn from interoperable sources, and is integrated into and supports training and exercising of applicable personnel.</p> <p>4–7: Operating force staffs possess M&S capability and resources to perform M&S visualization of adversary COAs (CBRN or TIM) and their effects, is commonly applied by operating forces and staffs, is integrated into the COP, refreshes as new information is processed, and supports the training and exercising of applicable personnel.</p> <p>1–3: Visualization of adversary COAs and their effects are inadequate to support training and exercising of personnel.</p> <p>0: Visualization of adversary COAs and their effects are nonexistent</p>
M8	Sufficient CBRN/TIM protection, detection, identification and decontamination equipment is on hand or simulation available.	<p>8–10: The full range of training tools are applied to CBRND training of all personnel as applicable to their tasks. Tools include simulations, virtual reality technologies, simulants, training aids, and other means to effectively recreate a CBRN/TIM environment without the hazards.</p> <p>4–7: Limited training tools are available for application to CBRND training of personnel. Applied tools partially recreate a CBRN/TIM environment (without the hazards), but not to a substantial degree.</p> <p>1–3: Training tools are inadequate for CBRND training of personnel.</p> <p>0: Training tools are not available for CBRND training of personnel.</p>

M9	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>
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¹ CBRN staff cell personnel and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions.

² Recurring unit exercises do not generally include the conduct of CBRND under simulated conditions by all military and critical civilian personnel and activities. Sustained operations in a CBRN/TIM environment are not emphasized and evaluated. The overall tendency is for inadequate CBRND training by regular units. The current threat situation has increased attention within this area.

³ Limited training aids and tools are available to support CBRND training of personnel. Distance learning course availability and access is improving. Limited capability repositories exist supporting field reachback for contact with CBRN experts and to access and apply plans, procedures, information, and lessons learned.

⁴ CBRN specialists are formally trained and receive recurrent training on their specialty. Augmentation personnel are trained by CBRN specialists to perform their assigned tasks.

⁵ Most unit exercises do not generally include the conduct of CBRND under simulated conditions. However, CBRND staff cells generally participate in unit exercises and may be evaluated if the exercise includes CBRN/TIM criteria. CBRN/TIM exercises fully challenging the entire staff as a cooperative and integrated group are not generally the rule.

⁶ Recurring CBRND training is required of all military and critical civilians tasked to potentially operate within a CBRN/TIM environment. However, nondeployable personnel and civilians within CONUS are trained as needed. Routine operations in non-HTA areas may impact scheduling of identified personnel

⁷ Standardized hazard effects models are not deployed and manual means are the predominant means of forecasting impacts. The current ATP-45 process provides manual, broad-area assessments. The present system, however, is inadequate for complex terrain and not considered accurate. The JWARN, JOEF, and JEM suite provides hazard effects modeling and assessment tools. The suite is projected to be initially fielded in the mid term with full fielding completed early in the far term.

⁸ Limited training aids and tools are available for the conduct of CBRND training of personnel. Generally, units and personnel train using their own equipment. Limited simulators are available at training centers to facilitate training of personnel in selected specialties. For example: CBRN specialists may be trained using a FOX simulator at Fort Leonard-Wood on CBRN reconnaissance.

⁹ Current DOTLPF adequately addresses the conduct of CBRND training for military units and personnel. DOTLPF will need to evolve as systems, tactics, and situations change.

9.8.3 Functional Solution Analysis

9.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Access to repositories and the quality of repositories is limited.
Partial Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs are required for use of repositories. *Personnel:* Repository staffing, including subject matter expert (SME) support, is required. *Facilities:* Physical plant support is required for repositories. Integrated and interoperable connectivity within GIG Enterprise Service needed to support worldwide routine and operational needs.
- 2. Deficiency:** Absence of availability of simulants and simulations for training.
Partial Non-Materiel Solutions: *Training:* Refined training programs are required for staffs, CBRN specialists, and general personnel.
- 3. Deficiency:** Inadequate scheduling opportunities for CBRND training, exercising, and evaluation.
Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs mandating and establishing training, exercise, and evaluation criteria are required to ensure all applicable personnel (military and civilian) are able to perform CBRND in a sustained CBRN/TIM environment. *Training:* Conduct formal and recurrent training of all applicable personnel (military and civilian) on CBRND actions, measures, and requirements. Conduct exercises and evaluations to assess readiness and to identify areas requiring additional attention. *Leadership:* Special attention is required ensuring adequate CBRND training, exercising, and evaluation occurs.
- 4. Deficiency:** Lack of standardized automated Joint Hazard Effects Modeling Tool that accurately reflects CBRN threats and provides flexibility for training, exercises, and evaluations.
Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, TTPs, and criteria are required for the application of hazard effects modeling for training, exercises, and evaluations. *Training:* Conduct formal and recurrent training of all applicable personnel (military and civilian) to effectively use and apply hazard effects modeling for training, exercises, and evaluations. Integrate hazard effects modeling into exercise and evaluation criteria and assessments.
- 5. Deficiency:** Coalition partner forces may be insufficiently trained or possess insufficient experienced personnel to conduct joint operations within a CBRN environment.
Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs addressing the training of non-U.S. forces for CBRN operations and their integration into the force are required. *Organization:* Ensure organizational structures, organization, and resources are identified and available to train, if necessary, non-U.S. personnel and forces for CBRN

operations. *Training:* Develop criteria, standards, and course material for training of non-U.S. personnel and forces for CBRN operations. Ensure non-U.S. personnel and forces are integrated into joint exercises and evaluations in preparation for CBRN operations.

Leadership: Ensure awareness of criticality of integration and survivability of non-U.S. forces to joint operations success within a CBRN environment. *Personnel:* Trained and knowledgeable personnel are required, fluent in partner language and certified to instruct CBRND and CBRN operations to non-U.S. forces. *Facilities:* Supporting infrastructures (e.g., facilities, systems, equipment, etc.) are required for training of non-U.S. forces for operations within a CBRN environment and to support U.S. trainers.

9.8.3.2 IMA Assessment Summary

Table 9.8-4 is a list of ideas for material approaches and a corresponding description of each idea. This task brings in the need for accessing remote data sources, as well as developing new and better CBRN simulants and simulations (including accurate hazards effects models.)

Table 9.8-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.8-4. TASHA 8: Materiel Approaches

Idea for Materiel Approach	Description
Lessons learned databases	Develop/consolidate databases for operational and training lessons learned.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, support, and lessons learned.
Management of databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.
Modeling and simulation	Develop a DoD-approved and standardized model for CBRN and TIM hazard prediction capabilities that incorporates physics-based functionalities. The model acquires information from databases (i.e., terrain, structures, environmental, meteorological, intelligence, unit and population) to display graphical output and map the hazard in near-real time. Develop a system including embedded training capable of simulating operational scenarios.
Simulants accurately depicting threat contaminants	Develop a system that collects and analyzes stimulant data and distinguishes it from real agents to be used in modeling and simulation.
Automated CBRN training system	Develop automated and interactive CBRN training system for individual and unit training to include training and exercise scenarios, evaluation and certification criteria, and automated tools to assist and complement individual and unit CBRN training.

Table 9.8-5. TASHA 8: IMA Assessment

<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">Ideas for Material Approaches (IMA)</div> <div style="width: 55%;">Identified Gaps</div> </div>	Lessons Learned Databases	Reachback Capability	Management of Databases	Modeling and Simulation	Simulants Accurately Depicting Threat Contaminants	Automated CBRN Training System
Access to repositories and the quality of repositories is limited.	X	X	X			X
Absence of availability of simulants and simulations for training.				X	X	X
Lack of standardized automated Joint Hazard Effects Modeling Tool that accurately reflects CBRN threats and provides flexibility for training, exercises, and evaluations.		X		X		X

9.9 Task TASHA 9: Track the processing of CBRN/TIM casualties and exposed personnel and MWA

9.9.1 Functional Area Analysis

9.9.1.1 Definition

This task encompasses the tracking of CBRN/TIM casualties and exposed personnel and MWAs via fielded information management systems. Information from this task feeds the general casualty tracking system and supports resourcing decisions at higher levels of command.

9.9.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.9.1.2.1 Supported Task: OPSHA 8

9.9.1.2.2 Lateral Task: TASENS 14

9.9.1.2.3 Supporting Task: N/A

9.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No interoperability. (C2.2.6)
2. Partially completed mission preparation. (C2.1.3)
3. Limited staff expertise. (C2.3.1.3)

Civil. N/A

9.9.2 Functional Needs Analysis

9.9.2.1 Capability and Deficiency Assessment Summary

Table 9.9-1 discusses individual capabilities to perform this task to the designated standards. Plans and procedures exist for treatment of known CBRN agents and a manual capability exists for tracking exposed or affected personnel. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

Tracking of CBRN/TIM casualties is not a specific feature of the general casualty system. All casualties, however, are tracked. There are plans and procedures in place for the treatment of known CBRN agents. Deficiencies include insufficient interface with other medical systems; lack of a current integrated/automated system; and inability to specifically track within the medical systems CBRN/TIM casualties and exposed personnel.

Projected Near/Mid-Term Capability and Deficiency

Tracking of CBRN/TIM casualties is not a specific feature of the general casualty system. Projected deficiencies include inadequate integration of Theater Medical Information Program (TMIP) and Defense Medical Surveillance System (DMSS) information with projected fielded JOEF, inability to specifically track within the medical systems CBRN/TIM casualties and exposed personnel, and the need for additional staff involvement necessary to track CBRN/TIM casualties.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 9.9-1. TASHA 9: Capability and Deficiency Assessment

Capability: CBRN Casualty Tracking	M1	M2	M3	M4	M5
Current Overall Capability	4 ¹	8 ²	4 ¹	0 ³	4 ⁴
Near/Mid-Term Overall Capability	4	8	4	0	4
Far-Term Overall Capability	4	8	4	0	4

	FAA Measure	Scale
M1	Tracking of CBRN/TIM casualties is accurate.	8–10: Tracking of CBRN/TIM casualties and exposed personnel individually and as a composite is accurate, current, and updated in near-real time from Medical Information Systems as information is entered. 4–7: Tracking of CBRN/TIM casualties and exposed personnel is performed manually on a periodic basis from information provided by Medical Services and is accurate as of the last update. 1–3: Tracking of CBRN/TIM casualties and exposed personnel contains substantial errors. 0: Tracking of CBRN/TIM casualties and exposed personnel is nonexistent.
M2	Casualties are treated in accordance with medical treatment plans for causation agent/material.	8–10: Medical Services doctrine, policies, procedures, and TTPs exist for the treatment of CBRN agents. Medical treatment plans are developed and disseminated by a central center of excellence for use by medical practitioners and personnel. 4–7: Medical Services doctrine, policies, procedures, and TTPs provide general guidance on the treatment of high-risk CBRN agents. Medical treatment plans are developed by unit-level medical practitioners and personnel based upon subject matter experts and research. 1–3: Medical treatment plans do not address causation agent/materials and/or are inadequate for the treatment of CBRN casualties. 0: Medical treatment plans do not exist.
M3	Casualties restricted by medical isolation/quarantine are identified and tracked.	8–10: Tracking of CBRN/TIM casualties and exposed personnel restricted by medical isolation/quarantine individually and as a composite is accurate, current, and updated in near-real time from Medical Information Systems as information is entered. 4–7: Tracking of CBRN/TIM casualties and exposed personnel restricted by medical isolation/quarantine is performed manually on a periodic basis from information provided by Medical Services and is accurate as of the last update. 1–3: Tracking of CBRN/TIM casualties and exposed personnel restricted by medical isolation/quarantine contains substantial errors 0: Tracking of CBRN/TIM casualties and exposed personnel restricted by medical isolation/quarantine is nonexistent.
M4	Exposed or affected personnel can be tracked over the long term.	8–10: Medical Information systems incorporate automated tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure from system entry until release from service. Systems incorporate ability to identify potential related issues and problems with medical treatment and care for tracked personnel. 4–7: Medical Information systems incorporate automated tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure from system entry until release from service. 1–3: Medical Information systems manually track personnel exposed to, affected by, and/or treated for CBRN/TIM exposure from system entry until release from service. 0: CBRN/TIM casualties and exposed personnel are not tracked through their career.

M5	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>
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¹ This should be, but is not, a feature of the general casualty tracking system. Tracking of CBRN/TIM casualties and exposed personnel, specifically, is performed manually and is generally viewed as outpatient or inpatient treatment for the results (e.g., respiratory distress, neurological impairments, etc.) and the cause (e.g., low-dose exposure to blood agent, treated exposure to GB, etc.) is usually considered informational and entered via text, if at all. Information is periodically updated and provided to the staff. The continued development of the TMIP and DMSS as interoperable and integrated systems may provide the ability to track these personnel and to provide information through JOEF for CBRND operations. JOEF is projected for initial fielding during the mid term with full fielding completed early in the far term. However, no indications currently exist for plans to include CBRN/TIM tracking capability.

² Medical Services doctrine, policies, procedures, and TTPs exist for the treatment of CBRN agents. Treatment plans are developed by SMEs at the Army Medical Department and disseminated for application by medical personnel.

³ CBRN/TIM casualties and exposed personnel are not tracked in the Medical System throughout their careers. The integration and interoperability of the TMIP and DMSS medical information systems provides a foundation for tracking these personnel through their careers. However, no indications currently exist for plans to include CBRN/TIM tracking capability.

⁴ Current DOTLPF addresses most critical aspects for completion of this task. Limitations in medical information systems require work-arounds for task completion. DOTLPF must evolve to meet current and future needs resulting from changes in systems, tactics, and situations.

9.9.3 Functional Solution Analysis

9.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Insufficient interface with other medical systems. An integrated/automated system does not yet exist to track CBRN patients from the inception of medical care through the career of CBRN/TIM casualties and exposed personnel.

Non-Material solutions: None

9.9.3.2 IMA Assessment Summary

Table 9.9-4 is a list of ideas for material approaches and a corresponding description of each idea. The approaches for this task include the need to provide real-time interfaces between the tactical and medical information systems and continue the search for new vaccines and treatments for CBRN/TIM agents.

Table 9.9-4. TASHA 9: Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Insufficient interface with other medical systems. An integrated/automated system does not yet exist to track CBRN patients from the inception of medical care through the career of CBRN/TIM casualties and exposed personnel.	Modifications to medical information systems	Develop automated modifications to existing and developing medical patient tracking systems (e.g., DMSS, Medical Analysis Tool [MAT], TMIP, etc.) to specifically track the status and treatment of CBRN/TIM casualties and link this information to CBRND automated systems, particularly JOEF.

9.10 Task TASHA 10: Manage CBRN personnel and unit resources to ensure effective CBRND task accomplishment

9.10.1 Functional Area Analysis

9.10.1.1 Definition

Ensures mission ready personnel and units are available to effectively perform CBRND tasks. Encompasses managing the availability of CBRN specialists and specialized CBRN units.

9.10.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.10.1.2.1 Supported Task: OPSHA 3

9.10.1.2.2 Lateral Task: TASUST 26

9.10.1.2.3 Supporting Task: N/A

9.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partially completed mission preparation. (C2.1.3)
2. No interoperability. (C2.2.6)
3. Limited staff expertise. (C2.3.1.3)

Civil. N/A

9.10.2 Functional Needs Analysis

9.10.2.1 Capability and Deficiency Assessment Summary

Table 9.10-1 discusses individual capabilities to perform this task to the designated standards. Services have the overall capability to manage CBRN personnel and units. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

The pool of trained CBRND personnel is generally adequate to meet respective Service needs. The availability of CBRND units could be limited, particularly if substantial forces are employed

in multiple regions involving CBRN threat. Individual and unit CBRN training is conducted. Deficiencies include training and provisioning of trained specialists to units requires continued attention, potential to overextend the existing units available due to the extensive operations tempo, and the perishability of skills due to personnel turnover and availability for refresher training.

Projected Near/Mid-Term Capability and Deficiency

No change is currently projected for this task.

Projected Far-Term Capability and Deficiency

No change is currently projected for this task.

Table 9.10-1. TASHA 10: Capability and Deficiency Assessment

Capability: CBRN Personnel and Unit Resource Management	M1	M2	M3	M4
Current Overall Capability	6 ¹	5 ²	6 ³	6 ⁴
Near/Mid-Term Overall Capability	6	5	6	6
Far-Term Overall Capability	6	5	6	6

	FAA Measure	Scale
M1	Allocation of CBRND specialist is adequate.	8–10: Adequate numbers of trained and experienced CBRND specialists are available and allocated to support concurrent multiple operations and routine requirements. 4–7: CBRND specialists are available to support a major operation and selected routine requirements. Experience will vary from minimal to substantial. Allocations are likely to be at a reduced level with augmentation by nonprimary-duty personnel. 1–3: CBRND specialist are available to support a major operation. Experience will vary from minimal to substantial. Routine requirements are filled by nonprimary-duty personnel. 0: Quantity of CBRND specialists is insufficient to support operations.
M2	Availability of CBRND units to perform specific CBRND tasks is adequate.	8–10: Sufficient numbers and types of trained, manned, and equipped CBRND units are available to support concurrent operations and routine requirements. 4–7: CBRND units are available to support a major operation and selected routine requirements. Training, manning, and equipage will vary from unit to unit and dependent upon unit type. 1–3: Quantity and/or type of CBRND units are insufficient to support operations 0: Types of CBRND units necessary to support operations do not exist.
M3	Training and experience enable successful performance of CBRND tasks.	8–10: All personnel performing CBRND tasks are fully trained and receive recurring refresher training on the conduct of their CBRND tasks. Exercises and evaluations are routinely conducted and fully challenge capabilities to maintain and refine skills, knowledge, and capabilities. CBRND competencies and experience are high and enable the rapid, accurate, and successful completion of tasks. 4–7: Core CBRND personnel are fully trained and receive recurring refresher training on the conduct of their CBRND tasks. Exercises and evaluations do not generally fully challenge capabilities. Limited training is provided, is inconsistent, and/or is administered in preparation for operations to noncore CBRND personnel for the performance of their assigned CBRND tasks. CBRND competencies and experience will vary, but sufficient capability exists to successfully perform CBRND tasks. 1–3: Training is inadequate for the successful performance of CBRND tasks 0: Training is nonexistent for the performance of CBRND tasks.
M4	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Sufficient CBRND specialists are available to support a major operation and selected routine Service requirements. Augmentation is applied to support core CBRND specialists where possible to reduce impact. Availability of trained and experienced CBRND specialists is low and strained when support is required for more than one large-scale operation involving CBRN threat. Routine requirements support reduces as demand rises to support operations.

² Sufficient CBRND units are available of the necessary types to support a major operation and selected routine Service requirements. Availability of trained, equipped, and manned CBRND units is low and strained when support is required for more than one large-scale operation involving CBRN threat. Routine support capabilities reduce as demand rises to support operations.

³ Primary-duty CBRND personnel are fully trained and receive recurring refresher training on the conduct of their CBRND tasks. Core augmentation personnel receive varying degrees of training. Generally, limited training is provided, is inconsistent, and/or is administered in preparation for operations to noncore or augmentation CBRND personnel for the performance of their assigned CBRND tasks. These skills are perishable and rely on traditional training methods and practices. However, sufficient resident capability exists to successfully perform the required tasks.

⁴ Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-around. Currently, organization and personnel are able to support a major operation and selected routine Service requirements but become strained with increased or additional demands. Augmentation is applied as a work-around to CBRN specialist availability to support core CBRND specialists where possible. Availability of trained and experienced CBRND specialists is low and strained when support is required for more than one large-scale operation involving CBRN threat. Routine requirements support reduces as demand rises to support operations. DOTLPF must continue to evolve as systems, tactics, and situations change.

9.10.3 Functional Solution Analysis

9.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Concern exists for potential to overextend existing available CBRN units and personnel due to extensive operations tempo (OPTEMPO) and potential reach of threat or required support of multiple concurrent operations with threat.
Non-Material Solutions: *Doctrine:* Unit readiness and deployment needs to be judiciously managed. *Organization:* Establish CBRND units and personnel position allocations sufficient to meet support requirements for defined operations and anticipated OPTEMPO considerations. *Personnel:* Ensure acquisition, training, and retention of sufficient qualified personnel to meet level supporting national multiple concurrent conflict capability requirements.
- 2. Deficiency:** Perishable skills require retraining and growth in skills.
Non-Material Solutions: *Training:* Continue and emphasize the importance of effective CBRND training for individuals and units. *Leadership:* Ensure personnel are current and prepared to perform CBRND tasks and responsibilities.

9.10.3.2 IMA Assessment Summary

N/A

9.11 Task TASHA 11: Correlate observations of the indigenous population for indicators of CBRN/TIM attack or release

9.11.1 Functional Area Analysis

9.11.1.1 Definition

JTF elements can identify sick or diseased people in the conduct of their activities. As an example, patrols, convoys, and security checkpoints can identify or observe ill health in the indigenous population. The frequency and extent of ill health could be a radiological, toxic chemical, or a biological agent indicator. Liaison and information are collected from indigenous and NGO activities in the tactical operating area. Relatively rapid degradation in the indigenous populace could indicate the presence of a CBRN agent and represent a threat to JTF elements, potentially shifting the strategic and operational objectives of the JTF away from command or national intentions. This task might also include observations regarding an increase of vector populations. Daily situation reports might include these observations.

Reported observations are correlated in the operations center contributing to combat risk assessments and the management of response and mitigation, including identification of necessary medical countermeasures to protect the force. The information is included in medical surveillance, and the results and response are included in the COP situational awareness. For vector attacks and small covert attacks of communicable disease agents, the correlation and inclusion of observations of the indigenous population within medical surveillance could be the primary means of detecting an attack and implementing medical preventive countermeasures.

9.11.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Transformation Planning Guidance, Protection Joint Functional Concept.

9.11.1.2.1 Supported Task: OPSHA 8

9.11.1.2.2 Lateral Task: TASENS 10

9.11.1.2.3 Supporting Task: N/A

9.11.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Partially completed mission preparation. (C2.1.3)
3. Marginal forces assigned. (C2.2.1)

4. Fair personnel nutrition and health. (C2.2.4.1)
5. Limited personnel experience. (C2.2.4.5)
6. Limited staff expertise. (C2.3.1.3)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Negative foreign government support. (C3.1.2.3)
3. Moderately opposed foreign public opinion. (C 3.1.2.4)
4. Poor civil health. (C3.3.1.4)
5. High health risk. (C3.3.1.5)
6. Significant TIM present in the civilian sector. (C3.3.7.5)

9.11.2 Functional Needs Analysis

9.11.2.1 Capability and Deficiency Assessment Summary

Table 9.11-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include some reports provided by non-JTF activities and limited ability to assess outbreak indicators, make accurate hazard and surveillance reports, and obtain reports of CBRN attack indicators. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Correlating observations of CBRN/TIM attacks require special liaison with NGOs, international agencies, indigenous civil authorities, and aid organizations. Medical surveillance operates in isolation from the routine activities of the operational staffs. The capability is improving as a result of improvements resulting from current conflicts. Interoperability within and among Services continues to improve. Deficiencies include insufficient liaison and collaboration with non-JTF agencies and organizations in the operating area, inadequate training, insufficient interaction and coordination between medical staffs and operational staffs, lack of interactive link with COP; and insufficient communication resources.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 9.11-1. TASHA 11: Capability and Deficiency Assessment

Capability: Correlate Observations of the Indigenous Population for Indicators of CBRN/TIM Attack or Release	M1	M2	M3	M4	M5	M6
Current Overall Capability	4 ¹	5 ²	5 ³	5 ⁴	5 ⁵	6 ⁶
Near/Mid-Term Overall Capability	4	5	5	5	5	6
Far-Term Overall Capability	4	5	5	5	5	6

	FAA Measure	Scale
M1	Reports are provided by non-JTF activities.	<p>8–10: Secure, interoperable, and interactive processes with automated tools exist and are predominantly applied by all relevant activities of the joint force, coalition partners, and other authorized entities. Inherent capabilities support connectivity to diverse systems operated and maintained by non-JTF activities.</p> <p>4–7: Special liaisons are equipped and possess connectivity for interaction and reporting of information collected by non-JTF activities and entities such as NGOs, international agencies, indigenous civil authorities, and aid organizations. In selected cases, these agencies are provided equipment and procedures specifically for this purpose.</p> <p>1–3: Information is collected from non-JTF activities and entities sporadically by JTF elements in the area of responsibility (AOR).</p> <p>0: The capability to collect information from non-JTF activities and entities is nonexistent.</p>
M2	Outbreak indicators are assessed and confirmed.	<p>8–10: Secure, interoperable, and interactive processes with automated tools exist and are predominantly applied by all echelons and elements of the joint force, coalition partners, and authorized entities. Information and data are collected, collated, confirmed, and processed using automated tools and processes on a continuous basis.</p> <p>4–7: Procedures, policies, techniques, and processes exist to collect, confirm, process, and report information on outbreak indicators and are assisted by automated systems requiring manual intervention and on a periodic basis or as determined necessary.</p> <p>1–3: Procedures, policies, techniques, and processes provide limited guidance for the collection, confirmation, processing, and reporting of information on outbreak indicators and are performed manually using raw information drawn from automated systems.</p> <p>0: The collection, confirmation, and reporting of outbreak indicators are nonexistent.</p>
M3	Reports on hazard are accurate.	<p>8–10: Hazard reporting accuracy and utility is high; based on standardized automated system processing, analysis, and evaluation with trained staff review and involvement; and reliant on trained and experience observations and rapid and accurate reporting by personnel in the field.</p> <p>4–7: Hazard reporting accuracy and utility exists but widely varies between units and staffs and is dependent upon manual processes reliant upon the experience, training, and availability of the performing staff/observing field personnel and the quality of reports and selected assessed information.</p> <p>1–3: Hazard reporting accuracy and utility are low.</p> <p>0: Hazard reporting accuracy and utility are nonexistent.</p>
M4	Health-related surveillance reporting system is in place.	<p>8–10: Secure, interoperable, and interactive medical surveillance systems exist and continuously interrelate with other nonmedical systems and CBRND information systems within the net-centric environment to provide ongoing health status of forces.</p> <p>4–7: Procedures, policies, techniques, and processes exist to perform medical surveillance of the force and are assisted by automated systems requiring manual intervention and on a periodic basis or as determined necessary.</p> <p>1–3: Medical surveillance is performed manually from raw information drawn from automated systems</p> <p>0: Medical surveillance is nonexistent.</p>

M5	Reports of observations of CBRN attack indicators are timely.	<p>8–10: Integrated, interoperable, and interactive automated systems substantially or fully detect, process, and report CBRN attack indicators in near-real time. These systems also support the collection, processing, and reporting of manually collected information and data.</p> <p>4–7: Doctrine, policies, procedures, TTPs, and formats exist and are applied and are generally performed manually for the reporting of CBRN attack indicators. Timeliness is contingent upon operational considerations and unit/personnel capabilities.</p> <p>1–3: Doctrine, policies, procedures, TTPs, and formats exist and are applied and are generally performed manually for the reporting of CBRN attack indicators. Time to perform is extended by available communications constraints and ongoing operational demands</p> <p>0: The timeliness of reporting of CBRN attack indicator observations fails to support survival and operational needs.</p>
M6	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Special liaisons may be assigned to applicable NGOs, international agencies, indigenous civil authorities, and aid organizations for coordination and information exchange.

² Procedures, policies, and processes are established for the largely manual collection, confirmation, processing, and reporting of outbreak indicators. Medical surveillance systems exist and assist for joint force personnel but are largely stovepiped and require manual intervention for transmission and interpretation. Further, these systems are not developed sufficiently to adequately incorporate information from non-JTF sources. Current systems and processes are dependent upon the experience, training, and cognizance of responsible staff.

³ Accuracy and utility of hazard reporting is dependent upon the experience, training, and availability of the necessary staff, as well as the quality and accessibility of information. Field reporting accuracy and utility varies widely dependent upon unit training, individual attentiveness, and in-place observation reporting mechanisms. Current capability is achieved using doctrine and locally developed processes. Limited training is provided to staff and field personnel for the identification, reporting, and processing of hazards and related information. Consistent standardized formal and refresher training on immediate or local battlefield hazard identification and reporting is not regularly and routinely performed. Limited and often cursory training is provided and often is not until preparation or during the conduct of operations.

⁴ Medical surveillance systems are largely stovepiped and lack integration with operations and intelligence systems. Further, these systems are not developed sufficiently to adequately incorporate information from non-JTF sources. Current systems and processes are dependent upon the experience, training, and cognizance of responsible staff.

⁵ CBRN attack indicator observations are largely reported using standardized ATP-45 formatted messages and are prepared manually for transmission using existing and available communications systems. Timeliness is contingent upon the experience and knowledge of the reporting personnel, ongoing operational considerations, and available communications capabilities. However, dissemination to other units in the potentially affected area, especially if they do not share communications systems and frequencies, is usually delayed until retransmitted by higher authority. JWARN provides the automated capability to disseminate CBRN attack indicator information in the net-centric environment. JOEF and JEM support the collection, interpretation, and visualization of the information. This suite of systems is projected to be fielded in the near-term. JOEF and JEM are projected for initial fielding during the mid term with full fielding completed early in the far term. Concurrent with the mid-term release of JOEF and JEM will be JWARN Block II which will be initially fielded to operational units.

⁶ Current DOTLPF include the ability to conduct this task using largely manual processes and available communications systems. However, processes and procedures for the immediate dissemination of information to neighboring units is not adequate. The retransmission of the information by higher echelon to all units potentially at risk or affected by a CBRN/TIM event is performed as a work-around and assurance of notification. CBRND training ranges from in-depth and substantial for selected functions and personnel to inadequate and haphazard for others, largely field personnel. DOTLPF will need to evolve as systems, tactics, and situations change.

9.11.3 Functional Solution Analysis

9.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Insufficient liaison and collaboration with non-JTF agencies and organizations in the operating area.

Partial Non-Material Solutions: *Doctrine:* Doctrine and TTPs requirements are needed for liaison and collaboration with non-JTF agencies and organizations within the operating area for the purposes of coordination and information exchange. *Organization:* Establish, man, and equip specific standard units and primary-duty personnel for the conduct of liaison and collaboration with other entities, including non-JTF agencies and organizations. *Training:* Ensure ongoing training and development of experienced and qualified personnel for the conduct of successful liaison and collaboration activities. *Personnel:* Ensure selection and availability of primary-duty personnel in sufficient quantities to ensure fully mission capable status of liaison units and elements supporting operations and mission requirements.

2. **Deficiency:** Inadequate organization within the JTF to effectively assess and confirm CBRN/TIM events and outbreaks.

Non-Material Solutions: *Doctrine:* Doctrine and TTPs are required for assessment and confirmation of CBRN/TIM events and outbreaks. *Organization:* Staffing and organizational resources supporting the identification, assessment, confirmation, and reporting of CBRN/TIM events and outbreaks are required. *Training:* Ensure adequate formal and recurring refresher training of staff and personnel on their areas of responsibility for the identification, assessment, confirmation, and/or reporting of potential CBRN/TIM events and outbreaks.

3. **Deficiency:** Inadequate training.

Non-Material Solutions: *Training:* Ensure adequate formal and recurring refresher training of staff and personnel on their areas of responsibility for the identification, assessment, confirmation, and/or reporting of potential CBRN/TIM events and outbreaks.

4. **Deficiency:** Insufficient interaction and coordination between medical, operational, and intelligence staffs.

Non-Material Solutions: *Doctrine:* Refine doctrine, policies, procedures, processes, and TTPs to support the interactive exchange of information between medical, operational, and intelligence elements. *Organization:* Organizational resources and systems supporting the interactive and collaborative exchange of information between staffs and elements are required. *Training:* Ensure formal and recurring refresher training promoting information interchange and collaborative relationships between medical, operational, and intelligence staffs.

5. **Deficiency:** Lack of interactive link with COP.

Partial Non-Material Solutions: *Doctrine:* Develop doctrine, policies, procedures, and TTPs establishing local linkage processes and means with the COP.

6. Deficiency: Insufficient communication resources.

Partial Non-Material Solutions: *Organization:* Develop tables of unit authorized equipment need to ensure adequate communications resources are available to support operational needs, including CBRND.

9.11.3.2 IMA Assessment Summary

Table 9.11-4 is a list of ideas for material approaches and a corresponding description of each idea. Material approaches here focus on the lack of liaison and collaboration with outside organizations and agencies, the need to provide accurate information to the development of the COP, and the need for additional communications resources.

Table 9.11-4. TASHA 11: Materiel Approaches

Identified Deficiencies	Idea for Materiel Approach	Description
Insufficient liaison and collaboration with non-JTF agencies and organizations in the operating area.	Medical surveillance system enhancement for indigenous population surveillance	Develop automated modifications to existing and developing medical surveillance systems for the collection, correlation, processing, and reporting of CBRN event indicators within indigenous populations.
Lack of interactive link with COP.		
Insufficient communication resources.		

9.12 Task TASHA 12: Conduct medical surveillance based on syndromic information and data across the battlespace

9.12.1 Functional Area Analysis

9.12.1.1 Definition

Using syndromic information and data, medical surveillance across the battlespace is conducted. The results are collected and analyzed in the operations centers contributing to combat risk assessments and the management of response and mitigation, including identification of necessary medical countermeasures to protect the force. Medical surveillance results and response are included in the COP situational awareness. Medical surveillance is a critical capability to identify biological agents (vectored, communicable), nonimmediate casualty chemical exposure, and emissive radiological exposures. For vector attacks and small covert attacks of communicable disease agents, medical surveillance could be the primary means of detecting the attack and its progression through JTF elements. Liaison and information are collected from indigenous and NGO activities in the tactical operating area.

9.12.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.12.1.2.1 Supported Task: OPSHA 7

9.12.1.2.2 Lateral Tasks: TASUST 5, TASUST 6, TASUST 7

9.12.1.2.3 Supporting Task: N/A

9.12.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Partially completed mission preparation. (C2.1.3)
3. Poor personnel nutrition and health. (C2.2.4.1)
4. Limited personnel experience. (C2.2.4.5)
5. Moderate staff expertise. (C2.3.1.3)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

2. Limited international organization support. (C3.1.2.5)
3. Moderate health risk. (C3.3.1.5)

9.12.2 Functional Need Analysis

9.12.2.1 Capability and Deficiency Assessment Summary

Table 9.12-1 discusses individual capabilities to perform this task to the designated standards. Services have a largely manual overall capability to perform medical surveillance of the battlespace. The overall capability for current, near/mid, and far term are rated “red.” Although improvements between the periods occur for specific capabilities and are reflected in the assessment of the measures, the improved capabilities are not sufficient to change the overall assessed color ratings for the measures and this task.

Current Capability and Deficiency

The current capability to conduct medical surveillance across the battlespace consists of limited automated assistive systems requiring substantial manual entry and manipulation such as USTRANSCOM Regulating and Command and Control Evacuation System (TRCCES)/ Composite Health Care System II – Tactical (CHCS2T), Global Expeditionary Medical System (GEMS), plus the Army Medical Surveillance Activity’s DMSS and Joint Medical Evacuation Program (JTMEP). JTMEP does provide medical surveillance but only within the medical community. Medical surveillance operates in isolation from the routine activities of the operational staffs. Deficiencies include that there is no cohesive and integrated data interchange of medical information related to CBRN via electronic means, CBRN casualty information will require identification and supporting programming to address CBRN information issues, and there is a considerable lag between the generation of CBRN medical information and its display in the COP. Generally, non-U.S. personnel are not tracked in Service medical systems and information collected from coalition partners, NGOs, and host-nation agencies must be correlated manually by epidemiologists and command staff personnel.

Projected Near/Mid-Term Capability and Deficiency

The continuing development of medical systems and medical surveillance tools meeting interoperability standards integrating the various aspects of medical care and treatment are expected to expand the availability of surveillance information critical to effective CBRND. Development of an integrated and interoperable medical surveillance system will provide the command staff with information for correlation with other gathered information. Warning information is subsequently disseminated through JWARN.

Projected Far-Term Capability and Deficiency

Continued improvement as standardized, interoperable, and integrated systems replace legacy systems.

Table 9.12-1. TASHA 12: Capability and Deficiency Assessment

Capability: Medical Surveillance	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	5 ¹	4 ²	4 ³	1 ⁴	1 ⁴	4 ³	4 ⁵
Near/Mid-Term Overall Capability	5	4	4	1	1	4	4
Far-Term Overall Capability	5	4	4	1	1	4	4

	FAA Measure	Scale
M1	Disseminated information is accurate.	8–10: Medical surveillance information is correlated and processed with other source information and, as a composite, is disseminated in near-real time to requiring users. The disseminated data are accurate, current, and updated as new information is received and processed. 4–7: Medical surveillance information is predominantly manually correlated and processed with other source information and, as a composite, is disseminated to requiring users. The disseminated data are accurate as of the last update. 1–3: Medical surveillance is not integrated with other source data or contains substantial errors. 0: Medical surveillance is nonexistent.
M2	Specific CBRN/TIM agent and appropriate medical countermeasures are identified.	8–10: Automated systems accurately and rapidly correlate syndromic indications from medical treatment information and other sources with CBRN/TIM agent symptomology, identify the appropriate causative agent, and specify the appropriate medical countermeasures. 4–7: Identification of the specific CBRN/TIM agent and appropriate medical countermeasures is predominantly performed manually with the use of limited assistive automated tools and resources where available. 1–3: Medical surveillance is inadequate for the identification of CBRN/TIM agent exposure and determination of appropriate medical countermeasures 0: Medical surveillance cannot identify and address CBRN/TIM agent exposure and appropriate medical countermeasures.
M3	Units affected by CBRN agents are identified and tracked.	8–10: Interoperable and integrated automated systems identify and track both potential and known exposed personnel and units. Medical systems track exposed personnel throughout their career and identify the exposure. 4–7: Units and personnel potentially and known to be exposed to CBRN agents are identified and tracked once known until exposure and contamination is confirmed and/or resolved. 1–3: Units and personnel potentially and known to be exposed to CBRN agents are inadequately identified and tracked until exposure and contamination is confirmed and/or resolved 0: Tracking of units and personnel potentially and known to be exposed to CBRN agents is not performed.
M4	Outbreak indicators are assessed and confirmed.	8–10: Automated systems accurately and rapidly correlate syndromic indications from medical treatment information and other sources with CBRN/TIM agent symptomology, identify the appropriate causative agent/disease, and specify the appropriate medical countermeasures and actions. 4–7: Identification of the specific CBRN/TIM agent or disease and appropriate medical countermeasures/activities are predominantly performed manually with the use of limited assistive automated tools and resources where available. 1–3: Medical surveillance does not adequately identify CBRN/TIM agent exposure, disease outbreaks, and the appropriate medical countermeasures. 0: Medical surveillance does not address CBRN/TIM agent exposure, disease outbreaks, and the appropriate medical countermeasures.

M5	Health-related surveillance, information epidemiology and symptomology information can be collected and analyzed.	8–10: Interoperable and integrated automated systems continually draw current information from medical systems (including treatment, surveillance, and syndromic data). These systems correlate and process the information for the identification of issues and potential solutions and/or response actions. 4–7: The collection and analysis of potential indicators are predominantly performed manually with the use of limited assistive automated tools and resources where available. 1–3: The collection and analysis of potential indicators is inadequate to prevent potential serious impact to operations 0: The collection and analysis of potential indicators is nonexistent.
M6	Battlespace health-related surveillance system is in place.	8–10: Medical surveillance of the battlespace is in place and information is correlated and processed with other source information and, as a composite, is disseminated in near-real time to requiring users. The disseminated data are accurate, current, and updated as new information is received and processed. 4–7: Medical surveillance is performed predominantly manually. Related information is generally manually correlated and processed with other source information and, as a composite, is disseminated to requiring users. The disseminated data are accurate as of the last update. 1–3: Medical surveillance is not integrated with other source data and/or contains substantial errors. 0: Medical surveillance is nonexistent.
M7	There is effective DOTLPP in place to conduct task.	8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations 4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPP is inadequate for accomplishment of this task. 0: DOTLPP does not exist for this task.

¹ Medical surveillance is predominantly manual in performance. Limited automated medical surveillance systems exist but are generally restricted to existing medical information systems for tracking U.S. force personnel. Epidemiologists may or may not have access to information provided to command centers by field personnel, NGOs, host-nation agency contacts, and other sources. The accuracy of the derived medical surveillance information is dependent upon the experience, knowledge, and skill of the performing individual and access to relevant information. Correlation of this information with other data available to the command centers is also dependent upon the experience, knowledge, skill of the operations, intelligence, and CBRN staff and the degree to which collaboration between the command staff elements exist.

² Largely performed manually using limited assistive automated tools and resources, when available, to identify potential exposures to a CBRN/TIM agent and the affecting agent, and to outline appropriate medical countermeasures. The accuracy of this information is dependent upon the experience, knowledge, and skill of the performing medical practitioner and access to relevant information. Collaboration with CBRN and other staff members is often performed only after a definitive diagnosis is reached, increasing the time before action and does not acknowledge existing assistive expertise.

³ Medical systems such as USTRANSCOM Regulating and Command and Control Evacuation System (TRCCES), Composite Health Care System II – Tactical (CHCS2T), Global Expeditionary Medical System (GEMS), and DMSS are available. However, they are not interoperable. These systems must meet DISA standards when substantial upgrades are performed or the systems are replaced. All systems must be interoperable in the far term. Information from these systems currently must be manually collected and tracked. Although these systems must be interoperable in the far term, CBRN is not possess a specific identifier in these systems and requires knowledge and skill on the part of the tracking medical and operations staff to identify and track affected personnel and units. Doctrine, policies, and procedures exist to assist the commander’s staff with the identification and tracking of affected units.

⁴ Performed manually with some limited assistive automated tools. Currently requires indication of a problem before epidemiological inquiry and medical surveillance is performed. Although limited medical surveillance tools do exist within selected stovepiped medical systems, the information must be manually interpreted and investigated generally following a deliberate implementation of the appropriate medical surveillance tool. Interoperability between medical systems may serve to support medical surveillance with preplanning for these activities and their information requirements. Epidemiologists may or may not have access to information provided to command centers by field personnel, NGOs, host-nation agency contacts, and other sources.

⁵ Current DOTLPF addresses most critical aspects for this task using largely manual processes and focuses upon medical services activities. However, data provided to command centers by field personnel and non-force sources (e.g., NGOs, coalition partners, etc.) is not always provided to medical services for consideration and correlation. Often, when performed at all, it is conducted by the command center staff and is dependent upon the experience and knowledge of performing personnel. Observations and information within unit reports to the command center reflecting potential indicators may not be forwarded to appropriate action offices or acted upon until there a clear and present danger impresses action. DOTLPF will need to evolve as systems, tactics, and situations change.

9.12.3 Functional Solution Analysis

9.12.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of cohesive and integrated data interchange of medical information related to CBRN via electronic means to the COP.
Partial Non-Materiel Solutions: *Doctrine:* Adjust doctrine to address processing of information provided to the command center by field reports, coalition partners, host-nation agencies, NGOs, and other sources. *Organization:* Ensure organizational structures are in place for the assessment and integration of information from sources other than medical services into medical surveillance. *Training:* Train staffs and medical services personnel on CBRN and disease outbreak indicators. Include diverse source information in CBRN exercises and evaluations for skill development and maintenance. *Facilities:* Establish supporting infrastructure to enable data interchange and display on the COP.
- 2. Deficiency:** Inadequate or lack of CBRN related casualty information.
Partial Non-Materiel Solutions: *Doctrine:* Adjust medical information systems doctrinal requirements to include CBRN identification and processing for medical surveillance and subsequent reporting. *Organization:* Ensure organizational structures are in place for the identification and collection of information from medical information systems for CBRN medical surveillance. *Training:* Train appropriate medical services personnel to query medical information systems and forward CBRN indicators and issues for medical surveillance review. *Facilities:* Develop supporting infrastructure to enable data collection and transfer.
- 3. Deficiency:** Inadequate timeliness between generation of CBRN medical information and its display in the COP.
Partial Non-Materiel Solutions: *Doctrine:* Adjust doctrine to emphasize indicator identification and continuing medical surveillance in coordination with command staffs. *Facilities:* Establish supporting infrastructure to enable data collection and transfer.

9.12.3.2 IMA Assessment Summary

Table 9.12-4 is a list of ideas for materiel approaches and a corresponding description of each idea. Approaches for this task cover the need to improve the information interchange with medical information systems, including extracting casualty data for tactical planning and improving the speed of medical input to the formation of the COP. Even though the medics are gathering patient surveillance data, the analysis of these data needs to be provided to tactical commanders to affect their decision process. Table 9.12-5 identifies which of the materiel approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.12-4. TASHA 12: Materiel Approaches

Idea for Materiel Approach	Description
Modifications to medical information systems	Develop automated modifications to existing and developing medical patient tracking systems (e.g., DMSS, MAT, TMIP, etc.) to specifically track the status and treatment of CBRN/TIM casualties and link this information to CBRND automated systems.
Automated interface to COP	Develop automated modifications to existing and developing medical surveillance systems to specifically identify indicators of CBRN/TIM exposures and link this information to CBRND automated systems and the COP.

Table 9.12-5. TASHA 12: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Modifications to Medical Systems</p>	<p>Automated Interface to COP</p>
<p>Lack of cohesive and integrated data interchange of medical information related to CBRN via electronic means to the COP.</p>	<p>X</p>	
<p>Inadequate or lack of CBRN-related casualty information.</p>	<p>X</p>	<p>X</p>
<p>Inadequate timeliness between generation of CBRN medical information and its display in the COP.</p>	<p>X</p>	<p>X</p>

9.13 Task TASHA 13: Conduct veterinary surveillance of MWA and indigenous animal population throughout the battlespace

9.13.1 Functional Area Analysis

9.13.1.1 Definition

This task deals with conducting veterinary surveillance of MWAs and indigenous animal population throughout the battlespace. Animal surveillance is a key part of force health protection efforts since illness or death in the animal populations may be an indication that a CBRN event has occurred.

Based on the battlespace veterinary plan, MWAs are routinely checked for potential indications of exposure to CBRN/TIM agents. Additionally, JTF elements in the area of operations can identify sick or diseased animals and birds in the conduct of their activities. As an example, patrols, convoys, and security checkpoints can identify or observe ill health in the indigenous population. The frequency and extent of ill health might be an indicator of the presence of a radiological, toxic chemical, or a biological agent. Liaison and information are collected from indigenous and NGO activities in the tactical operating area. Relatively rapid degradation in the indigenous animal and/or bird population might indicate the presence of a CBRN agent and a potential threat to JTF elements. Additionally, this task might also include observations regarding an increase of vector populations. Daily situation reports might include these observations. Information from these activities are compiled and correlated by veterinary surveillance. The results including appropriate veterinary countermeasures contribute to health and risk assessments and assist in the management of response and mitigation. Veterinary surveillance of MWA and indigenous animal and bird population is critical to the health of the force.

9.13.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Transformation Planning Guidance, Protection Joint Functional Concept.

9.13.1.2.1 Supported Task: OPSHA 7

9.13.1.2.2 Lateral Tasks: TASENS 10, TASUST 5, TASUST 6, TASUST 7

9.13.1.2.3 Supporting Task: N/A

9.13.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Partially completed mission preparation. (C2.1.3)
3. Marginal forces assigned. (C2.2.1)
4. Poor personnel nutrition and health. (C2.2.4.1)
5. Limited personnel experience. (C2.2.4.5)
6. Limited staff expertise. (C2.3.1.3)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support. (C3.1.2.3)
3. Moderately opposed foreign public opinion. (C 3.1.2.4)
4. Poor civil health. (C3.3.1.4)
5. High health risk. (C3.3.1.5)
6. Significant TIM present in the civilian sector. (C3.3.7.5)

9.13.2 Functional Needs Analysis**9.13.2.1 Capability and Deficiency Assessment Summary**

Table 9.13-1 shows the current capability to track MWAs is limited and manual in nature. There is no capability to track indigenous animals. The overall capability for current, near/mid, and far term are assessed “red.”

Current Capability and Deficiency

Indigenous animals are currently not included in any surveillance or reporting activities and veterinary surveillance procedures must be updated to include the indigenous animal populations. Non-JTF reporting and information is not addressed for establishment and integration into veterinary surveillance activities. A need exists to develop an automated surveillance and reporting system for MWAs and indigenous animals. Veterinary information is currently processed and disseminated in text format using Lotus Notes. Information contained in this system is not interoperable or transferable to other systems by other than manual extraction and reinput.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 9.13-1. TASHA 13: Capability and Deficiency Assessment

Capability: MWA/Indigenous Animal Veterinary Surveillance System	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	1 ¹	8 ²	1 ³	4 ⁴	4 ⁴	1 ¹	3 ⁵
Near/Mid-Term Overall Capability	1	8	1	4	4	1	3
Far-Term Overall Capability	1	8	1	4	4	1	3

	FAA Measure	Scale
M1	Reports are provided by non-JTF activities.	<p>8–10: Interoperable and integrated automated systems accurately and rapidly collect, correlate, validate, and process veterinary surveillance information from JTF and non-JTF sources for CBRN/TIM indications and potential cross-species outbreaks. The information is assessed and presented on the COP using automated tools and systems.</p> <p>4–7: Veterinary surveillance information from JTF and non-JTF sources are accurately and rapidly collected, correlated, confirmed, and processed manually for CBRN/TIM indications and potential cross-species outbreaks. The information is assessed and presented on the COP.</p> <p>1–3: Veterinary surveillance does not adequately collect, correlate, and process information from JTF and non-JTF sources for CBRN/TIM indications and potential cross-species outbreaks.</p> <p>0: Veterinary surveillance does not exist.</p>
M2	MWA restricted by veterinary isolation/quarantine are identified.	<p>8–10: MWAs are routinely reviewed by veterinary personnel for medical issues and concerns. MWAs are isolated/quarantined when determined necessary. Identification and tracking of these animals is accurately and adequately performed by supporting veterinary services both locally, by the owning Service, and the DoD Military Working Dog Veterinary Services Center.</p> <p>4–7: MWAs are reviewed by veterinary personnel upon CBRN/TIM exposure or contamination or if sick. MWAs are isolated/quarantined when determined necessary. Identification and tracking of these animals is performed manually and locally by supporting veterinary services.</p> <p>1–3: Identification and tracking of veterinary ordered MWA isolation/quarantine is inadequate.</p> <p>0: Identification and tracking of veterinary ordered MWA isolation/quarantine nonexistent.</p>
M3	Outbreak indicators are assessed and confirmed.	<p>8–10: Interoperable and integrated veterinary surveillance automated systems accurately and rapidly assess potential outbreak indicators reported by from JTF and non-JTF sources. The information is validated and presented on the COP using automated tools and systems.</p> <p>4–7: Veterinary surveillance accurately and rapidly assesses and confirms outbreak indicators reported by from JTF and non-JTF sources. Veterinary surveillance is performed predominantly manually and the information is validated and presented on the COP.</p> <p>1–3: Veterinary surveillance does not adequately assess and confirm outbreak indicators for CBRN/TIM indications and potential cross-species outbreaks reported by from JTF and non-JTF sources.</p> <p>0: Veterinary surveillance does not exist.</p>
M4	Reports on hazard are accurate.	<p>8–10: Veterinary hazard report utility is high and is posted directly to the COP.</p> <p>4–7: Veterinary hazard report utility exists and the information is posted on the COP after review and/or consolidation by nonveterinary activity or authority.</p> <p>1–3: Veterinary hazard report utility is low and unable to support operations.</p> <p>0: Veterinary hazard report utility is nonexistent.</p>
M5	Veterinary surveillance reporting system is in place.	<p>8–10: Interoperable and integrated veterinary surveillance reporting system exists and is in place. Reports are presented on the COP and disseminated to appropriate activities within and outside the area of operations.</p> <p>4–7: Veterinary surveillance reporting system exists and is in place. Reports are performed manually and disseminated using available communications channels to selected activities within and outside the area of operations.</p> <p>1–3: Veterinary surveillance reporting is inadequate to support operations.</p> <p>0: Veterinary surveillance reporting does not exist.</p>

M6	Reports of observations of CBRN attack indicators are timely.	<p>8–10: Interoperable and integrated automated systems accurately and rapidly collect, correlate, validate, and process veterinary surveillance information from JTF and non-JTF sources for CBRN/TIM indications and potential cross-species outbreaks. The information is assessed and presented on the COP using automated tools and systems.</p> <p>4–7: Veterinary surveillance information from JTF and non-JTF sources are accurately and rapidly collected, correlated, confirmed, and processed manually for CBRN/TIM indications and potential cross-species outbreaks. The information is assessed and presented on the COP.</p> <p>1–3: Veterinary surveillance does not adequately collect, correlate, and process information from JTF and non-JTF sources for CBRN/TIM indications and potential cross-species outbreaks.</p> <p>0: Veterinary surveillance does not exist.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Veterinary surveillance is inadequate for the collection, correlation, and processing of information from JTF and non-JTF sources for CBRN/TIM indications and potential cross-species outbreaks. Field observations of indigenous animals and wildlife are not generally performed or forwarded for veterinary surveillance activities. Veterinary surveillance reports on MWAs are generally not provided by non-JTF activities and veterinary surveillance reports on indigenous animals and wildlife are not provided by non-JTF activities.

² MWDs are routinely restricted or isolated to reduce exposure to indigenous animals. Veterinary isolation or quarantine is imposed when determined necessary by veterinary personnel for the protection of the animal, personnel, and other MWDs. Identification and tracking is performed locally and reported to the owning Service’s veterinary service and is viewed by the DoD MWD Veterinary Services Center. Reporting and identification is performed using veterinary services Lotus Notes–based system.

³ Veterinary surveillance does not adequately assess and confirm potential outbreak indicators among indigenous animals and wildlife. DOTLPF does exist for the conduct of assessment and confirmation of outbreak indicators. However, field observations of indigenous animals and wildlife are not generally performed or forwarded for veterinary surveillance activities. Veterinary surveillance reports on indigenous animals and wildlife are not generally provided by non-JTF activities.

⁴ Field veterinary services entities report on veterinary activities and identified hazards to medical services and the regional veterinary services center. The reports are generally not directly posted to the COP, although utility of identified hazards is generally high. Veterinary services do not possess automated tools to conduct veterinary surveillance. Reporting is generally performed using legacy Lotus Notes–based system or available communications systems.

⁵ DOTLPF is inadequate for the conduct of this task. Veterinary services DOTLPF does address most critical aspects of the conduct of veterinary surveillance within the JTF. However, JTF functions and activities outside of the veterinary services do not possess adequate DOTLPF to support veterinary surveillance. Non-JTF sources of information are not adequately addressed in veterinary surveillance activities and processes.

9.13.3 Functional Solution Analysis

9.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of established reporting and integration into veterinary surveillance activities of indigenous animal reports from non-JTF activities and routine MWA veterinary activities.
Partial Non-Materiel Solutions: *Doctrine:* Develop doctrine to establish procedures and guidance for MWA and indigenous animal reports from non-JTF entities. *Training:* Train non-JTF personnel to properly collect MWA and indigenous animal surveillance information and forward it to JTF activities. *Leadership:* Have leadership at non-JTF activities support and enable the collection and reporting of MWA and indigenous animal surveillance information to the JTF.
- 2. Deficiency:** Inability to directly place veterinary surveillance information into the COP.
Non-Materiel Solutions: *Doctrine:* Require the direct posting of veterinary surveillance information in the COP.
- 3. Deficiency:** Lack of SOPs to assess or confirm outbreak indicators in MWAs and indigenous animals.
Non-Materiel Solutions: *Doctrine:* Develop doctrine to require these types of SOPs.
- 4. Deficiency:** Inadequate routing of observations of indigenous animal/wildlife population within daily SITREPs to the veterinary services.
Non-Materiel Solutions: *Training:* Train personnel to routinely disseminate information on indigenous animals to veterinary services as it is placed in the situation report (SITREP). Veterinary services personnel should review SITREP.
- 5. Deficiency:** Lack of inclusion of indigenous animals in hazard reporting.
Non-Materiel Solutions: *Doctrine:* Develop doctrine to include indigenous animals in hazard reports.

9.13.3.2 IMA Assessment Summary

Table 9.13-4 is a list of ideas for material approaches and a corresponding description of each idea. The recommended approach to ensure completion of this task is to improve the information exchange process between the tactical and the veterinary units so the MWA treatment information is included in the COP.

Table 9.13-4. TASHA 13 Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Lack of established reporting and integration into veterinary surveillance activities of indigenous animal reports from non-JTF activities and routine MWA veterinary activities.	Modifications to veterinary information system	Develop automated modifications to existing and developing veterinary tracking systems to collect and disseminate food and water testing information, collect/collate and process veterinary CBRN information, track the status of MWA isolation and quarantine operations, and link this information to interoperable medical automated systems and the COP.

9.14 Task TASHA 14: Conduct surveillance of food and water supplies throughout the battlespace

9.14.1 Functional Area Analysis

9.14.1.1 Definition

Based on the battlespace preventive health plan, all food and water supplies are checked for contamination upon entering the supply chain, at key points in the supply chain, and before being prepared and consumed. This task is performed by veterinary, preventive medicine, engineer, and food service personnel. Information from these activities are collected and analyzed by preventive health surveillance. The results including appropriate preventive activities and medical countermeasures contribute to health and risk assessments and assist in the management of response and mitigation. Surveillance of food and water supplies is critical to the health of the force.

9.14.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.14.1.2.1 Supported Task: OPSHA 7

9.14.1.2.2 Lateral Tasks: TASENS 7, TASENS 8, TASENS 9

9.14.1.2.3 Supporting Task: N/A

9.14.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Partially completed mission preparation. (C2.1.3)
3. Poor personnel nutrition and health. (C2.2.4.1)
4. Limited personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited international organization support. (C3.1.2.5)
3. Moderate health risk. (C3.3.1.5)

9.14.2 Functional Needs Analysis**9.14.2.1 Capability and Deficiency Assessment Summary**

Table 9.14-1 discusses individual capabilities to perform this task to the designated standards. Current capabilities are based on old, manual systems and surveillance data on food and water and preventative health are not always integrated into the COP. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

Testing of food is performed when there is confirmed or suspected contamination. Water testing is done by a number of groups (e.g., preventative medicine and veterinarians) based on location. There is little capability to conduct routine surveillance of food and water supplies. Any collected data are not always shared nor included in the COP. Current deficiencies include the facts that reports may not be available, preventive medicine and veterinarians are not tied together to share data, testing is performed only when there is confirmed or suspected contamination, and the Veterinary Corps relies on e-mail to obtain and pass information.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 9.14-1. TASHA 14: Capability and Deficiency Assessment

Capability: Veterinary Food and Water Surveillance	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	1 ¹	5 ²	5 ³	6 ⁴	3 ¹	2 ⁵	4 ⁶
Near/Mid-Term Overall Capability	1	5	5	6	3	2	4
Far-Term Overall Capability	1	5	5	6	3	2	4

	FAA Measure	Scale
M1	Food and water surveillance information in the COP is accurate and useful.	8–10: Consumable food and water surveillance information utility is high and is accurately and rapidly presented on the COP using automated tools and systems. 4–7: Consumable food and water surveillance information utility exists; information is current and accurate and is directly posted to the COP using manual means. 1–3: Consumable food and water surveillance information utility is low, delayed, inaccurate, or not generally posted directly to the COP. 0: Consumable food and water surveillance information utility is nonexistent.
M2	Preventative health surveillance information is correlated.	8–10: Veterinary and preventative health surveillance automated systems are interoperable and integrated. Correlation of information is performed by the systems and is timely and accurate. 4–7: Correlation of veterinary and preventative health surveillance information is predominantly performed manually. 1–3: Correlation of veterinary and preventative health surveillance information is inadequate for support of operations 0: Correlation of veterinary and preventative health surveillance information is nonexistent.
M3	Reports on hazard are accurate.	8–10: Consumable food and water surveillance hazard report utility is high and is posted directly to the COP. 4–7: Consumable food and water surveillance hazard report utility exists and the information is posted on the COP after review and/or consolidation by nonveterinary activity or authority. 1–3: Consumable food and water surveillance hazard report utility is low and does not support operations. 0: Consumable food and water surveillance hazard report utility is nonexistent.
M4	Food and water surveillance information reporting system is in place.	8–10: Interoperable and integrated consumable food and water surveillance reporting system exists and is in place. Reports are presented on the COP and disseminated to appropriate activities within and outside the area of operations. 4–7: Consumable food and water surveillance reporting system exists and is in place. Reports are performed manually and disseminated using available communications channels to selected activities within and outside area of operations. 1–3: Consumable food and water surveillance reporting is inadequate for support of operations. 0: Consumable food and water surveillance reporting does not exist.

M5	Reports of contamination indications of food and water supplies are timely.	<p>8–10: Interoperable and integrated automated systems accurately and rapidly collect, correlate, and surveillance information of food and water supplies. The information is assessed and presented directly on the COP by veterinary and/or preventative health services activities using automated tools and systems.</p> <p>4–7: Surveillance information on food and water supplies is accurately and rapidly collected, correlated, and processed manually. The information is assessed and directly presented on the COP by veterinary and/or preventative health services activities.</p> <p>1–3: Food and water surveillance inadequately collects, correlates, and processes information for presentation on the COP by veterinary and/or preventative health services activities.</p> <p>0: Food and water surveillance does not exist.</p>
M6	Preventative activities and medical countermeasures are fully implemented.	<p>8–10: Veterinary and/or preventative health surveillance automated systems are interoperable and integrated. Correlation of information is performed by the systems and identifies appropriate medical services COAs that are timely and accurate. Implementation of appropriate preventative activities and medical countermeasures adequately address situation.</p> <p>4–7: Correlation of veterinary and/or preventative health surveillance information and identification of the appropriate medical services COA is predominantly performed manually and is timely and accurate. Implementation and conduct of the selected COA adequately addresses situation.</p> <p>1–3: Correlation of veterinary/or and preventative health surveillance information, identification of appropriate medical services COA, and/or implementation and conduct of the selected COA are inadequate for support of operations.</p> <p>0: Correlation of veterinary and/or preventative health surveillance information, identification of appropriate medical services COA, and/or implementation and conduct of the selected COA are nonexistent.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Consumable surveillance information is generally not posted to the COP. Information collected by veterinary and/or preventative health services activities is generally posted, when performed, to the COP by medical services authorities after review. Process is predominantly manual, time- and labor-intensive, and delays display of potentially critical information on the COP with concurrent risk to health and well-being of the force.

² Veterinary and/or preventative health surveillance information is correlated. However, the process is predominantly manual and time- and labor-intensive.

³ Consumable food and water surveillance hazard reporting on food and water supplies is posted on the COP by medical services authorities after review. Process is predominantly manual and time- and labor-intensive. Reporting is performed only on supplies tested. Generally, testing of food and water supplies by veterinary and/or preventative health surveillance are performed when indications exist of a potential safety issue.

⁴ Consumable food and water surveillance information reporting processes and procedures exist and is in place. Reporting is performed manually and disseminated using available C4ISR systems.

⁵ Cooperative relationships between veterinary, preventative health, and medical services activities in the field are largely dependent upon establishment of personal interactions, OPTEMPO, leadership interest, and the circumstances. Medical, preventative health, and veterinary services activities often operate and perform distinctly separate with generally inadequate coordination and cooperation.

⁶ DOTLPF provides for the performance of most critical aspects of this task. In-place barriers and work-arounds, however, impede accomplishment. DOTLPF must evolve as systems, tactics, and situations change and to promote net-centric operations.

9.14.3 Functional Solution Analysis

9.14.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of common sharing of automated data between preventive medicine and veterinary services.

Partial Non-Materiel Solutions: *Doctrine:* Adjust doctrine to include address and remove impediments to veterinary information processing and dissemination. *Organization:* Adjust medical and veterinary organizations to foster sharing and exchange of data. *Leadership:* Promote and maintain close cooperative and mutually participating relationships between field medical and veterinary services activities. *Training:* Provide initial and recurrent training to preventative medicine, veterinary services, and unit command staff of medical services activities facilitating and emphasizing the appropriate sharing of information.
- 2. Deficiency:** Inadequate doctrine supporting veterinary performance of testing unless there is confirmed or suspected contamination.

Partial Non-Materiel Solutions: *Doctrine:* Include threat-based guidance under which veterinary services activities perform sampling tests on animals for presymptomatic infections.
- 3. Deficiency:** Inadequate automated data collection and exchange for consumable food and potable water surveillance.

Partial Non-Materiel Solutions: *Doctrine:* Adjust joint and Service doctrine to require automated, interoperable data collection, analysis, and exchange systems for all units and forces tasked with conducting consumable food and potable water surveillance.
- 4. Deficiency:** Inadequate veterinary capability for response unless there exists a known problem or suspected situation.

Non-Materiel Solutions: *Doctrine:* Include threat-based guidance under which veterinary services activities perform sampling tests on animals for presymptomatic infections.

Personnel: Adjust veterinary staffing for additional workload involved in testing.

9.14.3.2 IMA Assessment Summary

Table 9.14-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on the need for medical/veterinary data exchange process, connecting the veterinarians to the tactical network, and providing the needed automated tools to improve the speed and accuracy of veterinary testing and reporting to the COP. Table 9.14-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.14-4. TASHA 14: Materiel Approaches

Idea for Materiel Approach	Description
Modifications to veterinary information system	Develop automated modifications to existing and developing veterinary tracking systems to collect and disseminate food and water testing information, collect/collate and process veterinary CBRN information, track the status of MWA isolation and quarantine operations, and link this information to medical automated systems and the COP.
Veterinary automated tools	Develop automated tools that, on a systematic (routine) basis, automatically trigger testing of food and water supplies.

Table 9.14-5. TASHA 14: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Modifications to Veterinary Information System</p>	<p>Veterinary Automated Tools</p>
<p>Lack of common sharing of automated data between preventive medicine and veterinary services.</p>	<p>X</p>	
<p>Inadequate doctrine supporting veterinary performance of testing unless there is confirmed or suspected contamination.</p>	<p>X</p>	<p>X</p>
<p>Inadequate Veterinary Corps automated data collection and exchange.</p>	<p>X</p>	<p>X</p>

9.15 Task TASHA 15: Conduct CBRND preparations

9.15.1 Functional Area Analysis

9.15.1.1 Definition

Includes collaborative preparation for joint and coalition forces CBRND operations within the local or immediate battlespace. Includes collecting and analyzing data from assessments within CBRND functional areas (Shape, Sense, Shield, and Sustain) to support CBRND preparations based on plans, commander's intent, and operational context and situation. Includes preparatory activities with affected forces, coalition partners, and appropriate NGO and indigenous agencies. Also includes integration of CBRN resources provided by other nations and agencies. Includes the tracking, status, and allocation of CBRND resources and activities to assure CBRND readiness and preparedness for sustained effective performance of CBRND tasks within a CBRN/TIM environment. Includes the development and dissemination of taskings to achieve defined end states. Maintains visibility and awareness in the COP of CBRND preparatory activities and resource status.

9.15.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Transformation Planning Guidance, Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept.

9.15.1.2.1 Supported Task: OPSHA 6

9.15.1.2.2 Lateral Tasks: TASHLD 9, TASHLD 10, TASHLD 11, TASHLD 12

9.15.1.2.3 Supporting Task: N/A

9.15.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited military commitments from other nations. (C2.1.1.7)
3. Marginal forces assigned. (C2.2.1)
4. Limited modern military systems. (C2.2.5)
5. Some interoperability. (C2.2.6)
6. Full joint staff integration. (C2.3.1.1)
7. Partial multinational integration. (C2.3.1.2)

8. Moderate staff expertise. (C2.3.1.3)
9. Limited deployed supplies. (C2.8.2)
10. Limited prepositioned materiel. (C2.8.4)
11. No host-nation support. (C2.8.5)

Civil

1. Limited major power involvement. (C3.1.2.1)
2. Negative foreign government support. (C3.1.2.3)
3. Uncertain international organization support. (C3.1.2.5)
4. Restrictive National Command Authority decisions. (C3.1.3)

9.15.2 Functional Needs Analysis

9.15.2.1 Capability and Deficiency Assessment Summary

Table 9.15-1 discusses individual capabilities to plan and prepare for CBRND operations and activities to the designated standards. Currently fielded capabilities are adequate, but need automating, for most operational situations. Capability includes processes and methodologies to plan, coordinate, and conduct preparations for CBRND operations and activities. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Processes exist to coordinate allocation of CBRND units, personnel, systems, and equipment. Plans have been prepared for operations in a CBRN/TIM environment. Training of U.S. forces for operations involving a CBRN threat is generally performed in preparation of tasked forces to conduct operations not of a sustained nature within a CBRN environment. U.S. forces are not trained and equipped to perform sustained operations within a CBRN environment. Although negotiations and discussions with coalition partners and other participants establish requirements and activities for non-U.S. forces in preparation for CBRN operations, not all potential partner nations possess CBRND capabilities. The participation of such nations in CBRN operations will be dependent upon the ability and willingness of the United States and/or other allies to provide the necessary training and materiel. Deficiencies include inadequate automated processing and assessment tools; training of coalition forces; and inadequately trained CBRND personnel.

Projected Near/Mid-Term Capability and Deficiency

The initial fielding of programmed Joint CBRND systems (e.g., Joint Expeditionary Collective Protection [JECP], Joint Service Lightweight Integrated Suit Technology[JSLIST], Joint Service General Purpose Mask [JSGPM], etc.) provides additional capabilities for consideration and application in operations planning. These systems will gradually replace Service-specific legacy systems throughout the mid term and into the early far term. The CBRN staff cell must consider

the diversity of CBRND assets and their associated capabilities when conducting CBRND operations. The programmed initial fielding of JEM and JOEF will provide tools to assist the CBRN staff cell in the performance of their tasks and responsibilities. However, the processes applied by the cell personnel will largely remain unchanged.

Projected Far-Term Capability and Deficiency

Joint CBRND systems will fully replace legacy Service-specific systems within the early far term. Additional protective systems will likely be fielded throughout the far term to address emerging and new threats. JEM and JOEF will be fully fielded in the early far term.

Table 9.15-1. TASHA 15: Capability and Deficiency Assessment

Capability: Conduct CBRND Preparations	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability	6 ¹	6 ²	6 ³	4 ⁴	6 ⁵	7 ⁶	5 ⁷	5 ⁸	6 ⁹
Near/Mid-Term Overall Capability	6	7	7	5	6	7	5	5	6
Far-Term Overall Capability	6	8	8	5	6	7	5	5	6

	FAA Measure	Scale
M1	Process exists to coordinate the allocation of CBRND units and personnel.	<p>8–10: Automated tools, processes, and systems track and display on the COP the status of CBRND units and personnel. Includes unit equipment and supplies status, unit capabilities, and other relevant information for review. Assists with the allocation of these units and personnel to meet identified needs and operational requirements.</p> <p>4–7: The identification, tracking, and allocation of CBRND units and personnel is performed by predominantly manual means. Process effectiveness is dependent upon the training, knowledge, skill, and experience of performing personnel and the currency and accuracy of applied information.</p> <p>1–3: Processes for the identification, tracking, and/or allocation of CBRND units and personnel is inadequate for effective support of operations</p> <p>0: Processes for the identification, tracking, and/or allocation of CBRND units and personnel is nonexistent.</p>
M2	Allocation of CBRND systems and equipment.	<p>8–10: Adequate quantities and types of CBRND equipment, systems, and material are available, allocated, ready, and match JTF operations (e.g., Expeditionary, High Maneuver, etc.) and environments (e.g., jungle, extreme cold terrain, desert, etc.). Includes support of sustained operations in a CBRN/TIM environment.</p> <p>4–7: Sufficient quantities and types of CBRND equipment, systems, and material are allocated and ready for support of JTF operations in a CBRN/TIM environment. Adjustments to planned quantities are performed when necessary for availability. Alternatives are identified, supporting material availability determined, and appropriate allocation actions are taken.</p> <p>1–3: CBRND systems and equipment allocation is inadequate to support operations.</p> <p>0: CBRND systems and equipment allocation processes do not exist.</p>
M3	Process exists to coordinate the pertinent Sense, Shape, Shield, and Sustain factors.	<p>8–10: Automated processes, templates, and collaborative spaces ensure all relevant issues and needs are addressed. Planners and CBRN specialist are highly trained, knowledgeable, and possess access to needed reference material and impacting information.</p> <p>4–7: Manual processes are predominantly applied to address pertinent CBRND issues and are dependent upon the training, skill, experience, and knowledge of planning participants.</p> <p>1–3: Process are inadequate for the effective identification and planning of pertinent CBRND issues, and/or planning participants do not possess adequate training, skill, experience, and knowledge to perform the task.</p> <p>0: Processes and training do not exist for the identification and planning of pertinent CBRND issues.</p>
M4	CBRND staff cell and units have access to dedicated information technology resources to perform tasks and responsibilities.	<p>8–10: CBRN staff cell and units possess dedicated information technology resources and tools for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements.</p> <p>4–7: CBRN staff cell and units are able to access shared information technology resources and tools for operational requirements and training.</p> <p>1–3: CBRN staff cell and units possess limited access to shared information technology resources for operational requirements and training.</p>

		0: CBRN staff cell and units do not possess access to information technology to support operations and training.
M5	Plans exist for operations within a CBRN/TIM environment.	8–10: Operational plans for sustained operations within a CBRN/TIM environment are developed and disseminated to all tasked elements. Plans adequately address the four CBRND areas and enable maintenance of OPTEMPO and successful attainment of planned end states. 4–7: Operational plans for operations within a CBRN/TIM environment are developed and disseminated to all tasked elements. Plans adequately address the four CBRND areas and enable resumption of OPTEMPO and successful attainment of planned end states. 1–3: Plans are inadequate for support of operations within a CBRN/TIM environment. 0: Plans are nonexistent for operations within a CBRN/TIM environment.
M6	Non-DoD CBRND resources integrated when available.	8–10: Available CBRND resources of coalition partners and pertinent non-DoD entities are integrated into CBRND planning and preparations. Secure, interoperable, and interactive processes between participants track identified CBRND resources and display information that is current and accurate on the COP. 4–7: Available CBRND resources of coalition partners and pertinent non-DoD entities are integrated into CBRND planning and preparations. Tracking and readiness information is performed by the owning nation/entity and status updates are provided to the JTF staff. Tracking of CBRND resources supplied to the JTF for application is predominantly performed manually and not integrated with existing JTF automated logistics and CBRND asset tracking systems. 1–3: Identification and tracking of available CBRND resources of coalition partners and non-DoD entities is inadequate to support operations 0: Identification and tracking of available CBRND resources of coalition partners and non-DoD entities is nonexistent.
M7	Forces prepared to operate in a CBRN/TIM environment.	8–10: Forces are equipped, trained, and ready to perform sustained operations within a CBRN/TIM environment. 4–7: Forces are equipped, trained, and ready to perform operations within a CBRN/TIM environment. 1–3: Forces are inadequately equipped, trained, or ready to perform operations within a CBRN/TIM environment 0: Forces are not equipped, trained, or prepared for operations within a CBRN/TIM environment.
M8	CBRN staff cells have the training an experience to make effective preparations.	8–10: All CBRN staff cell personnel are formally trained, receive recurring refresher training, and are experienced in the determination of appropriate CBRND needs, planning, and the conduct of preparations. 4–7: Limited training is provided, is inconsistent, and/or is administered as needed of CBRN staff cell personnel on the determination of appropriate CBRND needs, planning, and the conduct of preparations. Experience will vary between CBRN staff cells among the performing units. 1–3: CBRN staff cell personnel training and experience is inadequate to support operations 0: CBRN staff cell personnel training and experience is nonexistent.
M9	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Allocation of CBRND units and personnel is performed using predominantly manual processes and means. Currency and accuracy of information applied in the process is dependent upon routine reports and inquiries. Effective allocation is dependent upon the experience, skill, knowledge, and training of the staff and varies between staffs. The

programmed fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND units and personnel. However, the process will remain largely unchanged.

² CBRND equipment, systems, and types are available in sufficient quantities to support JTF operations in a CBRN environment, provided there does not exist conflicting demands to support multiple concurrent operations with CBRN threat. Protection from high-risk TIMs is minimal in current CBRND equipment, systems, and material. Further, the majority of the types of systems do not adequately support sustained operations and require infusion of increased CBRND resources to maintain OPTEMPO. Collective protection (COLPRO) systems, for example, are generally large-scale systems and do not adequately support expeditionary and high-maneuver operations, particularly in austere environments at the extremes of the lines of communication. JECF is programmed to field in the mid term and will provide COLPRO flexibility to support most operations and situations. The JSLIST is programmed to field during the mid term and is undergoing certification to meet Occupational Safety and Health Administration (OSHA) Level “C” requirements for TIMs. The JSGPM filtration system will provide a level of protection against selected TIMs and is programmed to field during the mid term. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. Full fielding of JOEF and JEM will be completed in the early far term. However, the process will remain largely unchanged.

³ Processes to consider, coordinate, and plan for pertinent CBRND Sense, Shape, Shield, and Sustain factors, needs, and limitations are predominantly manually performed. The effective application of these processes is dependent upon the experience, skill, knowledge, and training of the staff and varies between staffs. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the planning of CBRND. JOEF and JEM will complete fielding in the early far term.

⁴ CBRN staff cell personnel and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The programmed fielding of JOEF and JEM, although CBRND-supporting technologies, will likely reside upon resident C4ISR hardware and not dedicated CBRND hardware resources.

⁵ Operational plans do not generally address sustained operations within a CBRN/TIM environment. However, plans are developed addressing operations not of a sustained nature within a CBRN environment. Operations within a TIM environment are generally not planned or considered. Resumption and/or maintenance of OPTEMPO is a primary consideration of operational planning. Processes to consider coordinate, and plan for pertinent CBRND Sense, Shape, Shield, and Sustain factors, needs, and limitations are performed for CBRN threat in the development of plans.

⁶ In coordination with coalition partner staff and pertinent non-DoD entities, the JTF staff develops a comprehensive operations plan for successful achievement of the desired end states. Discussions and negotiations between partners determine the capabilities of each partner within the full spectrum of support. Specific tasks are assigned to elements of the coalition force and non-DoD entities most capable of completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual logistics support among coalition partners is planned to complement partners’ capabilities and to minimize weaknesses. For example: U.S. Marine Corps forces were equipped with lightweight CBRN/TIM individual protective equipment by the United Kingdom during Operation Desert Storm. The United States installed COLPRO capabilities in Saudi critical command and control facilities for the same operation. CBRND resources availability and readiness is addressed throughout the process for CBRND. The allocation, placement, and reallocation of protective assets is a function of the planning and operational control of the JTF, JTF staff, and combined staff. Acquisition cross-Service agreements between coalition partners enable acquisition and cross-servicing support between the partners. The implementing arrangement, a more specific arrangement, provides for a wide range of support exchange including consumables, sheltering, medical care, and other support activities. The allocation, operation, manning, management, and resupply of non-U.S. force CBRND assets are generally the responsibility of the owning nation. The tracking of these assets are internal to those forces and nations. Integration of U.S. and non-U.S. logistics systems is not currently required. Tracking of non-U.S. equipment supplied for U.S. force application is largely performed manually and not integrated with existing component Service systems.

⁷ Planning and preparation of U.S. forces for operations involving a CBRN threat provide for the equipping, training, and preparation of tasked forces to conduct operations not of a sustained nature within a CBRN environment. Negotiations and discussions with coalition partners and other participants establish similar requirements and activities for non-U.S. forces. However, not all potential partner nations possess CBRND capabilities and would rely upon the United States and other allies for equipment and training.

⁸ Training in CBRN staff cell operations and processes is generally conducted by the unit. Standardized training is virtually nonexistent, although standard requirements for the responsibilities and duties of the cell do exist. The effectiveness of the cell is dependent upon the experience, skill, knowledge, and training of the assigned staff personnel and varies between staffs.

⁹ DOTLPF adequately addresses most of the critical aspects of this task. However, DOTLPF requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPF will continue to need to evolve as systems, tactics, and situations change.

9.15.3 Functional Solution Analysis

9.15.2.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Inadequate automated processing and assessment tools for the NBC staff cells.
Partial Non-Materiel Solutions: *Doctrine:* Develop doctrine commensurate with advanced information technology application.
- 2. Deficiency:** Insufficient access to automated processing tools.
Partial Non-Materiel Solutions: *Doctrine:* Ensure TTPs and local procedures ensure access to automated processing tools.
- 3. Deficiency:** Inadequate integration and tracking of non-JTF resources applied by the JTF.
Partial Non-Materiel Solutions: *Doctrine:* Ensure TTPs and local procedures account for the integration of local resources in preparations. Also include the potential impact of chemical/biological contamination of airlift aircraft on the intertheater airlift flow and the passive defense measures available to mitigate the threat. *Organization:* Ensure coordination and collaboration with indigenous authorities. *Facilities:* Modification of supporting logistical infrastructure to track “loaned” non-U.S. CBRND resources and report status.
- 4. Deficiency:** Inadequate recognition and support of non-NATO capable forces in coalitions operating in a CBRN Threat environment.
Partial Non-Materiel Solutions: *Organization:* Ensure adequacy of coalitions to operate in a CBRND environment. *Training:* Ensure training programs are available for coalition partners who lack CBRND skills.
- 5. Deficiency:** Insufficient trained personnel for CBRN staff cells.
Partial Non-Materiel Solutions: *Training:* Ensure training programs maintained to provide a continuous pool of capable CBRN staff cells. *Personnel:* Take steps to adequately provide trained personnel to CBRN staff cells.

9.15.3.2 IMA Assessment Summary

Table 9.15-4 is a list of ideas for material approaches and a corresponding description of each idea. The material approaches to help accomplish this task cover developing new, more accurate models and simulations for CBRND planning, providing reach back capability to use information from previous lessons learned, the need for linkages to other data systems and the need for additional C4ISR assets. Table 9.15-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.15-4. TASHA 15: Materiel Approaches

Idea for Materiel Approach	Description
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Link to GIS	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to the COP.
Risk factor template	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.

Table 9.15-5. TASHA 15: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Simulations and Models</p>	<p>Database</p>	<p>Reachback Capability</p>	<p>Link to GIS</p>	<p>Risk Factor Templates</p>
<p>Inadequate automated processing and assessment tools for the NBC staff cells.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Insufficient access to automated processing tools.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Inadequate integration and tracking of non-JTF resources applied by the JTF.</p>	<p>X</p>	<p>X</p>		<p>X</p>	
<p>Inadequate recognition and support of non-NATO capable forces in coalitions operating in a CBRN Threat environment.</p>	<p>X</p>	<p>X</p>			<p>X</p>
<p>Insufficient trained personnel for CBRN staff cells.</p>	<p>X</p>	<p>X</p>			<p>X</p>

9.16 Task TASHA 16: Conduct CBRN hazard prediction and effects modeling

9.16.1 Functional Area Analysis

9.16.1.1 Definition

This task encompasses hazard prediction and effects modeling for situational awareness, response management, preparation, and planning within the immediate battlespace. Agent fate data aid in predicting persistency and impact over the length of the operation or campaign. Effects modeling extend to casualty prediction, effects on unit and mission capability, and expected degradation. All of these are required for COA (adversary and joint force) evaluations, preparations, and management. As the contaminated area matures, hazard levels fluctuate over time, based on the specific agent, winds, terrain, vegetation, waterways, etc. Terrain data, local or micrometeorology, and surface texture are accounted for in atmospheric modeling. Detection data and hazard characterization data are the input for the model-based predictions for atmospheric-driven hazards. Observations and data from the IDN are used to update the hazard prediction.

Biological agents, which are contagious, communicable, or propagated by vectors, are modeled to assist in locating the source, extent of population exposure, persistency in human and animal populations, and impact on military and indigenous populations.

Results are displayed to force commanders via the COP. Computations are performed in either stand-alone or network mode.

9.16.1.2 Derivation

UJTL (TA 2.4, TA 7, TA 7.1), Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, An Operational Concept for Biological Defense, Military Transformation: A Strategic Approach.

9.16.1.2.1 Supported Task: OPSHA 1

9.16.1.2.2 Lateral Tasks: TASENS 1, TASENS 2, TASENS 3

9.16.1.2.3 Supporting Task: N/A

9.16.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Temperate climate. (C1.3.1)
3. Moderate atmospheric effects. (C1.3.3)

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Low military systems reliability. (C2.2.5.3)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Limited staff expertise. (C2.3.1.3)
6. High information volume. (C2.3.1.9)

Civil

1. Limited international organization support. (C3.1.2.5)

9.16.2 Functional Needs Analysis**9.16.2.1 Capability and Deficiency Assessment Summary**

Table 9.16-1 discusses individual capabilities to perform this task to the designated standards. Staffs and units have limited capability to perform CBRN hazard prediction and effects modeling. ATP-45 provides broad-area assessments. Capability is manual and limited to the mesolevel. Even future capabilities do not provide sufficient information technology resources to CBRN staffs. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

There is no existing DoD approved methodology to provide common representation of WMD or TIM hazards. The current hazard prediction models have not been tested to DoD standards. These models lack validation, verification, and accreditation. Staffs and units currently possess limited capabilities to perform CBRN hazard prediction and effects modeling. ATP-45 provides broad-area assessments. Current deficiencies include lack of ability to work with urban terrain at the micro level, limited information provided by ATP-45 reports, absence of ability to accurately and rapidly characterize the hazard, coordination collaboration procedures required for medical and NBC staff cells, and no common joint hazard prediction capability. JEM will address some of these shortfalls. However, limitations remain with respect to quality control of meteorological and oceanographic inputs to JEM, as well as assessing the accuracy of JEM plume against ground truth. The absence of this supporting data has a significant impact during Concept of Operations (CONOPS) development process for high-resolution hazard prediction.

Projected Near/Mid-Term Capability and Deficiency

The programmed initial fielding of JWARN, JOEF, and JEM during the mid term is projected to improve the ability to perform hazard prediction and effects modeling. Overall capabilities of the JTF will gradually increase as operational units are equipped with the systems throughout the

mid term and into the early far term. However, this enhanced capability retains many of the current deficiencies. Micromodeling necessary for urban and complex terrain modeling is inadequate, a common accurate and detailed common joint hazard prediction capability is not determined, and future capabilities do not provide sufficient information technology resources to CBRN staffs. Although the systems do provide a level of support for an aerosolized biological release, they are inadequate for predicting communicable disease transmission, progression, and persistency within populations. Capabilities to detect and identify agents, including standoff detection, are fielded sporadically and as determined operationally ready. The fielding of JEM in the near term will markedly improve high-resolution hazard prediction throughout the battlespace. As JEM matures through the acquisition process, difficult challenges will be undertaken, such as urban and water dispersion. One notable shortfall with JEM is the absence of operating concepts that highlight the most effective employment of JEM across the Joint Service.

Projected Far-Term Capability and Deficiency

Interoperable medical surveillance prediction and modeling tools are reasonably expected to be fielded in this period and should address communicable disease transmission, progression, and persistency within populations. Agent detect and identify capabilities continue to improve as sensor systems are determined operationally ready and fielded. Fielding of JWARN, JEM, and JOEF is projected to be completed early in the far term.

Table 9.16-1. TASHA 16: Capability and Deficiency Assessment

Capability: Hazard Prediction and Effects Modeling		M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Chemical	Current	8 ¹	4 ²	4 ³	4 ⁴	4 ⁵	5 ⁶	5 ⁶	5 ⁶	4 ⁷	4 ⁸
	Near/Mid Term	8	5	5	7	5	6	6	6	5	4
	Far Term	8	6	6	8	5	7	7	7	7	5
Biological	Current	1 ⁹	4 ²	4 ³	4 ¹⁰	4 ⁵	4 ¹¹	4 ¹¹	4 ¹¹	4 ⁷	4 ⁸
	Near/Mid Term	1	5	5	5	5	5	5	5	5	4
	Far Term	4	6	6	8	5	6	6	6	7	5
Radiological	Current	8 ¹	4 ²	4 ³	4 ⁴	4 ⁵	5 ⁶	5 ⁶	5 ⁶	5 ⁷	7 ⁸
	Near/Mid Term	8	5	5	5	5	6	6	6	5	7
	Far Term	8	6	6	8	5	7	7	7	7	7
Current Overall Capability		5	4	4	4	4	5	5	5	4	5
Near/Mid Term Overall Capability		5	5	5	5	5	6	6	6	5	5
Far Term Overall Capability		7	6	6	8	5	7	7	7	7	6

	FAA Measure	Scale
M1	There is sufficient access to the hazard prediction models.	8–10: CBRN staff cell and unit personnel possess unrestricted access to common and standardized hazard prediction models. 4–7: CBRN staff cell and unit personnel possess limited access to common hazard prediction models. 1–3: CBRN staff cell and unit personnel have difficulty accessing hazard prediction models. 0: CBRN staff cell and unit personnel do not have access to hazard prediction models.
M2	Terrain data input is adequate.	8–10: Microterrain data are available with required fidelity (e.g., accuracy, resolution, time latency, periodicity) and applied to microlevel hazard prediction. 4–7: Meso-/macroterrain data are available, accurate, and applied to meso-/macrolevel hazard prediction. 1–3: Meso-/macroterrain data are available and applied to meso-/macrolevel hazard prediction and may contain errors. 0: Terrain data are not available and/or applied to hazard prediction.
M3	Meteorological data are adequate.	8–10: Micrometeorological, as well as high-altitude-weather, data are available with required fidelity (e.g., accurate, timely, of the required resolution) and applied for microlevel hazard prediction. 4–7: Meso-/macrometeorological data are available, accurate, and applied to meso-/macrolevel hazard prediction. 1–3: Meso-/macrometeorological data are available and applied to meso-/macrolevel hazard prediction and may contain errors. 0: Meteorological data are not available and/or applied to hazard prediction.

M4	Agent detection and identification data are adequate.	<p>8–10: Automated agent detection systems are integrated and interoperable with automated CBRND systems. Sensor systems include point, standoff, detect-to-alert, detect-and-identify, and identification sensors providing adequate detection capability and coverage of operations. Sensor data are correlated and processed to identify and characterize the hazard and the results are posted on the COP in near-real time.</p> <p>4–7: Agent detection systems vary between manual to automated detection systems and are predominantly point detection, and the sensor data must be manually correlated and processed to characterize the hazard. Input to the COP is usually performed manually.</p> <p>1–3: Agent detection and identification systems and data are inadequate to support operations.</p> <p>0: Agent detection and identification systems and data are nonexistent.</p>
M5	CBRND staff cell and units have access to dedicated information technology resources to perform tasks and responsibilities.	<p>8–10: CBRND staff cell and units possess dedicated information technology resources and tools for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements.</p> <p>4–7: CBRND staff cell and units are able to access shared information technology resources and tools for operational requirements and training.</p> <p>1–3: CBRND staff cell and units possess limited access to shared information technology resources for operational requirements and training.</p> <p>0: CBRND staff cell and units do not possess access to information technology to support operations and training.</p>
M6	Commanders and staffs have the training to effectively use hazard prediction tools.	<p>8–10: All commanders and staff personnel are formally trained and received recurring refresher training on the effective use of hazard prediction tools to include their application, interpretation, and weak and strong points.</p> <p>4–7: Selected staff personnel are trained on the effective use of hazard prediction models and processes. Commanders are cognizant of the proper application of these tools.</p> <p>1–3: Training on the effective use of hazard prediction tools and models is inadequate to effectively support operations</p> <p>0: Training on the effective use of hazard prediction tools and models is nonexistent.</p>
M7	CBRND specialists have the training to effectively apply hazard prediction models.	<p>8–10: CBRND specialist are formally trained and received recurring refresher training on the effective use of hazard prediction tools to include their application, interpretation, and weak and strong points. Exercises and evaluations include requirements for hazard prediction modeling and interpretation to maintain competencies.</p> <p>4–7: CBRND specialists are formally trained to perform hazard prediction using prediction models. Exercises and evaluations periodically include requirements for hazard prediction modeling and interpretation to maintain basic competencies.</p> <p>1–3: Training of CBRND specialists on the effective use of hazard prediction tools and models is inadequate to effectively support operations</p> <p>0: Training of CBRND specialists on the effective use of hazard prediction tools and models is nonexistent.</p>
M8	Hazard prediction useful for assessment and decision making.	<p>8–10: Hazard prediction utility is high for hazard assessment and decision-making. Prediction is based upon standardized automated microlevel hazard prediction tools continual drawing upon various applicable sources and updating predictions.</p> <p>4–7: Hazard prediction utility exists for assessment and decision making. Prediction is based upon common hazard prediction tools and is dependent upon manual processes, possibly with limited automated support, and is reliant upon the experience, training and knowledge of performing staff and the scope and quality of influencing information.</p> <p>1–3: Hazard prediction utility is low for assessment and decision making and is inadequate to effectively support operations.</p> <p>0: Hazard prediction utility is nonexistent.</p>

M9	Hazards effects models are useful for assessment and decision making.	<p>8–10: Hazard effects modeling utility is high for hazard assessment and decision making. Modeling is based upon standardized automated microlevel hazard effects modeling tools continual drawing upon various applicable sources and updating hazard effects presentations.</p> <p>4–7: Hazard effects modeling utility exists for assessment and decision making. Modeling is based upon predominantly manual modeling tools and is dependent upon manual processes, possibly with limited automated support, and is reliant upon the experience, training, and knowledge of performing staff and the scope and quality of influencing information.</p> <p>1–3: Hazard effects modeling utility is low for assessment and decision making and is inadequate to effectively support operations.</p> <p>0: Hazard effects modeling utility is nonexistent.</p>
M10	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ CBRND staff cell personnel and unit personnel are trained in the application of and possess access to ATP-45 hazard prediction model, a NATO standard. This is a manual process and is dependent upon the experience, skill, and knowledge of the performing individual(s). Although other prediction models, both GOTS and COTS, exist, these are not standardized and common to the force. The mid-term programmed fielding of JEM will provide CBRN specialists with a standardized and common hazard prediction tool. However, JEM will likely reside upon resident C4ISR systems and not dedicated CBRND hardware resources. CBRN specialists will possess shared access to these systems.

² Current hazard prediction modeling is performed at the meso-/macrolevel. Microterrain data, when available, are at greater depth of detail than required by the model. Modeling currently uses ATP-45, which provides broad-area assessments. ATP-45 was designed for application using standard maps. Digital Terrain Elevation Data (DTED) Level 1 terrain data adequately supports current modeling processes. The advent of computerized modeling using ATP-45 provides visualization, but generally requires terrain data to be resident. The mid-term and far-term fielding of JOEF and JEM will expand hazard modeling capabilities. Terrain data may be accessed as needed and retained from GIS, mapping, or other applicable and approved sources. JEM will provide a standardized and common hazard prediction tool.

³ Current hazard prediction modeling is performed at the meso-/macrolevel. Micrometeorological data, when available, are at greater depth of detail than required by the model. Modeling currently uses ATP-45 which provides broad-area assessments. ATP-45 was designed for application using standard maps. The mid-term and far-term fielding of JOEF and JEM will expand hazard modeling capabilities. Meteorological data from applicable and approved sources is accessed on a continuing basis and applied to the model. JEM will provide a standardized and common hazard prediction tool.

⁴ Agent detection and identification is currently performed using predominantly point detection systems and manual reporting. Characterization of the hazard is currently time-consuming and labor-intensive. Current sensor capabilities are limited. However, ongoing efforts are proceeding for development of enhanced sensor capabilities, including stand-off sensors. Fielding of these systems will occur throughout the mid- and far-term. The mid-term and far-term fielding of JWARN to operational units will provide the capability to integrate sensor data for alerting and warning. Agent identification may be achieved by sensor detection parameters, emplaced identification sensors, and/or manual identification processes. Characterization of the hazard can be performed rapidly and accurately through an adequate sensor mix tied to the automated system.

⁵ CBRN staff cell personnel and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The programmed fielding of JOEF and JEM, although CBRND supporting technologies, will likely reside upon resident C4ISR hardware and not dedicated CBRND hardware resources.

⁶ CBRN specialists received formal training on the use and application of the ATP-45 process. Commanders are cognizant of the implications of the results and factor the information into their decisions. CBRN specialists in operational units are periodically exercised and evaluated on the conduct of hazard prediction. However, most local evaluators are unable to adequately assess the performance of this task.

⁷ Current hazard prediction capability is based upon ATP-45, which provides broad-area assessments and is reliant upon the training, knowledge, and experience of the performing individual(s). ATP-45 is not designed for predictions involving urban or complex terrain. Other prediction processes exist, both GOTS and COTS, but are not common and standard to the force. The mid-term fielding of JOEF and JEM will expand hazard prediction capabilities and their utility to operations involving other than open terrain.

⁸ Current DOTLPF address the performance of this task using predominantly manual processes and at a meso-/macrolevel. Operations, however, are not restricted to open terrain, and the ATP-45 methodology is inadequate for these circumstances. DOTLPF must evolve and consider changes in technology, tactics, systems, and situations.

⁹ CBRND staff cell personnel and unit personnel are trained in the application of and possess access to ATP-45 hazard prediction model, a NATO standard. This is a manual process and is dependent upon the experience, skill, and knowledge of the performing individual(s). Although other prediction models exist, both GOTS and COTS, exist, these are not standardized and common to the force. However, although the ATP-45 and other prediction models do provide a level of support for an aerosolized biological release, they are inadequate for predicting communicable disease transmission, progression, and persistency within populations. The mid-term and far-term programmed fielding of JEM will provide CBRN specialists with a standardized and common hazard prediction tool. However, JEM will likely reside upon resident C4ISR systems and not dedicated CBRND hardware resources. CBRN specialists will possess shared access to these systems. Further, JEM will not incorporate tools to predict disease transmission, progression, and persistency. Future medical surveillance tool development is said to include these capabilities which will be interoperable.

¹⁰ Agent detection and identification is currently performed using predominantly point detection systems and manual reporting. Characterization of the hazard is currently time-consuming and labor-intensive. Current sensor capabilities are limited. However, ongoing efforts are proceeding for development of enhanced sensor capabilities, including standoff sensors. Fielding of these systems will occur throughout the mid and far term. The mid-term and far-term fielding of JWARN (Increment 1 – IOC) to operational units will provide the capability to integrate sensor data for alerting and warning. Agent identification may be achieved by sensor detection parameters, emplaced identification sensors, and/or manual identification processes. Characterization of the hazard can be performed rapidly and accurately through an adequate sensor mix tied to the automated system. JEM, programmed to initially field in the mid term and complete fielding in the early far term, will not incorporate tools to predict disease transmission, progression, and persistency. Future medical surveillance tool development is said to include these capabilities which will be interoperable.

¹¹ CBRN specialists received formal training on the use and application of the ATP-45 process. Commanders are cognizant of the implications of the results and factor the information into their decisions. CBRN specialists in operational units are periodically exercised and evaluated on the conduct of hazard prediction. However, most local evaluators are unable to adequately assess the performance of this task. However, ATP-45 is not appropriate for a nonaerosolized release of a biological agent. Close coordination and collaboration between medical services and CBRN staff cell personnel is essential for situations involving a communicable biological hazard.

9.16.3 Functional Needs Analysis

9.16.3.1 DOTLPP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Absence of ability to accurately and rapidly characterize the hazard.
Partial Non-Materiel Solutions: *Doctrine:* Improved TTPs required for hazard characterization.
- 2. Deficiency:** Access is limited to information technology (IT) resources.
Partial Non-Materiel Solutions: *Doctrine:* Ensure TTPs and local procedures access/availability to IT resources. *Organization:* Ensure adequate IT resources are available.
- 3. Deficiency:** Insufficient continuing training requirement to maintain proficiency.
Partial Non-Materiel Solutions: *Training:* Establish continued training requirements, recurring refresher courses, and training tools.
- 4. Deficiency:** Inadequate ability for communicable disease transmission and persistency in populations.
Partial Non-Materiel Solutions: *Doctrine:* Ensure doctrine addresses improved communicable disease prediction of transmission and persistency.
- 5. Deficiency:** Inadequate coordination and collaboration procedures for medical and CBRN staff cells.
Partial Non-Materiel Solutions: *Doctrine:* Establish doctrinal requirements for close collaboration of medical and CBRN staffs. *Training:* Ensure joint training programs for CBRN and medical staff cells.
- 6. Deficiency:** Inadequate communicable biological hazard prediction.
Partial Non-Materiel Solutions: *Doctrine:* Improve doctrine for communicable biological hazard prediction. *Training:* Ensure training programs for communicable biological hazard prediction.

9.16.3.2 IMA Assessment Summary

Table 9.16-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches here again include the development of faster, more accurate CBRN models and simulations; improved detection capabilities; and medical tools for predicting casualties and collaborating with tactical units. Table 9.16-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPP assessment.

Table 9.16-4. TASHA 16: Materiel Approaches

Idea for Materiel Approach	Description
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA
Medical prediction/collaboration tools	Develop automated tools to model the spread and persistency of communicable diseases that interface with the COP to provide collaboration and accurate information for decision making.
CBRN staff collaboration tools	Develop automated system among and between CBRND specialists and other functions (e.g., operations, logistics) to allow collaboration between these functional areas and link to the COP.
Hazard status templates	Develop a system that merges collected data and predictions of agent travel to provide hazard status.

Table 9.16-5. TASHA 16: IMA Assessment

Identified Gaps	Simulations and Models	Medical Prediction/ Collaboration Tools	CBRN Staff Collaboration Tools	Hazard Status Templates
Absence of ability to accurately and rapidly characterize the hazard.	X	X	X	X
Access is limited to IT resources.	X		X	X
Insufficient continuing training requirement to maintain proficiency.	X	X	X	X
Inadequate ability for communicable transmission and persistency in populations.	X	X	X	X
Coordination collaboration procedures required for medical and CBRN staff cells.		X	X	
Inadequate communicable biological prediction.	X	X	X	X

9.17 Task TASHA 17: Operate an IDN to “detect to warn” and provide continuous hazard status**9.17.1 Functional Area Analysis****9.17.1.1 Definition**

This task encompasses deploying and establishing an IDN array of detectors and sensors to provide synergy to the system and compensate for the technological weaknesses of any single sensor. Includes the ability to continuously monitor the CBRN situation through the use of an IDN. An IDN likely consists of smart standoff and point detectors as a means to “detect to warn” and receive continuous updates. Compiled IDN data update hazard predictions and projected impacts to achieve an understanding of the hazard. Survey and reconnaissance activities can be directed based on the results of the IDN data. Additional IDN assets aid in monitoring persistent CBRN hazards. Data from the IDN are displayed via the COP. Areas not covered by the IDN need to be managed. Ideally, the IDN archives event histories. Additionally, the IDN links to the JTF intelligence system, theater missile defense system, and other theater collection assets. CBRN data are correlated with data from other assets at a processing node within the operations center.

9.17.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.17.1.2.1 Supported Task: OSHA 5

9.17.1.2.2 Lateral Task: N/A

9.17.1.2.3 Supporting Task: N/A

9.17.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Temperate climate. (C1.3.1)

Military

1. Limited personnel experience. (C2.2.4.5)
2. Limited modern military systems. (C2.2.5)
3. Low military systems reliability. (C2.2.5.3)
4. Some interoperability. (C2.2.6)

5. Limited staff expertise. (C2.3.1.3)
6. Intelligence dissemination and receipt fully exists. (C2.4.7)

Civil. N/A

9.17.2 Functional Needs Analysis

9.17.2.1 Capability and Deficiency Assessment Summary

Table 9.17-1 discusses individual capabilities to perform this task to the designated standards. There is no current capability to operate an IDN to “detect to warn” and provide continuous hazard status. JWARN, when fielded, will provide improvement in the ability to warn units. The overall capability for current and near/mid term are “red.” Although improvements between the periods occur for specific supporting capabilities and are reflected in the assessment, the improved capabilities are not sufficient to change the overall assessed color ratings for the assessed measures. Improvement in task capabilities achieve an assessed “yellow” rating for the far term.

Current Capability and Deficiency

Joint forces have extremely limited capability to “detect to warn” and provide continuous status. Deficiencies include lack of sensor capability, inadequate networking of sensors, immature technology, and lack of ability to differentiate between multiple releases. Doctrine and training must mature along with the evolving systems.

Projected Near/Mid-Term Capability and Deficiency

JWARN (Increment 1 – IOC), programmed for initial fielding during the mid term, will provide a substantial improvement in the ability to notify and warn units of a hazard.

Projected Far-Term Capability and Deficiency

JWARN (Increment 1 – IOC) is projected to complete fielding in the early far term. Sensors and IDN capabilities are in development with stated fielding sometime in the far term. This effort is dependent upon the progression of sensor technologies necessary for an IDN.

Table 9.17-1. TASHA 17: Capability and Deficiency Assessment

Capability: Operate an IDN to “Detect to Warn” and Provide Continuous Hazard Status	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Capability	0 ¹	0 ²	0 ³	0 ⁴	0 ⁵	0 ⁶	0 ⁷	0 ⁸	0 ⁹
Near/Mid-Term Capability	1	2	2	0	0	0	3	2	0
Far-Term Capability	3	4	4	6	4	4	4	7	3

	FAA Measure	Scale
M1	Tactical area is adequately covered by the IDN.	8–10: IDN systems exist and provide full coverage of the tactical area for all CBRN and high-threat TIMs. IDN data are integrated and interoperable with CBRN and C4ISR systems. CBRN and C4ISR systems are continuously updated with IDN information. 4–7: IDN systems exist and provide coverage of critical areas of the area of operations for all CBRN and high-threat TIMs. IDN data are integrated and interoperable with CBRN and C4ISR systems. CBRN and C4ISR systems are updated with IDN information. 1–3: IDN systems provide inadequate coverage of operations for all CBRN and high-threat TIMs. 0: IDN systems are nonexistent.
M2	There is confidence in the IDN ability to detect and provide characterization data.	8–10: IDN detection and characterization data utility is high and supports decision making, operations, and the safety and well-being of the force. 4–7: IDN detection and characterization data utility exists for decision making, operations, and assists activities providing for the safety and well-being of the force. 1–3: IDN detection and characterization data are low and unable to support decision making and operations positively affecting the safety and well-being of the force. 0: IDN detection and characterization data are nonexistent.
M3	Sensors are managed at all echelons networked to the IDN.	8–10: All echelons networked to the IDN are able to remotely manage sensors using automated tools and C4ISR connectivity. 4–7: Selected entities networked to the IDN are able to remotely manage sensors using automated tools and C4ISR connectivity. 1–3: IDN sensors are remotely managed by a single control point. 0: IDN sensors cannot be managed remotely.
M4	There are sufficient doctrine and TTPs for effective IDN operation.	8–10: Doctrine and TTPs provide clear and concise guidance, requirements, and procedures for the effective operation of an IDN. 4–7: Doctrine and TTPs provide general guidance, requirements, and procedures for the operation of an IDN. 1–3: Doctrine and TTPs do not adequately address the operation of an IDN. 0: Doctrine and TTPs are nonexistent for the operation of an IDN.

M5	Units are adequately trained to effectively operate the IDN.	<p>8–10: All personnel performing IDN operations tasks are fully trained and receive recurring refresher training on the conduct of their tasks. Exercises and evaluations are routinely conducted and fully challenge capabilities to maintain and refine skills, knowledge, and capabilities. IDN operations competences and experience are high and enable the rapid, accurate, and successful completion of tasks.</p> <p>4–7: Core personnel performing IDN operations tasks are fully trained and receive recurring refresher training on the conduct of their tasks. Exercises and evaluations do not generally fully challenge capabilities. Limited training is provided, is inconsistent, and/or is administered in preparation for operations to noncore personnel for the performance of their assigned tasks. IDN operations competencies and experience will vary, but sufficient capability exists to successfully perform tasks.</p> <p>1–3: Training is inadequate for the successful performance of IDN operations.</p> <p>0: Training is inadequate or nonexistent for the successful performance of IDN operations.</p>
M6	CBRND specialists have the training to effectively operate the IDN.	<p>8–10: All CBRND personnel are fully trained and receive recurring refresher training on the conduct of IDN operations. Exercises and evaluations are routinely conducted and fully challenge capabilities to maintain and refine skills, knowledge, and capabilities. IDN operations competences and experience are high and enable the rapid, accurate, and successful completion of tasks.</p> <p>4–7: Core CBRND specialists performing IDN operations tasks are fully trained and receive recurring refresher training on the conduct of their tasks. Exercises and evaluations do not generally fully challenge capabilities. Limited training is provided, is inconsistent, and/or is administered in preparation for operations to noncore CBRND specialists for the performance of their assigned tasks. IDN operations competencies and experience will vary, but sufficient capability exists to successfully perform tasks.</p> <p>1–3: Training is inadequate for the successful performance of IDN operations.</p> <p>0: Training is nonexistent for the successful performance of IDN operations.</p>
M7	All operation centers networked to IDN.	<p>8–10: All operations centers are networked to the IDN.</p> <p>4–7: Selected operations centers are networked to the IDN.</p> <p>1–3: Selected operations centers possess limited access to the IDN.</p> <p>0: Operations centers are not networked to the IDN.</p>
M8	IDN can successfully track and monitor the hazard throughout its persistency.	<p>8–10: The IDN maintains its ability to monitor the hazard, clear sensors between readings, and reset sensors throughout the full presence of the hazard without manual intervention.</p> <p>4–7: The IDN requires manual intervention to maintain the ability to monitor the hazard, clear sensors between readings, and reset sensors through the hazard’s presence.</p> <p>1–3: The IDN requires manual intervention and possesses limited capability to monitor the hazard, clear sensors between readings, and resetting of sensors through the hazard’s presence.</p> <p>0: The IDN is unable to monitor and track a hazard throughout its persistency.</p>
M9	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Fielded IDN systems for CBRN/TIM do not currently exist. Systems are in development and fielding is expected in the far term but are contingent upon sensor technology progression. JWARN, to be initially fielded to operational units in the mid term with fielding projected to be completed in the early far term, includes IDN data capabilities.

² Confidence is low as IDN systems have yet to be fielded. Expectation is the systems will increase the accuracy of decision making, sustain OPTEMPO, and further promote the safety and well-being of the force.

³ Current fielded detection systems are inadequately networked and many require manual reporting. Management of current systems is performed locally and adjustments are often made individually. Systems are in development and fielding is expected in the far-term but are contingent upon sensor technology progression. Remote management capabilities is an expectation for these future fielded systems.

⁴ Lack of IDN maturity prohibits doctrine and TTP development.

⁵ Units are currently trained in the operation of current non-IDN sensor systems. Training to support future fielded IDNs awaits development of associated DOTLPF and IDN technology maturity.

⁶ CBRND specialists are currently trained in the operation of current non-IDN sensor systems. Training to support future fielded IDNs awaits development of associated DOTLPF and IDN technology maturity.

⁷ IDN is not fielded; therefore, operations centers are not networked to the IDN. However, operations centers are increasingly evolving to handle network sensors for other battlespace threats. Connectivity to future fielded IDNs awaits development of associated DOTLPF and IDN technology maturity.

⁸ IDN technology is currently too immature to perform this function

⁹ Lack of IDN maturity prohibits development of supporting and associated DOTLPF.

9.17.3 Functional Solution Analysis

9.17.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Lack of sensor capability.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine supporting IDN as sensor and IDN capability matures.
2. **Deficiency:** Lack of mature IDN and evolving operation center technologies/systems.
Partial Non-Material Solutions: *Doctrine:* Doctrine needs to mature as IDN and sensor capability matures. *Training:* Operations center training will have to adjust to maturing IDN capability.
3. **Deficiency:** Lack of mature doctrine.
Non-Material Solutions: *Doctrine:* Develop doctrine supporting IDN as sensor and IDN capability matures.
4. **Deficiency:** Absence of training standards.
Non-Material Solutions: *Training:* Develop training standards supporting IDN as sensor and IDN capability matures.

9.17.3.2 IMA Assessment Summary

Table 9.17-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches needed to accomplish this task include the development and fielding of IDN interfaces for detectors, collecting and processing detector data, querying detectors for status and associated data processing and modeling. Table 9.17-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.17-4. TASHA 17: Materiel Approaches

Idea for Materiel Approach	Description
IDN interface for sensors	Ensure developmental CBRN sensors include ability to interface with an IDN. Develop adaptors to interface existing CBRN sensors to the IDN.
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots, and overlays and verify receipt of reports and plots. Transmission of data uses existing communication nets.
Query sensor status	Develop a system capable of automatically requesting sensor status (health) of networked sensors.
Simulation and models	Develop a system enabling operational commanders to display current operational picture and to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Field CBRN information resource	Develop a field resource system that will provide and search archived information for CBRN/TIM agents, effects, treatments, etc.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.

Table 15.17-5. TASHA 17: IMA Assessment

Identified Gaps Ideas for Material Approaches (IMA)	IDN Interface for Sensors	Sensor Data	Query Sensors for Status	Simulation and Models	Database	Field CBRN Information Resource	Reachback Capability
Lack of sensor capability.	X	X	X				
Lack of mature IDN and evolving operation center technologies/systems.	X			X	X	X	X

9.18 Task TASHA 18: Provide CBRN tactical situational awareness throughout the battlespace via the COP

9.18.1 Functional Area Analysis

9.18.1.1 Definition

Establishes tactical battlespace situational awareness, via the COP, to ensure units immediately affected by the hazards are able to effectively respond, including warning units projected to be affected by the hazard based on hazard prediction results as displayed in the COP. An NBC Warning and Reporting System provides essential information for local staff action and command decisions. Data from the local IDN accompanied by hazard characterizations are the input for situational awareness. The overall operational objective is for situational awareness to mature into shared awareness, and then shared understanding. Shared awareness and understanding promotes synchronized response on the part of affected units.

9.18.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.18.1.2.1 Supported Task: OSHA 8

9.18.1.2.2 Lateral Task: N/A

9.18.1.2.3 Supporting Task: N/A

9.18.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Few modern military systems. (C2.2.5)
2. Low military systems reliability. (C2.2.5.3)
3. Some interoperability. (C2.2.6)
4. Poor multinational integration. (C2.3.1.2)
5. Restricted information exchange. (C2.3.1.8)
6. High information volume. (C2.3.1.9)
7. Marginal intelligence database. (C2.4.2)

Civil. N/A

9.18.2 Functional Needs Analysis

9.18.2.1 Capability and Deficiency Assessment Summary

Table 9.18-1 discusses individual capabilities to perform this task to the designated standards. Current capability to provide CBRN tactical situational awareness is based on ATP-45 information. The mid- to far-term fielding of JWARN and JEM will provide the future capability. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Joint forces currently have limited capability to provide CBRN tactical situational awareness via the COP; basic ATP-45 information is currently available, and the assessment process remains predominantly manual. Current deficiencies include the lack of visibility of CBRN information in the COP, potential for errors and omissions related to predominant manual systems of assessment, and inadequacy of ATP-45 information to provide detailed and specific information; and the perishable nature of attained staff skills. Continuous training is required to update perishable skills.

Projected Near/Mid-Term Capability and Deficiency

The projected initial fielding in the mid term of JWARN, JOEF, and JEM systems will enhance the collection, processing, availability, timeliness, and accuracy of CBRN information for display in the COP. Emerging C4ISR capabilities will enhance the CBRN threat intelligence process. However, projected deficiencies include the impact of retained legacy systems upon the ability to process and disseminate information; lack of operational assessment tools for CBRN impact; and the inadequacy of ATP-45 information to provide detailed, accurate, and specific information on the hazard. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection and integration of information until the legacy systems are either replaced or modified for compliance. Doctrine must evolve to maximize the utility of the new systems for all phases of operations from planning to post-operations.

Projected Far-Term Capability and Deficiency

The fielding of JWARN, JOEF, and JEM are projected to be completed during the early far term. All legacy systems are projected to either be replaced by, or be in compliance with, DISA standards and fully support net-centric operations in the far term.

Table 9.18-1. TASHA 18: Capability and Deficiency Assessment

Capability: CBRN Tactical Situational Awareness	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability	8 ¹	5 ²	3 ²	1 ³	4 ⁴	7 ⁵	2 ⁶	1 ²	4 ⁷
Near/Mid-Term Overall Capability	8	6	4	2	4	8	2	3	4
Far-Term Overall Capability	9	7	8	5	5	9	3	7	5

	FAA Measure	Scale
M1	Mechanism is in place to disseminate routine, essential, and critical CBRN/TIM threat intelligence rapidly.	8–10: Means exist and are employed to rapidly disseminate routine, essential, and critical CBRN/TIM threat intelligence to all need-to-know centers. 4–7: Limited means exist and are employed for dissemination of CBRN threat intelligence to most need-to-know centers. 1–3: Means employment is inadequate for dissemination of CBRN threat intelligence to requiring need-to-know centers. 0: Means do not exist for the dissemination of CBRN threat intelligence to requiring need-to-know centers.
M2	Means exist to compile and display information on CBRN/TIM events that occurs throughout the operating area.	8–10: Automated systems substantially or fully perform collection, compilation, and processing of CBRN/TIM events occurring throughout the area of operations, incorporate display of the information, and provide the information to the COP. 4–7: Collection, compilation, and processing of CBRN/TIM events occurring throughout the area of operations is performed predominantly using manual means, is limited to available trained resources, and the quality of the selected assessed data. 1–3: Inadequate capability to collect, compile, and process information on CBRN/TIM events throughout the area of operations. 0: Nonexistent capability to collect, compile, and process information on CBRN/TIM events throughout the area of operations.
M3	Means exist to present information on the operational impact of the CBRN/TIM event.	8–10: Automated systems substantially or fully present operational impact information and plausible COAs for CBRN/TIM events occurring and provide visualization of the information. 4–7: Determination of the operational impact of CBRN/TIM events is performed predominantly using manual means, is limited to available trained resources, and the quality of the selected assessed data. Visualization is minimal. 1–3: Inadequate capability to assess and present the operational impacts of CBRN/TIM events. Automated visualization is absent. 0: Nonexistent capability to assess and visually present the operational impacts of CBRN/TIM events.
M4	There is confidence in the CBRN information available within the COP.	8–10: Confidence in accuracy, timeliness, trustworthiness, and relevancy of CBRN information on the COP is high. CBRN information is collected, correlated, and processed in high fidelity from multiple sources and source automated information systems are interoperable. 4–7: Limited confidence in accuracy, timeliness, trustworthiness, and relevancy of CBRN information on the COP. Predominantly manual processes collect, correlated, and process CBRN information from sources and may be restricted in the number of sources assessed. 1–3: Low confidence in accuracy, timeliness, trustworthiness, and relevancy of CBRN information on the COP. 0: No confidence in accuracy, timeliness, trustworthiness, and relevancy of CBRN information on the COP.

M5	There are sufficient doctrine and TTPs to effectively acquire and maintain situation awareness.	<p>8–10: Doctrine, policies, procedures, and TTPs are adequate for the establishment and maintenance of situation awareness and integrate CBRN information on the COP.</p> <p>4–7: Doctrine, policies, procedures, and TTPs supporting the establishment and maintenance of situation awareness exist and address CBRN.</p> <p>1–3: Doctrine, policies, procedures, and TTPs are inadequate for the establishment and maintenance of situation awareness.</p> <p>0: Doctrine, policies, procedures, and TTPs are nonexistent for the establishment and maintenance of situation awareness.</p>
M6	Units are adequately trained to effectively acquire and maintain situational awareness.	<p>8–10: All unit commanders and staff are formally trained and receive recurring refresher training including the effective acquisition and maintenance of situation awareness and emphasize CBRN as a critical component.</p> <p>4–7: Limited training is provided, is inconsistent, and/or is administered to staffs in preparation for operations with a CBRN threat for CBRN as an important factor when acquiring and maintaining situation awareness.</p> <p>1–3: Training on the inclusion of CBRN in the acquisition and maintenance of situation awareness is inadequate for support of operations.</p> <p>0: Training on the inclusion of CBRN in the acquisition and maintenance of situation awareness is nonexistent.</p>
M7	CBRND specialist units, teams, cells have access to the COP.	<p>8–10: CBRN specialist units, teams, and cells possess dedicated information technology resources and tools with unrestricted (as applicable) access to the COP for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements.</p> <p>4–7: CBRN specialist units, teams, and cells are able to access the COP using shared information technology resources and tools for operational requirements and training.</p> <p>1–3: CBRN specialist units, teams, and cells possess inadequate access to the COP to support operations and training requirements.</p> <p>0: CBRN specialist units, teams, and cells do not possess access to the COP to support operations and training requirements.</p>
M8	Potentially affected or indirectly affected units are made aware by the COP across echelons of command.	<p>8–10: All CBRN potentially or indirectly affected units are identified and notified in a timely manner by automated systems and across echelons of command on the COP. Timely, accurate, and relevant information is posted on the COP and readily accessible.</p> <p>4–7: Limited means exist and are employed over the COP across echelons of command for the dissemination of CBRN hazard information to known potentially affected units.</p> <p>1–3: Means are inadequate to notify potentially and indirectly affected units of CBRN hazard using the COP across echelons of command.</p> <p>0: Means are nonexistent to notify potentially and indirectly affected units of CBRN hazard using the COP across echelons of command.</p>
M9	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Existing DoD communication infrastructure systems and JWARN, where available, are used to disseminate CBRN intelligence and warnings. Manual ATP-45 format messages are created when automated warning systems are unavailable. However, existing communications systems are not fully interoperable and are dependent upon systems available to elements of the JTF. Attentiveness is required to ensure the effectiveness of the intelligence and operations centers in this mixed communications environment. Net-centric operations and mandatory DISA standards address interoperability and the interchange of information among elements. All DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate, during the mid term.

² Current processes are predominantly manual with limited automation. Process is labor- and time-consuming and dependent upon the training, experience, and availability of performing personnel as well as the quality of the collected information. The current capability is achieved using doctrine and locally devised checklists. The process is slow and prone to human error and omissions. TIM processes are currently nonexistent for operational forces and data are limited to civilian HAZMAT and ITF-40 sources. Information currently flows vertically through the command structure and not horizontally to adjacent and nearby forces. Although limited visualization tools are available for CBRN, these are not generally in use by operating forces. JOEF and JEM are envisioned as providing forces with the tools to assess and display CBRN information and plausible COAs. JWARN will provide the means for collection and dissemination of CBRN information both vertically and horizontally. JWARN, JOEF, and JEM are projected for initial fielding during the mid term. The efficiency and utility of JWARN, JOEF, and JEM will be influenced by emerging C4ISR systems and processes residing on and using GIG Enterprise Services. Legacy systems will continue to require significant manual extraction, review, and reinput of information for application by JWARN, JOEF, and JEM. The continuing requirement for DoD systems to become and be in compliance with DISA standards will gradually provide interoperability of the systems with JOEF and JEM with projected full interoperability of systems in the far term. JOEF and JEM are programmed to link with the COP via the GIG Enterprise Service. Access needed for automated systems to post all relevant data to the COP, as well as access to needed information from the COP.

³ Specificity of current ATP-45 processes is inadequate. ATP-45-based data are broad-based and general without the degree of detail necessary for effective decisioning. ATP-45 information does not provide fidelity of data essential for operations in complex and urban terrain. JWARN uses ATP-45 format. JEM is currently projected as macrolevel capable. JWARN, JOEF, and JEM are projected for initial fielding in the mid term with fielding completed in the early far term. Visualization and COA determinations are supported by these systems.

⁴ Doctrine, policies, procedures, and TTPs supporting the establishment and maintenance of situation awareness exist and are sufficient for ATP-45-based processes. JWARN, JOEF, and JEM are projected for initial fielding in the mid term with fielding completed in the early far term and have capabilities for connectivity with the COP. Doctrine, policies, procedures, and TTP is not sufficient for providing CBRN information into the COP.

⁵ Limited training is provided to unit staffs on CBRN as an integral part of situational awareness. Consistent formal and refresher training including CBRN in situational awareness attainment and maintenance is not regularly and routinely performed. Limited routine training is provided and often is not focused upon preparation for operations with a CBRN threat. The fielding of JWARN, JEM, and JOEF provide the capability to refine staff skills as part of local training and exercising/evaluations. JWARN, JOEF, and JEM are programmed for initial fielding during the mid term with fielding completed in the early far term. However, supporting and requiring DOTLFP is necessary to ensure attainment and maintenance of the capability that includes CBRN.

⁶ CBRN specialist units, teams, and cells possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions, which may conflict with CBRN entity connectivity to the COP until a known threat is identified and command influence is exerted. JWARN, JOEF, and JEM are programmed for initial fielding during the mid term with fielding completed in the early far term and possess capabilities to link with the COP via the GIG Enterprise Service.

⁷ Current DOTLFP adequately address tactical situation awareness. CBRN is discussed but is not considered critical without threat and does not currently possess a direct interface to COP. DOTLFP will need to evolve as systems, tactics, and situations change.

9.18.3 Functional Solution Analysis

9.18.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Inadequate DOTLPF ensuring emergent JWARN, JOEF, and JEM capabilities provide accurate and timely information into the COP.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine and TTPs for JWARN, JOEF, and JEM and account for COP integration. *Organization:* Develop organization structures and processes for the accurate, timely, and effective application of JWARN, JOEF, and JEM in operations. *Training:* Incorporate into initial and recurring training the effective and timely operation and application of JWARN, JOEF, JEM and the dissemination of information on the COP. Incorporate into exercise and evaluation criteria requirements challenging force application and use of JWARN, JOEF, and JEM, including posted COP information. *Leadership:* Ensure awareness of criticality to operations with threat of accurate and timely CBRND information posted on the COP. *Facilities:* Establish supporting infrastructure necessary for the effective, accurate, and timely application of JWARN, JOEF, and JEM as well as the posting and availability of resulting information on the COP.
- 2. Deficiency:** Inadequate doctrine for predictions and status information being made available by JEM, JOEF, and JWARN.
Non-Material Solutions: *Doctrine:* Develop doctrine for application of capabilities provided by JEM, JOEF, and JWARN.
- 3. Deficiency:** Inadequate basic skill training and refresher training to ensure a cadre of trained personnel.
Non-Material Solutions: *Training:* Ensure training programs for CBRN Information Systems and COP.
- 4. Deficiency:** Inadequate access to IT resources and the COP.
Partial Non-Material Solutions: *Training:* Ensure access to IT systems for CBRN staff cells and units.

9.18.3.2 IMA Assessment Summary

Table 9.18-4 is a list of ideas for material approaches and a corresponding description of each idea. This task—key to the ability to shape the battlespace—will require extensive materiel improvements. These improvements include improvements in transmitting accurate information, using existing and forthcoming C4ISR assets to their full capabilities, and automated planning and assessment tools. Table 9.18-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.18-4. TASHA 18: Materiel Approaches

Idea for Materiel Approach	Description
Information assurance	Develop a CBRND system that processes and transmits information in accordance with Information Assurance Defense in Depth standards including certification and accreditation in accordance with DoD and CJCS guidance.
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots, and overlays and verify receipt of reports and plots. Transmission of data uses existing communication nets.
Link to GIS	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to the COP.
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor template	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Hazard status template	Develop a system that merges collected data and predictions of agent travel to provide hazard status.
Hazard prediction tool	Develop a DoD-approved model for CBRN and TIM hazard prediction capabilities, incorporating physics-based functionalities. The model acquires and integrates information from appropriate databases (i.e., terrain, structures, environmental, meteorological, intelligence, unit, population, etc.) to accurately predict, map, and graphically portray the hazard in near-real time.
Data fusion	Develop a capability to automatically perform data fusion. “Data fusion” is combining automatically correlated information with data that refines the information or presents it in an intuitive format. Fused data in many cases will arrive later than real- or near-real-time data.

Table 9.18-5. TASHA 18: IMA Assessment

Ideas for Material Approaches (IMA)	Information Assurance	Collect, Exchange and Disseminate Information	Link to GIS	Simulations and Models	Database	Reachback Capability	Risk Factor Template	Data Fusion	Hazard Status Template	Hazard Prediction Tool
Identified Gaps										
Inadequate DOTMLPF ensuring emergent JWARN, JOEF, and JEM capabilities provide accurate and timely information into the COP.	X	X	X	X	X	X	X	X	X	X
Inadequate access to IT resources and the COP.		X	X			X				

9.19 Task TASHA 19: Provide CBRN warning, reporting, and alarming throughout the local or immediate battlespace**9.19.1 Functional Area Analysis****9.19.1.1 Definition**

Includes warning, reporting, and alarming to disseminate CBRN information across the tactical area of operations. This task encompasses the warning, reporting and alarming of units and personnel potentially affected by the hazard in time to assume protective posture. Within the local or immediate battlespace, CBRN warning and reporting may occur multiple times, perhaps concurrently. The various elements of command monitor the CBRN/TIM situation over their respective areas of interest. For atmospheric and surface hazards, models portray the probable downwind hazard and likely downwind contour pattern for each event. The fidelity of the prediction or tracking of actual contamination depends on IDN performance. The ability to actually detect and characterize the hazard is essential to effective warning, reporting, and alarming. Interoperability of warning, reporting, and alarming systems is critical across Services and between nations.

9.19.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 7, TA 7.1), Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.19.1.2.1 Supported Task: OSHA 8

9.19.1.2.2 Lateral Task: N/A

9.19.1.2.3 Supporting Task: N/A

9.19.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Low military systems reliability. (C2.2.5.3)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Limited staff expertise. (C2.3.1.3)
6. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.19.2 Functional Needs Analysis

9.19.2.1 Capability and Deficiency Assessment Summary

Table 9.19-1 discusses individual capabilities to perform this task to the designated standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Most CBRN warning, reporting, and alarming are performed using manual processes; little automation exists. Current deficiencies include lack of automated detection and warning, insufficient information for risk assessment; and stand-alone CBRND systems not integrated with C4ISR capabilities. The ATP-45 information and related processes fail to take full advantage of automated systems and processes to increase rapidity and accuracy.

Projected Near/Mid-Term Capability and Deficiency

The projected initial fielding in the mid term of JWARN will provide substantial improvement in this capability. Emerging C4ISR capabilities will enhance the dissemination of CBRN information to requiring force elements, both vertically and horizontally. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. Doctrine and TTPs must be revised to accommodate new C4ISR systems as well as JWARN.

Projected Far-Term Capability and Deficiency

The fielding of JWARN is projected to be completed early in the mid term. All legacy systems are projected to either be replaced by, or be in compliance with, DISA standards and fully support net-centric operations in the far term.

Table 9.19-1. TASHA 19: Capability and Deficiency Assessment

Capability: Provide CBRN Tactical and CBRN Warning, Reporting, and Alarming Throughout the Local or Immediate Battlespace	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability	5 ¹	8 ²	6 ²	6 ²	7 ³	5 ⁴	2 ⁵	5 ⁶
Near/Mid-Term Overall Capability	8	9	7	6	8	5	5	5
Far-Term Overall Capability	9	9	7	7	9	5	8	5

	FAA Measure	Scale
M1	Tactical area CBRN/TIM IDN provides automated warning and reporting.	<p>8–10: Tactical area CBRN/TIM IDN systems substantially or fully perform automated warning and reporting of CBRN/TIM to local JTF elements (including coalition partners and other authorized entities) and all appropriate organizations and echelons of command and control in sufficient detail to enable effective, adequate, and rapid response specific to the incident and involved elements. CBRN information is immediately and prominently posted on the COP.</p> <p>4–7: Tactical area CBRN/TIM IDN systems are not integrated with automated warning and reporting systems and are managed and controlled by local centers. The local unit centers perform the required warning and reporting of CBRN/TIM hazards using existing and primarily manual means.</p> <p>1–3: Inadequate tactical CBRN/TIM IDN and/or warning and reporting capability exists.</p> <p>0: Tactical CBRN/TIM IDN and/or warning and reporting capability is nonexistent.</p>
M2	CBRND specialists have the training to effectively warn and make reports.	<p>8–10: All CBRND personnel are fully trained and receive recurring refresher training on CBRN warning and reporting. Exercises and evaluations are routinely conducted and fully challenge capabilities to conduct effective CBRN warning and reporting and to refine skills, knowledge, and competencies. CBRN warning and reporting competencies are high and enable the rapid, accurate, and successful notification of hazards.</p> <p>4–7: Core CBRND specialists performing CBRN warning and reporting are fully trained and receive recurring refresher training on the conduct of CBRN warning and reporting. Exercises and evaluations do not generally fully challenge capabilities. Limited training is provided, is inconsistent, and/or is administered in preparation for operations to noncore CBRND specialists for CBRN warning and reporting. CBRN warning and reporting competencies and experience will vary, but sufficient capability exists to successfully perform tasks.</p> <p>1–3: Training is inadequate for the successful performance of CBRN warning and reporting.</p> <p>0: Training is nonexistent for the successful performance of CBRN warning and reporting.</p>
M3	Commanders and staffs have the training to effectively use warnings and reports.	<p>8–10: All commanders and staff personnel are formally trained and receive recurring refresher training on the effective use of CBRN warnings and reports to include their application, interpretation, and weak and strong points.</p> <p>4–7: Selected staff personnel are trained on the effective use of CBRN warnings and reports. Commanders are cognizant of the proper application of CBRN warnings and reports.</p> <p>1–3: Training on the effective use of CBRN warnings and reports is inadequate for support of operations.</p> <p>0: Training on the effective use of CBRN warnings and reports is nonexistent.</p>

M4	Units are sufficiently trained for CBRN/TIM hazard alarm, warning, and reporting.	<p>8–10: All personnel are formally trained and receive recurring refresher training on policies, procedures, and processes for CBRN/TIM hazard alarm, warning, and reporting. Training is tailored to the functions, activities, and tasks of the individuals. Exercises and evaluations are routinely conducted and fully challenge capabilities to conduct effective CBRN hazard alarm, warning, and reporting and to refine and maintain skills, knowledge, and competencies. CBRN hazard alerting, warning, and reporting competencies are high and enable the rapid, accurate, and successful dissemination of presence of hazards.</p> <p>4–7: All unit personnel are fully trained on CBRN hazard alerting. Selected personnel are fully trained and receive recurring refresher training on the conduct of CBRN warning and reporting. Exercises and evaluations do not generally fully challenge unit capabilities. Limited training is provided, is inconsistent, and/or is administered in preparation for operations to other personnel for CBRN warning and reporting. CBRN hazard alerting, warning, and reporting competencies and experience will vary, but sufficient capability exists to successfully perform tasks.</p> <p>1–3: Training is inadequate for the successful performance of CBRN hazard alerting, warning, and reporting.</p> <p>0: Training is nonexistent for the successful performance of CBRN hazard alerting, warning, and reporting.</p> <p>NOTE: Alerting, warning, and reporting do not strictly refer to formal ATP-45 and similar systems of information dissemination. Immediate dissemination such as yelling, radio, etc. (e.g., “Gas! Gas! Gas!”, notifying company commander, relaying to adjacent element by field phone, etc.) of an imminent hazard to local personnel is an essential element of alerting, warning, and reporting.</p>
M5	Units transmit and receive CBRN/TIM hazard alarm, warning, and reporting effectively.	<p>8–10: All units are linked to the COP and possess interoperable and integrated automated systems and tools to rapidly and accurately formulate and transmit, and receive and integrate CBRN/TIM hazard alarm, warning, and report information. Potentially or indirectly affected subordinate units are simultaneously identified and notified in a timely manner by automated systems and the COP. Related information is posted on the COP and readily accessible.</p> <p>4–7: Limited means exist, are predominantly manual, and are employed to formulate and transmit, and receive and integrate CBRN/TIM hazard alarm, warning, and report information. The parent unit disseminates the information to potentially or indirectly affected subordinate units using existing communications means.</p> <p>1–3: Means are inadequate enabling units to formulate and transmit, and receive and integrate CBRN/TIM hazard alarm, warning, and report information; and/or disseminate the information to potentially or indirectly affected subordinate units.</p> <p>0: Means are nonexistent enabling units to formulate and transmit, and receive and integrate CBRN/TIM hazard alarm, warning, and report information; and/or disseminate the information to potentially or indirectly affected subordinate units.</p>
M6	There are sufficient doctrine and TTPs for effective response and the restoration of operations.	<p>8–10: Doctrine, policies, procedures, and TTPs are adequate for effective response to, and restoration of operations following, a CBRN event and integrate CBRN information on the COP.</p> <p>4–7: Doctrine, policies, procedures, and TTPs supporting response to, and restoration of operations following, an event exist and address CBRN.</p> <p>1–3: Doctrine, policies, procedures, and TTPs are inadequate for response to, and restoration of operations following, a CBRN event.</p> <p>0: Doctrine, policies, procedures, and TTPs are nonexistent for response to, and restoration of operations following, a CBRN event.</p>

M7	Units warned to take effective countermeasures.	<p>8–10: All CBRN potentially or indirectly affected units are identified and notified in a timely manner by automated systems and the COP. Related information is posted on the COP and readily accessible.</p> <p>4–7: Limited means exist and is employed over the COP for the dissemination of CBRN hazard and countermeasure information to known potentially affected units.</p> <p>1–3: Means are inadequate to notify potentially and indirectly affected units of CBRN hazard and required countermeasures using the COP.</p> <p>0: Means are nonexistent to notify potentially and indirectly affected units of CBRN hazard and required countermeasures using the COP.</p>
M8	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Current detection systems are primarily point detection systems and require manual oversight, control, signal interpretation, validation, and reporting. The initial fielding of JWARN to operational units during the mid term provides the means to manage, integrate, and report IDN information. Fielding of JWARN is projected for completion during the early far term. JWARN enables the dissemination of CBRN information on the COP to all units in an area (horizontal flow) as well as higher authority and subordinate units (vertical flow, the current practice). However, full tactical IDN capabilities are dependent upon sensor technology progression and fielding.

² All personnel are trained during military basic training and periodic CBRND training on alerting nearby personnel, warning those in their area, and reporting the event as outlined in their unit procedures. This training is reinforced during deployment preparation for operations with a threat. CBRND specialists are fully trained and receive recurring training on the conduct of performing CBRN warning and reporting. Units not possessing primary duty CBRND specialists do assign selected staff personnel with CBRN responsibilities and provide access to the necessary training. CBRN warning and reporting competencies of these latter personnel will vary, but sufficient capability generally exists. Selected staff personnel are also trained using these warnings and reports to assess and recommended COAs to the commander for maintenance of OPTEMPO while providing for the safety and well-being of the force. Exercises and evaluations do not generally challenge all areas of unit capabilities for alerting, warning, and reporting. Adjacent units, particularly non-U.S. and often other U.S. Service, may not receive alerts, warnings, and reports until after these have been processed up through channels and then disseminated back down channels. This procedure creates unnecessary delays with potential serious ramifications for OPTEMPO and unit survivability. Fielding of JWARN is projected for completion during the early far term. JWARN enables the dissemination of CBRN information on the COP to all units in an area (horizontal flow) as well as higher authority and subordinate units (vertical flow, the current practice).

³ Currently, the transmission and reception of CBRN/TIM hazard alarm, warning, and report information is performed manually predominantly using ATP-45 formats and processes by the CBRN staff cell. Each unit is responsible for ensuring potentially or indirectly affected subordinate units are notified of the hazard. This is generally performed using nondedicated existing and available communications systems. The mid-term initial fielding of JWARN, and its continued deployment into the early far term, to operational units will reduce the labor and manual steps required for effective alarming, warning, and reporting of CBRN hazards. Further, JWARN supports the horizontal and vertical dissemination of information. JWARN applies ATP-45 formats and processes for reporting and warning.

⁴ Doctrine, policies, procedures, and TTPs outline requirements for the warning and reporting of CBRN hazards. The response to and subsequent restoration of operations following an event are generally addressed in supporting DOTLPF.

⁵ CBRN information is not integral to the COP. DOTLPF and operational plans provide guidance and instructions for the conduct of CBRND to protect against the effects of CBRN/TIM hazards. Units plan and prepare to perform CBRND measures during preparations to ensure required actions are performed rapidly and effectively when necessary and required. MOPP 4 provides maximum protection and is implemented immediately upon notification of a hazard until the hazard is characterized and the risks are determined. However, notification is not generally performed over the COP. ATP-45 format messages and other sources are usually the means of notification to take CBRND actions. Fielding of JWARN is projected for completion during the early far term. JWARN enables the dissemination of CBRN information on the COP to all units in an area (horizontal flow) as well as higher authority and subordinate units (vertical flow, the current practice).

⁶ Current DOTLPF includes the ability to conduct this task using largely manual processes and available communications systems. However, processes and procedures for the dissemination of information to neighboring units is not adequate. The retransmission of the information by higher echelon to all units potentially at risk or affected by a CBRN/TIM event is performed as a work-around and assurance of notification. CBRND training ranges from indepth and substantial for selected functions and personnel to inadequate. DOTLPF will need to evolve as systems, tactics, and situations change.

9.19.3 Functional Solution Analysis

9.19.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Absence of ability to automate detection and warning reports.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine and adjust TTPs to address emergent capabilities. *Training:* Adapt training to account for emergent IDN, JWARN, and COP capabilities
2. **Deficiency:** Inadequate integration of emerging capabilities.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine and adjust TTPs to address emergent capabilities.
3. **Deficiency:** Inadequate training and maintenance of proficiency of commanders and staffs.
Non-Material Solutions: *Training:* Advanced training capabilities are required.
4. **Deficiency:** Insufficient training and refresher training of units and personnel assigned to units.
Non-Material Solutions: *Training:* Advanced training capabilities are required.
5. **Deficiency:** Inadequate integration of emergent C4ISR capabilities.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine and adjust TTPs to address emergent capabilities. *Training:* Advanced training capabilities required.
6. **Deficiency:** Doctrine and TTPs are inadequate to fully implement JWARN and COP capabilities.
Non-Material Solutions: *Doctrine:* Ensure doctrine and TTPs keep pace with emergent capabilities.
7. **Deficiency:** Inadequate process of continuing adjustment for emergent C4ISR, IDN, and organizational changes.
8. **Non-Material Solutions:** *Doctrine:* Ensure doctrine and TTPs keep pace with emergent capabilities. *Organization:* Ensure organizational structures and operations adapt to emergent capabilities and maximize operational capabilities.

9.19.3.2 IMA Assessment Summary

Table 9.19-4 is a list of ideas for material approaches and a corresponding description of each idea. Material approaches here focus on focus on the dissemination of the warning and reporting information using better automated tools and reach back to historical databases. Table 9.19-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.19-4. TASHA 19: Materiel Approaches

Idea for Materiel Approach	Description
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots, and overlays and verify receipt of reports and plots. Transmission of data uses existing communications nets.
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Link to GIS	Develop a system resident in standard C4ISR systems and interface to GIS to provide input to the COP.

Table 9.19-5. TASHA 19: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Collect, Exchange, and Disseminate Information</p>	<p style="text-align: center;">Simulations and Models</p>	<p style="text-align: center;">Database</p>	<p style="text-align: center;">Reachback Capability</p>	<p style="text-align: center;">Risk Factor Templates</p>	<p style="text-align: center;">Link to GIS</p>
<p>Absence of ability to automate detection and warning reports.</p>	X					X
<p>Inadequate integration of emerging capabilities.</p>	X	X	X	X	X	X
<p>Inadequate integration of emergent C4ISR capabilities.</p>	X	X	X	X	X	X

9.20 Task TASHA 20: Manage CBRN material resources to ensure effective CBRND task accomplishment**9.20.1 Functional Area Analysis****9.20.1.1 Definition**

This task encompasses the ability to ensure resources are available to effectively perform CBRND tasks across command echelons and units, as well as in support of coalition units, NGOs, and indigenous civil authorities. Resources managed include CBRN systems, items of equipment, consumables, and supplies. Involves resource tracking to ensure the effective allocation of CBRND systems equipment, supplies, and consumables throughout the operating area. Also manages demand for transportation and maintenance support for CBRND systems.

9.20.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Sense and Respond Logistics: Co-Evolution of an Adaptive Capability Document Concept, Sense and Respond CONOPs.

9.20.1.2.1 Supported Task: OPSHA 3**9.20.1.2.2 Lateral Task: TASHLD 8****9.20.1.2.3 Supporting Task: N/A****9.20.1.3 Condition**

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel experience. (C2.2.4.5)
3. Low military systems reliability. (C2.2.5.3)
4. Some interoperability. (C2.2.6)
5. Partial joint staff integration. (C2.3.1.1)
6. Partial multinational integration. (C2.3.1.2)
7. Limited staff expertise. (C2.3.1.3)
8. Restricted information exchange. (C2.3.1.8)
9. High information volume. (C2.3.1.9)
10. Limited deployed supplies. (C2.8.2)
11. Limited CONUS resupply. (C2.8.3)

Civil. N/A

9.20.2 Functional Needs Analysis

9.20.2.1 Capability and Deficiency Assessment Summary

Table 9.20-1 discusses individual capabilities to perform this task to the designated standards. U.S. forces have the capability to manage and maintain CBRND materiel resources (for U.S. forces only) for short-term, moderate-intensity CBRND operation; they do not have the current (or future) capability to ensure effective task accomplishment in high-intensity CBRND operations or for coalition partners. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

9.20.2.2 Overall Capability and Deficiency Assessment Summary

Table 9.20-2 shows the overall capabilities and deficiencies for this task.

Current Capability and Deficiency

The joint forces have limited capacity to provide and manage CBRN resources in a sustained CBRND operation. Defense logistics processes and systems do exist to manage assets and Service-specific processes and systems are incorporated. Current deficiencies include lack of access to maintenance information; lack of supplies, equipment, and consumables to equip joint forces for sustained high-intensity CBRND operations; lack of effective tools to determine COA; insufficient and stove-piped systems track CBRND logistics items; and lack of integration of CBRND logistics in the COP.

Projected Near/Mid-Term Capability and Deficiency

The DoD effort to standardize data structures and promote integration/interoperability will provide increased opportunities for improvements in CBRND logistics management processes. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND.

Projected Far-Term Capability and Deficiency

All legacy systems are projected to either be in compliance with, or replaced by new systems that are compliant with, DISA standards and fully support net-centric operations in the far term. Otherwise, no change is projected for this task.

Table 9.20-1. TASHA 20: Capability and Deficiency Assessment

Capability: Manage CBRN Resources	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability	4 ¹	4 ¹	4 ¹	5 ²	4 ¹	7 ¹	5 ³	5 ⁴	5 ⁵
Near/Mid-Term Overall Capability	4	4	4	5	4	8	5	5	5
Far-Term Overall Capability	5	5	5	5	5	9	5	5	5

	FAA Measure	Scale
M1	There is access to CBRND information for maintenance.	8–10: Queriable, interoperable, and integrated logistics automated systems substantially or fully track and report availability and operational status of all CBRND assets—end items, consumables, and components—including maintenance, location, condition, and manufacturer lot status data. 4–7: CBRND assets are tracked and reported using predominantly manual means, generally limited to aggregate information (except possibly for selected end items). 1–3: CBRND asset information inadequate for determination of availability and status of material for support of operations. 0: CBRND asset information is not available for determination of availability and status of material for support of operations.
M2	Tools and processes are available to manage CBRND material resources.	8–10: CBRND logistics management doctrine, policies, procedures, TTPs and supporting interoperable and integrated automated systems and tools exist, are in place, provide current and accurate information to the COP, and support effective management of CBRND material. 4–7: General logistics doctrine, policies, procedures, TTPs, and supporting automated systems and manual processes exist, are in place, support predominantly manual management of material, and can provide selected information on CBRND material. 1–3: Logistics management processes are inadequate for CBRND material. 0: Logistics management processes are nonexistent for CBRND material.
M3	CBRND logistic tracking system is sufficient.	8–10: CBRND logistics management doctrine, policies, procedures, TTPs, and supporting interoperable and integrated automated systems exist, are in place, and provide current and accurate information to the COP for CBRND material. 4–7: General logistics doctrine, policies, procedures, TTPs, and supporting automated systems and manual processes exist, are in place, and can provide selected information on CBRND material. 1–3: Logistics management processes are inadequate for monitoring CBRND material. 0: Logistics management processes are nonexistent for CBRND material.
M4	Sufficient replacement systems are available.	8–10: Adequate replacements end items, components, and consumables are available to rapidly support operations. Replenishment is sufficient to maintain stocks and support routine and operational requirements. 4–7: Replacement end items, components, and consumables are available to support operations. Systems may be drawn from noncommitted operational units and stocks to meet operational needs. Replenishment is sufficient to meet operational requirements. 1–3: Replacement systems, components, and/or consumables are available in inadequate numbers exist to support operations, and/or replenishment is inadequate to effectively support operational requirements. 0: Replacement systems, components, and/or consumables are not available and/or replenishment cannot support operational requirements.

M5	Appropriate CBRND logistics management processes are in place.	8–10: CBRND logistics management doctrine, policies, procedures, TTPs, and supporting interoperable and integrated automated systems exist, are in place, and provide current and accurate information to the COP for CBRND material. 4–7: General logistics doctrine, policies, procedures, TTPs, and supporting automated systems and manual processes exist, are in place, and can provide selected information on CBRND material. 1–3: Logistics management processes are inadequate for CBRND material. 0: Logistics management processes are nonexistent for CBRND material.
M6	Analytical tools are used to assess logistics demand for COA results.	8–10: Automated logistics systems substantially or fully perform analytical processing of CBRND material data to assess logistical demands for plausible COAs. 4–7: Analytical process for the assessment of plausible CBRND material impacts upon COAs is performed predominantly using manual means, is limited to available trained resources, and the quality and currency of the assessed data. 1–3: Inadequate capability to perform CBRND material assessments for the evaluation of plausible COAs. 0: Nonexistent capability to perform CBRND material assessments for the evaluation of plausible COAs.
M7	Units are fully equipped for CBRND operations.	8–10: Units are equipped with necessary CBRND materials and assets in the quantities and types to effectively conduct sustained operations and maintain OPTEMPO within a CBRN/TIM hazard environment. 4–7: Units are equipped with necessary CBRND material and assets in adequate quantities to conduct operations within a CBRN/TIM hazard environment. 1–3: Units are inadequately equipped with sufficient types or quantities of CBRND material and assets to conduct operations within a CBRN/TIM hazard environment. 0: Units are not equipped with types or quantities of CBRND material and assets for operations within a CBRN/TIM hazard environment.
M8	CBRND resources are limited or not employed due to insufficient/lack of supporting consumables	8–10: Adequate replacements end items, components, and consumables are available to rapidly support operations. Replenishment is sufficient to maintain stocks and support routine and operational requirements. 4–7: Replacement end items, components, and consumables are available to support operations. Systems may be drawn from noncommitted operational units and stocks to meet operational needs. Replenishment is sufficient to meet operational requirements. 1–3: Replacement systems, components, and/or consumables are inadequate in numbers to support operations, and/or replenishment is inadequate to support operational requirements. 0: Replacement systems, components, and/or consumables are not available and/or replenishment cannot support operational requirements.
M9	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Stovepiped Service logistics systems exist for maintenance, stocks, transport, and requisitioning. However, these systems are not interoperable and integrated. Predominantly manual means are applied to obtain and aggregate information, generally using manual reporting processes. General logistics DOTLPF are in place and support manual processes. However, the information is not integrated into the COP for awareness and for rapid or immediate COA decisioning support. Assessment processes and integration into COA development is generally performed manually. The effectiveness of CBRND logistics management is dependent upon the experience, skill, knowledge, and training of the assigned

staff personnel and the quality and accuracy of the base information and varies between staffs. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. The programmed initial fielding of JOEF and JEM in the mid term, with fielding completed early in the far-term, provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. However, the process will remain unchanged.

² CBRND equipment, systems, and types are available in sufficient quantities to support JTF operations in a CBRN environment, provided there do not exist conflicting demands to support multiple concurrent operations with CBRN threat. A number of CBRND assets are low-density items and may require transfer from nonparticipating units to meet JTF requirements. Further, the majority of the types of systems do not adequately support sustained operations and require infusion of increased CBRND resources to maintain OPTEMPO. For example, COLPRO systems are generally large-scale systems, limited in number, and do not adequately support expeditionary and high-maneuver operations, particularly in austere environments at the extremes of the lines of communication. Currently, replacement must be drawn from other deployable, but untasked, units. JECIP is programmed to field in the mid term and will provide COLPRO flexibility to support most operations and situations. Replenishment of depot supporting stocks of systems, components, and consumables are largely dependent upon manufacturer production surge capacities and available production line capacities. Often, assets are manufactured under sole source contracts, may contain proprietary materials/processes, and the asset or critical components may be produced outside of the United States. Further, asset replacement/replenishment is dependent upon planning, available logistical transport resources, assigned priority in relation to other mission-critical assets, and the location and status of the needed asset. DOTLPP provides for the acquisition and maintenance of war reserve materiel (WRM) stocks to meet projected operational requirements. However, funding of WRM acquisitions and levels maintenance are performed by the Services and generally addressed after other operational requirements are satisfied. Funding of WRM stocks of CBRND assets are not forecasted by the Services due to changing operational requirements and is performed on annually based upon available funds. Availability of systems is further complicated in circumstances involving non-CBRND equipped partner forces, increasing demand upon available systems for initial and replacement support. Other CBRND-capable partners may offset initial CBRND system requirements, but replacement and support of partner-provided assets requires close coordination and cooperation between the JTF and the providing partner.

³ Limited availability of selected types and specific systems does not permit the allocation of these resources to all units possessing planned operational taskings. A number of CBRND assets are low density and inadequate to support multiple operations involving a threat. Planners consider the availability of CBRND resources, threat, risks, and projected operational requirements to identify CBRND requirements. Determination of the mix of systems is performed by the planners based upon this logistical information. Adjustments are accomplished upon implementation of plans and as needed during operations to provide adequate quantities and types of CBRND materials for support of CBRN operations. However, planning and CBRND assets do not adequately support sustained operations within a CBRN/TIM operations.

⁴ CBRND equipment, systems, and types are available in sufficient quantities to support JTF operations in a CBRN environment, provided there do not exist conflicting demands to support multiple concurrent operations with CBRN threat. A number of CBRND assets are low-density items and may require transfer from nonparticipating units to meet JTF requirements. Further, the majority of the types of systems do not adequately support sustained operations and require infusion of increased CBRND resources to maintain OPTEMPO. For example, COLPRO systems are generally large-scale systems, limited in number, and do not adequately support expeditionary and high-maneuver operations, particularly in austere environments at the extremes of the lines of communication. Currently, replacement must be drawn from other deployable, but untasked, units. JECIP is programmed to field in the mid term and will provide COLPRO flexibility to support most operations and situations. Replenishment of depot supporting stocks of systems, components, and consumables are largely dependent upon manufacturer production surge capacities and available production line capacities. Often, assets are manufactured under sole source contracts and may contain proprietary materials/processes and the asset or critical components may be produced outside of the United States. Further, asset replacement/replenishment is dependent upon planning, available logistical transport resources, assigned priority in relation to other mission-critical assets, and the location and status of the needed asset. DOTLPP provides for the acquisition and maintenance of WRM stocks to meet projected operational requirements. However, funding of WRM acquisitions and levels maintenance are performed by the Services and generally addressed after other operational requirements are satisfied. Funding of WRM stocks of CBRND assets are not forecasted by the Services due to changing operational requirements and is performed on an annually based upon available funds. Availability of systems is further complicated in circumstances involving non-CBRND equipped partner forces, increasing demand upon available systems for initial and replacement support. Other CBRND-capable partners may offset initial CBRND system requirements, but replacement and support of partner-provided assets requires close coordination and cooperation between the JTF and the providing partner.

⁵ Existing DOTLPP adequately addresses the performance of this task although predominantly using manual means. DOTLPP requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPP will continue to need to evolve as systems, tactics, and situations change.

9.20.3 Functional Solution Analysis

9.20.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Inadequate access to maintenance information.
Partial Non-Material Solutions: *Doctrine:* Doctrine and TTPs are required for emergent access to maintenance information. *Training:* Training programs are required to ensure personnel know-how to access information.
2. **Deficiency:** Inadequate ability to query and apply automated logistics information for CBRND.
Partial Non-Material Solutions: *Doctrine:* Develop doctrine, policy, and TTPs incorporating CBRND into logistics information processes. *Training:* Ensure CBRN staff cell receive initial and recurring training on accessing automated logistics information systems and processing information.
3. **Deficiency:** Inadequate integration of emergent capabilities and systems.
Partial Non-Material Solutions: *Doctrine:* Doctrine and TTPs need to evolve relevant to emerging capability. *Training:* Ensure training programs are available for the effective use of emergent resource management systems.

9.20.3.2 IMA Assessment Summary

Table 9.20-4 is a list of ideas for material approaches and a corresponding description of each idea. In addition to the material approaches involving data access, modeling and automated tools, this task also brings in the need for interfacing with logistical data to determine the current status of CBRND equipment down to unit level. Table 9.20-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.20-4. TASHA 20: Materiel Approaches

Idea for Materiel Approach	Description
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Management of databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.
Link to GIS	Develop a system resident in standard C4ISR systems and interface with GIS to provide input to the COP.
Link to logistics systems	Develop an automated interface that tracks CBRND supplies and equipment and their status and condition through existing DoD logistics systems.
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.

Table 9.20-5. TASHA 20: IMA Assessment

Identified Gaps / Ideas for Material Approaches (IMA)	Database	Reachback Capability	Management of Databases	Link to GIS	Link to Logistics Systems	Simulations and Models	Risk Factor Templates
Inadequate access to maintenance information	X	X	X	X	X		
Inadequate ability to query and apply automated logistics information for CBRND	X	X		X	X	X	
Inadequate integration of emergent capabilities and systems					X	X	X

9.21 Task TASHA 21: Conduct immediate or local battlespace CBRN/TIM incident COA assessment for maneuvering forces

9.21.1 Functional Area Analysis

9.21.1.1 Definition

Includes immediate or local CBRN/TIM incident COA assessment for maneuvering forces. Also includes evaluating adversary COAs against maneuver force vulnerabilities and COAs for maneuvering forces response. This considers all aspects of Shield, Shape, Sense, and Sustain operational elements. As part of the process, tactical end states are envisioned for sustained operation while enduring CBRN attacks.

9.21.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.21.1.2.1 Supported Task: OPSHA 6

9.21.1.2.2 Lateral Task: N/A

9.21.1.2.3 Supporting Task: N/A

9.21.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Major storm weather systems. (C1.3.1.2)
3. Precipitating weather. (C1.3.1.3)
4. Strong atmospheric weapons effects. (C1.3.3)

Military

1. Limited modern military systems. (C2.2.5)
2. Partial joint staff integration. (C 2.3.1.1)
3. Limited staff expertise. (C2.3.1.3)
4. Restricted information exchange. (C2.3.1.8)
5. High information volume. (C2.3.1.9)
6. Low certitude of data. (C2.4.6)

Civil. N/A

9.21.2 Functional Needs Analysis

9.21.2.1 Capability and Deficiency Assessment Summary

Table 9.21-1 discusses individual capabilities to perform this task to the designated standards. The current capability to conduct CBRN/TIM incident COA assessment for maneuvering forces is a manual process (essentially ATP-45 and map overlays), augmented with limited automated tools that work in isolation and are not part of the COP. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Staffs and units have the capability to account for all Sense, Shape, Shield, and Sustain factors in manual and mental processes. CBRND resource information is not included in the COP, and there is a limited capability to share local information between adjacent units. Current deficiencies include limited decision and assessment tools, lack of automated processes, lack of capability to account for resources, lack of collaborative capability, the inability for agent/release characterization at lower unit levels, and lack of CBRN resource visibility in the COP.

Projected Near/Mid-Term Capability and Deficiency

The programmed initial deployment of JWARN, JOEF, and JEM during the mid term provides enhanced staff capability to effectively and rapidly assess CBRN events and to conduct COA assessment. The DoD effort to standardize data structures and promote integration/ interoperability will provide increased opportunities for improvements in CBRND logistics management processes. Developmental “born joint” DoD information systems will be compliant with the four elements of the NR-KPP, ensuring interoperability, information assurance, integration to the appropriate community of interest, as well as GIG architecture. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND.

Projected Far-Term Capability and Deficiency

The completion of deployment of JWARN, JOEF, and JEM is expected during the early far term. All legacy systems are projected to either be in compliance with, or replaced by new systems that are compliant with, DISA standards and fully support net-centric operations in the far term. Otherwise, no change projected for this task.

Table 9.21-1. TASHA 21: Capability and Deficiency Assessment

Capability: Immediate or Local Battlespace CBRN/TIM Incident COA Assessment for Maneuvering Forces	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	6 ¹	5 ²	5 ³	6 ⁴	4 ⁵	3 ⁶	5 ⁷
Near/Mid-Term Overall Capability	6	5	5	7	4	4	5
Far-Term Overall Capability	7	5	5	8	5	7	5

	FAA Measure	Scale
M1	Assessment is conducted collaboratively.	8–10: Electronic collaborative workspaces with automated tools exist and are predominantly applied for evaluation, assessment, planning, and decisioning processes. 4–7: Manual collaborative processes are predominantly applied for the evaluation, assessment, planning, and decisioning processes. 1–3: Collaborative processes are inadequate for the conduct of evaluation, assessment, planning, and decisioning processes. 0: Collaborative processes do not exist for the conduct of evaluation, assessment, planning, and decisioning processes.
M2	Operational and analytical/planning staffs have the training and experience to effectively assess CBRN event response COAs.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of CBRN COA assessment for event response. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN event response COA assessment. 1–3: Adversary CBRN event response COA assessment training is inadequate to support operations. 0: Adversary CBRN event response COA assessment training is nonexistent.
M3	There are sufficient doctrine and TTPs for effective assessments.	8–10: Doctrine, policies, procedures, and TTPs are adequate for effective assessments and are actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations. 4–7: Doctrine, policies, procedures, and TTPs for assessment exist but are predominantly manual and are periodically revised to exploit technologies and operational changes. 1–3: Doctrine, policies, procedures, and TTPs are inadequate for effective assessments. 0: Doctrine, policies, procedures, and TTPs are nonexistent for effective assessments.
M4	All pertinent Sense, Shape, Shield, and Sustain factors are considered.	8–10: Automated processes, templates, and collaborative spaces ensure all relevant issues and needs are addressed. Staff and CBRN specialists are highly trained, knowledgeable, and possess access to needed reference material and impacting information. 4–7: Manual processes are predominantly applied to address pertinent CBRND issues and are dependent upon the training, skill, experience, and knowledge of staff participants. 1–3: Processes are inadequate for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants do not possess adequate training, skill, experience, and knowledge to adequately perform the task. 0: Processes do not exist for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants do not possess training, skill, experience, and knowledge to perform the task.

M5	CBRND resources location, status, and availability displayed by COP.	<p>8–10: CBRND logistics management doctrine, policies, procedures, TTPs, and supporting interoperable and integrated automated systems and tools exist, are in place, provide current and accurate information to the COP, and support effective management of CBRND material.</p> <p>4–7: General logistics doctrine, policies, procedures, TTPs and supporting automated systems and manual processes exist, are in place, support predominantly manual management of material, and can provide selected information on CBRND material. Placement on the COP, when performed, is by manual entry.</p> <p>1–3: Logistics management processes are inadequate for CBRND material.</p> <p>0: Logistics management processes are nonexistent for CBRND material.</p>
M6	Accurate local data are available.	<p>8–10: Micrometeorology, microterrain, unit element locations, and CBRN detection and characterization data are available, accurate, and effectively applied to microlevel hazard prediction using automated systems and tools. Data are correlated and processed to identify and characterize the hazard and the results are posted on the COP in near-real time.</p> <p>4–7: Meso-/macrometeorological and terrain, unit locations, and CBRN detection and characterization data are available, accurate, and adequately applied to meso-/macrolevel hazard prediction. Data is correlated and processed predominantly using manual means to identify and characterize the hazard. Input to the COP is usually performed manually.</p> <p>1–3: Meteorology, terrain, unit location, and/or CBRN detection and characterization data are inadequate to support operations.</p> <p>0: Meteorology, terrain, unit location, and/or CBRN detection and characterization data are nonexistent.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Assessments currently require collaboration using traditional means such as telephone calls, personal visits, mail routing, e-mail, and other similar means. There is an absence of electronic collaborative workspaces within which differing functions and activities are able to cooperatively assist the evaluation, assessment, planning, and decisioning process without time delay and the need for physical presence. Automated tools could effectively enhance and be enhanced by these electronic rooms. Collaborative workspaces support net-centric operations. These workspaces are inevitable and a natural progression with the increasing utility of automation and information sharing.

² Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN incident COA development and assessment. Consistent formal and refresher training on immediate or local battlefield CBRN incident COA development and assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. Initial fielding of JEM and JOEF is projected for mid term with completion of fielding in the early far term. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

³ Doctrine, policies, procedures, and TTPs exist and are sufficient for the manual performance of effective CBRN incident assessment. This is not true for current, emerging, and projected automated and simulated based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

⁴ Manual processes exist and are applied by staff and NBC specialists. However, the breadth and depth of planning and consideration of CBRND issues is dependent upon the knowledge, skills, and experience of the participants in the process. The projected initial fielding of JEM and JOEF, with fielding completed in the early far term, provides enhanced automated capabilities to conduct COA development and determination of supporting resource allocations for CBRND.

⁵ Stovepiped Service logistics systems exist for maintenance, stocks, transport, and requisitioning. However, these systems are not interoperable and integrated. Predominantly manual means are applied to obtain and aggregate information, generally using manual reporting processes. General logistics DOTLPF are in place and support manual processes. However, the information is not integrated into the COP for awareness and for rapid or immediate COA decisioning support. CBRN units are identified and tracked at the unit

level. The specific status of the unit, to include available resources, is current as of the last report by the unit. Assessment processes and integration into COA development is generally performed manually. The effectiveness of CBRND logistics management is dependent upon the experience, skill, knowledge, and training of the assigned staff personnel, quality and accuracy of the base information, and varies between staffs. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. However, the process will remain unchanged. Completed fielding of JEM and JOEF is expected in the early far term.

⁶ Current DOTLPF and available limited automated systems fielded with operational units is inadequate to perform micro-level data assimilation and display. Micro-level data, when available, is at greater depth of detail than required by the current standard ATP process. Hazard identification, characterization, and hazard impacts are conducted at the meso-/macrolevel and are consistent with ATP-45 processes. The ATP-45 process broadly applies the information without consideration of changes in terrain and meteorology at dispersed unit locations. The ATP-45 process is inadequate to meet needs in urban or complex terrain. The initial mid-term fielding of JWARN, JOEF, and JEM will expand data collection, assessment, and display capabilities. Data will be accessed on a continuing basis and processed information updated. Completion of the fielding of JWARN, JOEF, and JEM is expected in the early far term.

⁷ Existing DOTLPF adequately addresses the performance of this task although predominantly using manual means. DOTLPF requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPF will continue to need to evolve as systems, tactics, and situations change.

9.21.3 Functional Solution Analysis

9.21.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Absence of COA tool for CBRN incident impact.
Partial Non-Materiel Solutions: *Training:* Develop training programs that encompass and support operational application of emergent assessment tools.
2. **Deficiency:** Lack of collaborative capability available to CBRND staff cells and specialists.
Partial Non-Materiel Solutions: *Doctrine:* Enhance doctrine and TTPs to support active collaboration among the joint forces and coalition partners. *Training:* Develop training, exercises, and evaluations supporting and challenging collaborative processes among involved forces.
3. **Deficiency:** Lack of advanced training programs for automated tools
Non-Materiel Solutions: *Training:* Implement training programs for staff members on collaborative assessment processes.
4. **Deficiency:** Inadequate doctrine and TTPs accounting for emergent JWARN and JEM capability.
Non-Materiel Solutions: *Doctrine:* Expand doctrine and TTPs to address the application of advanced assessment tools.
5. **Deficiency:** Lack of characterization capability at the unit level.
Partial Non-Materiel Solutions: *Organization:* Make provision for sensors at the unit level. *Training:* Establish training programs for the effective local level use of sensors.

9.21.3.2 IMA Assessment Summary

Table 9.21-4 is a list of ideas for material approaches and a corresponding description of each idea. Simulations and models, data reachback capability, links to GIS, improved sensors and tables and templates are all material approaches to accomplish this task. Table 9.21-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.21-4. TASHA 21: Materiel Approaches

Idea for Materiel Approach	Description
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Link to GIS	Develop a system resident in standard C4ISR systems and interface with GIS to provide input to the COP.
Improved CBRN detectors	Ensure current and future detector programs quickly identify, quantify and disseminate detected CBR/TIM agent events.
CBRN staff collaboration tools	Develop automated system among and between CBRND specialists and other functions (e.g., operations, logistics) to allow collaboration between these functional areas and link to the COP.
Field CBRN information resource	Develop a field resource system that will provide and search archived information for CBRN/TIM agents, effects, treatments, etc.
Link to logistics systems	Develop an automated interface that tracks CBRND supplies and equipment and their status and condition through existing DoD logistics systems.

Table 9.21-5. TASHA 21: IMA Assessment

Ideas for Material Approaches (IMA)	Simulations and Models	Database	Reachback Capability	Risk Factor Templates	Link to GIS	Improved CBRN Detectors	CBRN Staff Collaboration Tools	Field CBRN Information Resource	Link to Logistics Systems
Identified Gaps									
Absence of COA tool for CBRN incident impact.	X	X	X	X	X			X	X
Lack of collaborative capability available to the CBRND staff cells and specialists.	X	X	X	X	X		X		
Lack of characterization capability at the unit level.	X					X		X	

9.22 Task TASHA 22: Provide CBRN attack or TIM release impact assessment throughout the local or immediate battlespace**9.22.1 Functional Area Analysis****9.22.1.1 Definition**

The impact assessments are made by unit and command staffs as rapidly as possible. Access to local meteorology data and environmental conditions are essential to the assessment process. Assessments are time-phased over the predicted hazards fate. Addresses impacts to personnel, casualties, operations, terrain, equipment, and fixed, as well as, mobile forces. This assessment of the CBRN/TIM hazard impact is combined with other assessments of the situation to enable a complete combat risk assessment by the commander. As part of the process, tactical end states are envisioned for sustained operations, while enduring CBRN attacks.

9.22.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.22.1.2.1 Supported Task: OSHA 12

9.22.1.2.2 Lateral Task: N/A

9.22.1.2.3 Supporting Task: N/A

9.22.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Induced air. (C1.3)
3. Temperate climate. (C1.3.1)
4. Strong atmospheric weapons effects. (C1.3.3)

Military

1. Limited modern military systems. (C2.2.5)
2. Partial joint staff integration. (C2.3.1.1)
3. Limited staff expertise. (C2.3.1.3)
4. Restricted information exchange. (C2.3.1.8)
5. High information volume. (C2.3.1.9)
6. Low certitude of data. (C2.4.6)

Civil. N/A

9.22.2 Functional Needs Analysis

9.22.2.1 Capability and Deficiency Assessment Summary

Table 9.22-1 discusses individual capabilities to perform this task to the designated standards. The capability includes the current manual method of preparing and distributing impact assessments in the present and the mid- to far-term fielding of JWARN, JEM, and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Limited manual, nonnetworked capability exists to assess impacts of CBRN attack or TIM release. Current deficiencies include limited automation, constrained archival capabilities, and lack of sophisticated assessment tools.

Projected Near/Mid-Term Capability and Deficiency

JWARN, in conjunction with JEM and JOEF, will provide substantial improvement in the area. JWARN, JEM, and JOEF are projected for initial deployment during the mid term. However, the limitation to ATP-45 information and processes restricts the systems to the meso-/macrolevel of assessment and modeling. Coalition partners are not certain to possess sufficient automated capabilities to exchange, integrate, and process CBRND information.

Projected Far-Term Capability and Deficiency

Completion of deployment of JWARN, JOEF, and JEM is expected in the early far term. Otherwise, no change is projected for this task.

Table 9.22-1. TASHA 22: Capability and Deficiency Assessment

Capability: Impact Assessment of the Local Immediate Battlespace	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current Overall Capability	6 ¹	4 ²	1 ³	5 ⁴	5 ⁴	5 ⁵	5 ⁶	5 ⁷	6 ⁸	4 ⁹	5 ¹⁰
Near/Mid-Term Overall Capability	6	5	4	5	5	5	5	5	6	5	5
Far-Term Overall Capability	8	5	6	7	7	6	5	5	6	6	5

	FAA Measure	Scale
M1	CBRN/TIM information is accessible.	8–10: CBRN staff cell, unit staff, and automated systems possess unrestricted access to stored data on CBRN and TIM agents. Data sets are integrated and interoperable with CBRN systems. Additional information support is available using electronic Reachback and connectivity to information sources located outside the AO. Reachback is transparent to the user. 4–7: CBRN staff cell and unit personnel predominantly depend upon doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge for evaluation and assessment of CBRN and TIM agents. 1–3: Access to CBRN and/or TIM information is inadequate to support operations. 0: Access to CBRN and/or TIM information is nonexistent.
M2	CBRN staff cell and units have access to dedicated information technology resources to perform tasks and responsibilities.	8–10: CBRN staff cell and units possess dedicated information technology resources and tools for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements. 4–7: CBRN staff cell and units are able to access shared information technology resources and tools for operational requirements and training 1–3: CBRN staff cell and units possess limited access to shared information technology resources for operational requirements and training 0: CBRN staff cell and units do not possess access to information technology.
M3	Plausible end states envisioned are based on the response COAs.	8–10: Standardized M&S capability exists to assess and visualize potential end-states based upon assessed COAs (both CBRN and TIM) and is applied by all operating forces and staffs, is reviewed and assessed against other COAs, and the selected COA is placed into the COP. M&S continuously refreshes as new information drawn from interoperable sources and selections are made. 4–7: Operating force staff possess M&S capability and resources to perform M&S visualization of potential end-states based upon assessed COAs (CBRN or TIM) and is commonly applied by operating forces and staffs. Selected COA is placed into the COP and refreshes as new information is processed. 1–3: Visualization of potential COA end-states are inadequate for minimal support of operations. 0: Visualization of potential COA end-states are nonexistent.
M4	An automated assessment process is in place.	8–10: Secure, interoperable, and interactive electronic processes and workspaces with automated tools exist and are predominantly applied by all relevant echelons of the joint force, coalition partners, and other authorized entities. 4–7: Collaborative and interoperable manual processes are predominantly applied by most planning staffs of the joint force, coalition partners, and other authorized entities. 1–3: Process is inadequate or collaboration and interoperability is limited within or between elements of the joint force, coalition partners, and other authorized entities. 0: Process is nonexistent, or are not collaborative and interoperable within or between elements of the joint force, coalition partners, and other authorized entities.

M5	Assessment is conducted in a time responsive manner.	8–10: Integrated, interoperable, and interactive automated systems substantially collect, validate, compile, process, and evaluate CBRN information in near-real time for assessment and COA determination. Information is posted on the COP. 4–7: Doctrine, policies, procedures, TTPs, and formats exist and are applied and are generally performed manually for assessment. Timeliness is contingent upon operational considerations and unit/personnel capabilities. 1–3: The timeliness of assessment is not adequate to minimally support survival and operational needs. 0: The timeliness of assessment fails to support survival and operational needs.
M6	The assessment is conducted collaboratively.	8–10: Electronic collaborative workspaces with automated tools exist and are predominantly applied for evaluation, assessment, planning, and decisioning processes. 4–7: Manual collaborative processes are predominantly applied for evaluation, assessment, planning, and decisioning processes. 1–3: Collaborative processes are inadequate for the conduct of evaluation, assessment, planning, and decisioning processes. 0: Collaborative processes do not exist for the conduct of evaluation, assessment, planning, and decisioning processes.
M7	Analytical/planning staffs have the training and experience to effectively assess adversary and CBRN/TIM event response COAs.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of CBRN COA assessment for event response. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN event response COA assessment. 1–3: Adversary CBRN event response COA assessment training is inadequate to support operations. 0: Adversary CBRN event response COA assessment training is nonexistent.
M8	Analytical/planning staffs have the training and experience to effectively assess the CBRN/TIM event situation and its impacts.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained, receive recurring refresher training, and are routinely exercised and evaluated on the use of automated tools and processes for assessment of CBRN COA events and their potential impacts upon forces and operations. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the predominantly manual conduct of assessments of CBRN events and their potential impacts upon forces and operations. 1–3: CBRN event situation and impact assessment training is inadequate to support operations. 0: CBRN event situation and impact assessment training is nonexistent.
M9	There are sufficient doctrine and TTPs for effective assessments.	8–10: Doctrine, policies, procedures, and TTPs are adequate for effective assessments and are actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations. 4–7: Doctrine, policies, procedures, and TTPs for assessment exist but are predominantly manual and are periodically revised to exploit technologies and operational changes. 1–3: Doctrine, policies, procedures, and TTPs are inadequate for assessments. 0: Doctrine, policies, procedures, and TTPs are nonexistent for effective assessments.
M10	Accurate meteorological data are available.	8–10: Micrometeorology is available, accurate, and effectively applied to microlevel hazard prediction using automated systems and tools. Data is correlated and processed to characterize CBRN hazards as impacted by weather, and the results are posted on the COP in near-real time. 4–7: Meso-/macrometeorological data are available, accurate, and adequately applied to meso-/macrolevel hazard prediction. Data are correlated and processed predominantly using manual means to characterize CBRN hazards as impacted by weather. Input to the COP is usually performed manually. 1–3: Meteorology data are inadequate to support operations. 0: Meteorology data are nonexistent.

M11	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.
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¹ CBRN staff cell and unit personnel deploy with hard and electronic copies of doctrine and reference material for the performance of their duties and responsibilities. However, training and acquired knowledge provide the basis for decisioning and the effective application of the manually accessed information sources.

² CBRN staff cell personnel and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The projected initial fielding of JWARN, JOEF, and JEM provide using CBRN personnel to more efficiently perform their tasks and responsibilities. The fielding of JWARN, JOEF, and JEM is projected to be completed during the early far term.

³ Insufficient simulation capability in available automated assessment tools or completely unavailable for manual vulnerability assessment. Currently available modeling and simulation tools are limited to HPAC- and VLSTRACK-based systems designed for graphics-enhanced systems. COTS M&S tools, such as ADASHI, provide limited capabilities but are not DISA certified. Current M&S tools, additionally, are not interoperable and are not linked within the COP. They must be manually data entered and manipulated. JOEF and JEM are envisioned as providing forces with the tools to assess and simulate plausible adversary COAs. Additionally, they may be also used to assess actual events and for training. JOEF and JEM will be initially fielded in the mid term with fielding completion expected in early far-term. However, the extent to which JOEF and JEM will address TIM (and the specific agents to be included) is not as yet determined. JOEF is projected to include analytical tools for the evaluation of COAs and will draw information from diverse sources operating using GIG Enterprise Services. Visualization through modeling and simulation is projected to be accomplished using JEM. JOEF and JEM are programmed to link with the COP via GIG Enterprise Service. However, not all coalition partners are certain to possess sufficient automated capabilities for the integration and application of generated and displayed CBRND information.

⁴ The assessment process is performed manually by most planning staffs. Automated tools, systems, and processes are not in place at this time. Timeliness is a factor of operational considerations, available communications capabilities, and skilled personnel. The fielding of JWARN, JOEF, and JEM to operational units in the mid term will provide automated assessment tools for application in planning and response to CBRN/TIM events. However, not all coalition partners are certain to possess sufficient automated capabilities for the exchange, integration, and application of automated CBRND information and processes.

⁵ Assessments currently require collaboration using traditional means such as telephone calls, personal visits, mail routing, e-mail, and other similar means. There is an absence of electronic collaborative workspaces within which differing functions and activities are able to cooperatively assist the evaluation, assessment, planning, and decisioning process without time delay and the need for physical presence. Automated tools could effectively enhance and be enhanced by these electronic rooms. Collaborative workspaces support net-centric operations. These workspaces are inevitable with the increasing utility of automation and information sharing. The initial fielding during the mid term of JWARN, JOEF, and JEM provide the CBRN staff cell with tools for conducting assessments and developing COAs. The fielding of JWARN, JOEF, and JEM is expected to be completed during the early far term. However, not all coalition partners are certain to possess sufficient automated capabilities for the integration and application of automated CBRND information.

⁶ Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN incident COA development and assessment. Consistent formal and refresher training on immediate or local battlefield CBRN incident COA development and assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. Collaborative processes for planning, evaluation, assessment, and decisioning are manual in nature and time-consuming. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. JEM and JOEF are projected for initial fielding during the mid term and completion of fielding expected during the early far term. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

⁷ Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN incident COA development and assessment. Consistent formal and refresher training on immediate or local battlefield CBRN incident COA development and assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. JEM and JOEF are projected for initial fielding during the mid term and completion of fielding expected during the early far term. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

⁸ Doctrine, policies, procedures, and TTPs exist are sufficient for the manual performance of effective CBRN incident assessment. This statement is not true for current, emerging, and projected automated and simulated based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

⁹ Current DOTLPF and available limited automated systems fielded with operational units is inadequate to perform microlevel data assimilation and display. Microlevel data, when available, is at greater depth of detail than required by the current standard ATP process. Hazard identification, characterization, and hazard impacts are conducted at the meso-/macrolevel and are consistent with ATP-45 processes. The ATP-45 process broadly applies the information without consideration of changes in terrain and meteorology at dispersed unit locations. The ATP-45 process is inadequate to meet needs in urban or complex terrain. The projected fielding of JWARN, JOEF, and JEM will expand data collection, assessment, and display capabilities. JWARN, JOEF, and JEM are projected to be initially fielded in the mid term with fielding expected to be completed in the early far term. Data will be accessed on a continuing basis and processed information updated. However, these systems are based upon the ATP-45 process and formats. Further, the modeling and simulation software is meso-/macrolevel.

¹⁰ Existing DOTLPF adequately addresses the performance of this task although predominantly using manual means. DOTLPF requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPF will continue to need to evolve as systems, tactics, and situations change.

9.22.3 Functional Solution Analysis

9.22.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Inadequate access to information and archived data.
Partial Non-Materiel Solutions: *Doctrine:* Improve doctrine, policies, procedures, and TTPs required enhancing information archival and access. *Training:* Improve training for use of archives.
- 2. Deficiency:** Lack of advanced impact assessment tools.
Partial Non-Materiel Solutions: *Doctrine:* Improve doctrine, procedures, policies, and TTPs for advanced assessment tools as fielded. *Training:* Training programs are required for effective application of advanced assessment tools.
- 3. Deficiency:** Insufficient training, due to staff turnover.
Non-Materiel Solutions: *Training:* Training programs are required for effective application of advanced assessment tools.

9.22.3.2 IMA Assessment Analysis

Table 9.22-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches for this task include reachback capability to lessons learned databases and the management and maintenance of those databases. Table 9.22-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.22-4. TASHA 22: Materiel Approaches

Idea for Materiel Approach	Description
Lessons learned databases	Develop/consolidate databases for operational and training lessons learned.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned
Management of databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.

Table 9.22-5. TASHA 22: IMA Assessment

Identified Gaps Ideas for Material Approaches (IMA)	Lessons Learned Databases	Reachback capability	Management of Databases
Inadequate access to information and archived data.	X	X	X
Lack of advanced impact assessment tools.	X	X	

9.23 Task TASHA 23: Conduct immediate or local battlespace CBRN/TIM incident COA assessment for fixed and mobile sites

9.23.1 Functional Area Analysis

9.23.1.1 Definition

Includes local or immediate CBRN/TIM incident COA assessment for specific fixed sites. Includes evaluating local adversary attack COAs and local responses for accurate response and mitigation of COAs. Sense, Shape, Shield, and Sustain factors are thoroughly addressed. During the process tactical end states are envisioned for sustained operations, while enduring CBRN attacks. The assessments impact fixed-site planning and preparations.

9.23.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 6.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.23.1.2.1 Supported Task: OSHA 6

9.23.1.2.2 Lateral Task: N/A

9.23.1.2.3 Supporting Task: N/A

9.23.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Induced air. (C1.3)
3. Temperate climate. (C1.3.1)
4. Strong atmospheric weapons effects. (C1.3.3)

Military

1. Limited modern military systems. (C2.2.5)
2. Partial joint staff integration. (C2.3.1.1)
3. Limited staff expertise. (C2.3.1.3)
4. Restricted information exchange. (C2.3.1.8)
5. High information volume. (C2.3.1.9)
6. Low certitude of data. (C2.4.6)

Civil. N/A

9.23.2 Functional Needs Analysis

9.23.2.1 Capability and Deficiency Assessment Summary

Table 9.23-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Joint forces have limited capability to conduct CBRN/TIM incident COA assessment for fixed and mobile sites. Manual, subjective, processes are currently used. Visibility of CBRND resources on the COP is not currently available. Hazard information transfer is limited to ATP-45 format, a manual (preautomation) system.

Projected Near/Mid-Term Capability and Deficiency

When fielded, JWARN (with JOEF and JEM) will help with COA assessment and increase the potential for collaborative assessments. JWARN (with JOEF and JEM) are projected for initial fielding in the mid term. DOTLPF must be prepared to support emerging systems. JWARN will provide the joint forces with a comprehensive analysis and response capability to minimize the effects of hostile NBC attacks as well as accidents and incidents. JOEF and JEM will interface through and with JWARN. It will provide the operational capability to employ NBC warning technology which will collect, analyze, identify, locate, report and disseminate NBC warnings. JWARN will be compatible and integrated with joint and Service Common Operating Environment-based operational and non-Common Operating Environment-based tactical C4ISR systems. However, the limitation to ATP-45 information and process restricts the system to the meso-/macrolevel. The DoD effort to standardize data structures and promote integration/interoperability will provide increased opportunities for improvements in CBRND logistics management processes. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND.

Projected Far-Term Capability and Deficiency

Fielding of JWARN (with JOEF and JEM) is expected to be completed in the early far term. All legacy systems are projected to either be in compliance with, or replaced by new systems that are compliant with, DISA standards and fully support net-centric operations in the far term. Otherwise, no change is projected for this task.

Table 9.23-1. TASHA 23: Capability and Deficiency Assessment

Capability: Conduct Immediate or Local Battlespace CBRN/TIM Incident COA Assessment for Fixed and Mobile Sites	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	5 ¹	5 ²	5 ³	6 ⁴	4 ⁵	4 ⁶	5 ⁷
Near/Mid-Term Overall Capability	6	5	5	7	4	5	5
Far-Term Overall Capability	7	5	5	8	5	6	5

	FAA Measure	Scale
M1	Assessment is conducted collaboratively.	8–10: Electronic collaborative workspaces with automated tools exist and are predominantly applied for evaluation, assessment, planning, and decisioning processes. 4–7: Manual collaborative processes are predominantly applied for the evaluation, assessment, planning, and decisioning processes. 1–3: Collaborative processes are inadequate for the conduct of evaluation, assessment, planning, and decisioning processes. 0: Collaborative processes do not exist for the conduct of evaluation, assessment, planning, and decisioning processes.
M2	Operational and analytical/planning staffs have the training and experience to effectively assess CBRN event response COAs.	8–10: All intelligence, operations, and CBRN staff personnel are formally trained and receive recurring refresher training on the conduct of CBRN COA assessment for event response. 4–7: Limited training is provided, is inconsistent, and/or is administered in preparation for operations to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN event response COA assessment. 1–3: Adversary CBRN event response COA assessment training is inadequate to support operations. 0: Adversary CBRN event response COA assessment training is nonexistent.
M3	There are sufficient doctrine and TTPs for effective assessments.	8–10: Doctrine, policies, procedures, and TTPs are adequate for effective assessments and are actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations. 4–7: Doctrine, policies, procedures, and TTPs for assessment exist but are predominantly manual and are periodically revised to exploit technologies and operational changes. 1–3: Doctrine, policies, procedures, and TTPs are inadequate for assessments. 0: Doctrine, policies, procedures, and TTPs are nonexistent for effective assessments.
M4	All pertinent Sense, Shape, Shield, and Sustain factors are considered.	8–10: Automated processes, templates, and collaborative spaces ensure all relevant issues and needs are addressed. Staff and CBRN specialists are highly trained, knowledgeable, and possess access to needed reference material and impacting information. 4–7: Manual processes are predominantly applied to address pertinent CBRND issues and are dependent upon the training, skill, experience, and knowledge of staff participants. 1–3: Processes are inadequate for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants do not possess adequate training, skill, experience, and knowledge to adequately perform the task. 0: Processes do not exist for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants are not trained, experienced, and knowledgeable in the task.

M5	CBRND resources location, status, and availability displayed on COP.	<p>8–10: CBRND logistics management doctrine, policies, procedures, TTPs, and supporting interoperable and integrated automated systems and tools exist, are in place, provide current and accurate information to the COP, and support effective management of CBRND material.</p> <p>4–7: General logistics doctrine, policies, procedures, TTPs and supporting automated systems and manual processes exist, are in place, support predominantly manual management of material, and can provide selected information on CBRND material. Placement on the COP, when performed, is by manual entry.</p> <p>1–3: Logistics management processes are inadequate for CBRND material.</p> <p>0: Logistics management processes are nonexistent for CBRND material.</p>
M6	Accurate local meteorological data are available.	<p>8–10: Micrometeorology is available, accurate, and effectively applied to microlevel hazard prediction using automated systems and tools. Data is correlated and processed to characterize CBRN hazards as impacted by weather, and the results are posted on the COP in near-real time.</p> <p>4–7: Meso-/macrometeorological data are available, accurate, and adequately applied to meso-/macrolevel hazard prediction. Data is correlated and processed predominantly using manual means to characterize CBRN hazards as impacted by weather. Input to the COP is usually performed manually.</p> <p>1–3: Meteorology data are inadequate to support operations. Dedicated CBRN/TIM information processing mechanisms are inadequate to support CBRN/TIM processing for decisioning.</p> <p>0: Dedicated CBRN/TIM information processing mechanisms do not exist.</p>
M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Assessments currently require collaboration using traditional means such as telephone calls, personal visits, mail routing, e-mail, and other similar means. There is an absence of electronic collaborative workspaces within which differing functions and activities are able to cooperatively assist the evaluation, assessment, planning, and decisioning process without time delay and the need for physical presence. Automated tools could effectively enhance and be enhanced by these electronic rooms. Collaborative workspaces support net-centric operations. These workspaces are inevitable with the increasing utility of automation and information sharing.

² Limited training is provided to intelligence, operations, and CBRN cell specialists for the processing and conduct of CBRN incident COA development and assessment. Consistent formal and refresher training on immediate or local battlefield CBRN incident COA development and assessment is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations. The fielding of JWARN, JEM and JOEF provide capability to refine cell specialist skills as part of local training and exercising/evaluations. These systems are projected for initial fielding within the mid term, and fielding is expected to be completed in the early far term. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

³ Doctrine, policies, procedures, and TTPs exist are sufficient for the manual performance of effective CBRN incident assessment. This statement is not true for current, emerging, and projected automated and simulated-based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

⁴ Manual processes exist and are applied by staff and NBC specialists. However, the breadth and depth of planning and consideration of CBRND issues is dependent upon the knowledge, skills, and experience of the participants in the process. The projected initial fielding of JWARN, JEM and JOEF, with fielding completed in the early far term, provide enhanced automated capabilities for CBRND.

⁵ Stovepiped Service logistics systems exist for maintenance, stocks, transport, and requisitioning. However, these systems are not interoperable and integrated. Predominantly manual means are applied to obtain and aggregate information, generally using manual reporting processes. General logistics DOTLPF are in place and support manual processes. However, the information is not integrated into the COP for awareness and for rapid or immediate COA decisioning support. CBRN units are identified and tracked at the unit

level. The specific status of the unit, to include available resources, is current as of the last report by the unit. Assessment processes and integration into COA development is generally performed manually. The effectiveness of CBRND logistics management is dependent upon the experience, skill, knowledge, and training of the assigned staff personnel, quality and accuracy of the base information, and varies between staffs. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. However, the process will remain unchanged. Completed fielding of JEM and JOEF is expected in the early far term.

6 Current DOTLPF and available limited automated systems fielded with operational units is inadequate to perform microlevel meteorological data assimilation and display. Microlevel meteorological data, when available, is at greater depth of detail than required by the current standard ATP process. Hazard identification, characterization, and hazard impacts are conducted at the meso-/macrolevel and are consistent with ATP-45 processes. The ATP-45 process broadly applies the information without consideration of changes in terrain and meteorology at dispersed unit locations. The ATP-45 process is inadequate to meet needs in urban or complex terrain. The initial mid-term fielding of JWARN, JOEF, and JEM will expand data collection, assessment, and display capabilities. Data will be accessed on a continuing basis and processed information updated. Completion of the fielding of JWARN, JOEF, and JEM is expected in the early far term. However, the ATP-45 process and formats are applied by JWARN, JOEF, and JEM.

⁷ Existing DOTLPF adequately addresses the performance of this task, although predominantly using manual means. DOTLPF requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPF will continue to need to evolve as systems, tactics, and situations change

9.23.3 Functional Solution Analysis

9.23.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Inadequate doctrine covering the mechanism and requirement for collaborative development of fixed site CBRN/TIM incident assessments.

Non-Material Solutions: *Doctrine:* Ensure doctrine, policies, procedures, and TTPs enabling effective CBRN assessments collaboration are in place and adequate to meet operational needs. *Training:* Integrate into formal and informal training and challenging exercise and evaluation criterion for CBRN assessments collaboration applying emerging technologies and processes.

2. **Deficiency:** Insufficient doctrine and training to ensure staff personnel can effectively respond to a CBRN/TIM event.

Non-Material Solutions: *Doctrine:* Enhance doctrine, policies, procedures, and TTPs enabling effective the production and maintenance of effective staff personnel for CBRN/TIM event response. *Training:* Integrate into formal and informal training challenging exercise and evaluation criteria to produce and sustain sufficient and effective staff personnel to respond to CBRN/TIM events.

3. **Deficiency:** Lack of specific doctrine for the effective use of JWARN, JOEF and JEM assessments.

Non-Material Solutions: *Doctrine:* As the development of JWARN, JOEF and JEM progresses, the full range of doctrine should be developed for their effective use and application for CBRN/TIM response.

9.23.3.2 IMA Assessment Analysis

N/A

9.24 Task TASHA 24: Manage the CBRND response and mitigation efforts

9.24.1 Functional Area Analysis

9.24.1.1 Definition

Response and event mitigation management are executed dynamically and collaboratively across the affected and responding commands. All Shape, Sense, Shield, and Sustain factors are considered. Includes coordination with coalition partners, NGOs, and indigenous authorities and organizations. Ensure plans, TTPs, and standard operating procedures exist and drills are conducted. Manage resources including personnel, supplies (consumables), and equipment. Actions involve resource allocation, reallocation, tracking and taskings. Includes managing survey, reconnaissance, and decontamination actions. Encompasses the management of CBRN casualty processing throughout the JOA. Restoration operations may be required as a distinct operation independent of joint participation after a CBRN incident.

9.24.1.2 Derivation

UJTL (TA 2.4, TA 5, TA 5.2.1, TA 5.5, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.24.1.2.1 Supported Task: OPSHA 8

9.24.1.2.2 Lateral Tasks: TASENS 13, TASENS 17, TASHLD 1, TASHLD 2, TASHLD 3, TASHLD 4, TASHLD 5, TASHLD 6, TASHLD 7, TASHLD 12, TASHLD 13, TASHLD 14, TASUST 1, TASUST 2, TASUST 3, TASUST 4, TASUST 8, TASUST 9, TASUST 10, TASUST 11, TASUST 12, TASUST 13, TASUST 14, TASUST 15, TASUST 16, TASUST 17, TASUST 18, TASUST 19, TASUST 20, TASUST 21

9.24.1.2.3 Supporting Task: N/A

9.24.1.3 Condition

Perform this task under conditions of:

Physical

1. Moderately developed land. (C1.1)
2. Induced air. (C1.3)
3. Major storm weather systems. (C1.3.1.2)
4. Precipitating weather. (C1.3.1.3)
5. Strong atmospheric weapons effects. (C1.3.3)

Military

1. Restrictive mission instructions. (C2.1.1)

2. Partial preexisting arrangements. (C2.1.1.2)
3. Partially completed mission preparation. (C2.1.3)
4. Partial personnel capability. (C2.2.4)
5. Limited modern military systems. (C2.2.5)
6. Partial joint staff integration. (C2.3.1.1)
7. Partial multinational integration. (C2.3.1.2)
8. Limited staff expertise. (C2.3.1.3)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Significant TIM present in the civilian sector. (C3.3.7.5)

9.24.2 Functional Needs Analysis

9.24.2.1 Capability and Deficiency Assessment Summary

Table 9.24-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Existing doctrine and training provide manual mechanisms to manage CBRND response and WMD/TIM hazard mitigation. Deficiencies include lack of ability to collect CBRND information across echelons; lack of ability to assess unit, personnel, and equipment adequacy; lack of means to use M&S to evaluate COAs; and absence of effective decision support tools.

Projected Near/Mid-Term Capability and Deficiency

The projected initial fielding of the JWARN, JOEF, and JEM during the mid term enhances and provides visibility of CBRND information and processes. However, adequate DOTLPF to capitalize upon the potential benefits of these systems does not currently exist. Additionally, these systems are based upon the preautomation ATP-45 information reporting formats and processes. The DoD effort to standardize data structures and promote integration/interoperability will provide increased opportunities for improvements in CBRND logistics management processes. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or

modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND.

Projected Far-Term Capability and Deficiency

Fielding of JWARN (with JOEF and JEM) is expected to be completed in the early far term. All legacy systems are projected to either be in compliance with, or replaced by new systems that are compliant with, DISA standards and fully support net-centric operations in the far term. Otherwise, no change is projected for this task.

Table 9.24-1. TASHA 24: Capability and Deficiency Assessment

Capability: Manage the CBRND Response and Mitigation Efforts	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability	5 ¹	5 ²	6 ³	6 ⁴	4 ⁵	6 ⁶	5 ⁷	5 ⁸	6 ⁹	5 ¹⁰
Near/Mid-Term Overall Capability	6	5	7	7	4	7	5	6	6	5
Far-Term Overall Capability	7	5	8	8	5	8	5	5	7	6

	FAA Measure	Scale
M1	Compiled and correlated theater CBRN Information available.	8–10: Interoperable and integrated automated systems, processes, and tools collect, compile, correlate, and process CBRN/TIM information for decisioning and planning. Standardized automated templates and M&S tools provide visualization and rapid attainment of situational awareness. Information is continuously processed and updated. 4–7: Manual processes are predominantly applied for the collection, compilation, correlation, and processing of CBRN/TIM information. The process may be restricted in the number of sources compiled and correlated and is dependent upon the knowledge, training, and experience of performing personnel. 1–3: Compilation and correlation of CBRN information is inadequate to support operations 0: Compilation and correlation of CBRN information is nonexistent
M2	Allocation of CBRN units and personnel is adequate.	8–10: Sufficient numbers and types of trained, manned, and equipped CBRND units and CBRN specialists are available to support concurrent operations and routine requirements. 4–7: CBRN units and specialists are available to support a major operation and selected routine requirements. Training, manning, and equipage will vary from unit to unit and dependent upon unit type. Specialist experience will vary from minimal to substantial. Allocations are likely to be at a reduced level with augmentation by nonprimary-duty personnel. 1–3: CBRND specialists and units are available to support a major operation. Experience will vary from minimal to substantial. Routine requirements are filled by nonprimary-duty personnel. 0: Quantity and/or type of CBRND units and specialists are insufficient to support operations.
M3	Allocation of CBRND systems and equipment is adequate.	8–10: Adequate quantities and types of CBRND equipment, systems, and material are available, allocated, ready, and match JTF operations (e.g., Expeditionary, High Maneuver, etc.) and environments (e.g., jungle, extreme cold terrain, desert, etc.). Includes support of sustained operations in a CBRN/TIM environment. 4–7: Sufficient quantities and types of CBRND equipment, systems, and material are allocated and ready for support of JTF operations in a CBRN/TIM environment. Adjustments to planned quantities are performed when necessary for availability. Alternatives are identified, supporting material availability determined, and appropriate allocation actions are taken. 1–3: CBRND systems and equipment allocation is inadequate to support operations. 0: CBRND systems and equipment allocation processes do not exist.

M4	All pertinent Sense, Shape, Shield, and Sustain information is available.	<p>8–10: Automated processes, templates, and collaborative spaces ensure all relevant issues and needs are addressed. Staff and CBRN specialists are highly trained, knowledgeable, and possess access to needed reference material and impacting information.</p> <p>4–7: Manual processes are predominantly applied to address pertinent CBRND issues and are dependent upon the training, skill, experience, and knowledge of staff participants.</p> <p>1–3: Processes are inadequate for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants do not possess adequate training, skill, experience, and knowledge to adequately perform the task.</p> <p>0: Processes do not exist for the identification and planning of pertinent CBRND issues, and/or staff and/or CBRN specialist participants are not trained, experienced, and knowledgeable in the task.</p>
M5	CBRND resources location, status and availability displayed by COP.	<p>8–10: CBRND logistics management doctrine, policies, procedures, TTPs, and supporting interoperable and integrated automated systems and tools exist, are in place, provide current and accurate information to the COP, and support effective management of CBRND material.</p> <p>4–7: General logistics doctrine, policies, procedures, TTPs and supporting automated systems and manual processes exist, are in place, support predominantly manual management of material, and can provide selected information on CBRND material. Placement on the COP, when performed, is by manual entry.</p> <p>1–3: Logistics management processes are inadequate for CBRND material.</p> <p>0: Logistics management processes are nonexistent for CBRND material.</p>
M6	Mechanism in place to process CBRN/TIM information rapidly to meet decision needs.	<p>8–10: Highly interoperable, integrated, and dedicated system and tools collect, compile, correlate, process, report, and provide visualization of CBRN/TIM information for decisioning in near-real time.</p> <p>4–7: Dedicated mechanisms are in place to process CBRN/TIM information for decisioning.</p> <p>0: Dedicated CBRN/TIM information processing mechanisms are inadequate or do not exist.</p>
M7	There is means to track unit level mission degradation and restoration status.	<p>10: Highly integrated dedicated system provides accurate, timely, and current unit-level mission capability status, including existing degradation and mitigation/restoration activities and status.</p> <p>4–7: Dedicated mechanisms are in place to process and provide critical data elements on unit mission capability status. Tracking mechanisms provide minimal information.</p> <p>1–3: Dedicated unit-level mission capability status tracking mechanisms are inadequate to support operations</p> <p>0: Dedicated unit-level mission capability status tracking mechanisms do not exist.</p>
M8	Staff sufficiently trained or experienced to coordinate response and mitigation.	<p>8–10: Staff personnel are experience, formally trained, receive recurring refresher training, and are fully challenged in exercises and evaluations on effective incident response and mitigation COA development and decisioning. Interoperable and integrated automated systems, tools, and processes support efficient and accurate incident response actions and the minimal application of resources necessary for successful mitigation activities.</p> <p>4–7: Selected staff personnel are trained to perform effective incident response and mitigation COA development and decisioning. Processes are predominantly manual, although some units may possess limited automated capabilities. Staff incident response and mitigation management competencies and experience will vary within and between units, but sufficient capability exists to successfully perform the essential tasks.</p> <p>1–3: Staff training, experience, and/or competencies are inadequate for successful CBRN/TIM incident response and/or mitigation.</p> <p>0: Staff training, experience, and/or competencies are nonexistent for successful CBRN/TIM incident response and/or mitigation.</p>

M9	Plans, TTPs, and SOPs have been developed, trained and exercised.	<p>8–10: Doctrine, policies, procedures, and TTPs are adequate for effective response to an event and mitigation. Unit plans and SOPs are developed applying these documents, automated tools and systems, and training—both formal and recurring refresher training—of performing personnel. Unit-level training is performed to ensure personnel are ready, capable, and prepared to perform their taskings. Routine and recurring exercises and evaluations fully challenge unit and individual capabilities to effectively and rapidly respond to an event and perform necessary mitigation efforts. Doctrine, policies, procedures, TTPs, and SOPs are actively revised to exploit current, emerging, and projected technologies and changes to tactics, systems, capabilities, and situations.</p> <p>4–7: Doctrine, policies, procedures, and TTPs for assessment exist but processes are predominantly manual. Unit plans and SOPs apply these documents and the knowledge, experience, and training of the performing personnel. Response and mitigation training is inconsistent and/or is administered to unit personnel in preparation for operations with CBRN threat. Exercises and evaluations do not generally fully challenge capabilities. Doctrine, policies, procedures, TTPs, and SOPs are periodically revised to exploit technologies and operational changes.</p> <p>1–3: Doctrine, policies, procedures, TTPs, SOPs, training, and/or exercises and evaluations are inadequate for incident response and mitigation</p> <p>0: Doctrine, policies, procedures, TTPs, SOPs, training, and/or exercises and evaluations are nonexistent for effective incident response and mitigation.</p>
M10	There is effective DOTLPP in place to conduct task.	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>

¹ Manual process exists and is applied by staff and NBC specialists. The process is dependent upon the knowledge, skills, and experience of the performing personnel. These factors will vary within and between staffs ranging from minimal to substantial capabilities. The projected mid-term initial fielding of JWARN, JOEF, and JEM (with fielding expected to be completed in the early far term) to operational units will provide some capabilities to compile and correlate CBRN information and to post to the COP. However, current processes remain and require NBC specialist and staff action.

² Sufficient CBRND specialists are available to support a major operation and selected routine Service requirements. Augmentation is applied to support core CBRND specialists where possible to reduce impact. Availability of trained and experienced CBRND specialists is low and strained when support is required for more than one large-scale operation involving CBRN threat. Routine requirements support reduces as demand rises to support operations. Sufficient CBRND units are available of the necessary types to support a major operation and selected routine Service requirements. Availability of trained, equipped, and manned CBRND units is low and strained when support is required for more than one large-scale operation involving CBRN threat. Routine support capabilities reduce as demand rises to support operations.

³ CBRND equipment, systems, and types are available in sufficient quantities to support JTF operations in a CBRN environment, provided there does not exist conflicting demands to support multiple concurrent operations with CBRN threat. Protection from high-risk TIMs is minimal in current CBRND equipment, systems, and material. Further, the majority of the types of systems do not adequately support sustained operations and require infusion of increased CBRND resources to maintain OPTEMPO. COLPRO systems, for example, are generally large-scale systems and do not adequately support expeditionary and high maneuver operations, particularly in austere environments at the extremes of the lines of communication. JECF is programmed to field in the mid term and will provide COLPRO flexibility to support most operations and situations. The JSLIST is programmed to field during the mid term and is undergoing certification to meet OSHA Level “C” requirements for TIMs. The JSGPM filtration system will provide a level of protection against selected TIMs and is programmed to field during the mid term. The fielding of these protective systems will be gradual and planners will be required to consider remaining legacy systems as well as the newer joint systems in planning and support. However, as the number of elements possessing joint systems increases, the diverse support requirements will lessen and improvements in operational support are expected. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. However, the process will remain largely unchanged. Completion of the deployment of JOEF and JEM is projected during the early far term.

⁴ Manual processes exist and are applied by staff and NBC specialists. However, the breadth and depth of planning and consideration of CBRND issues is dependent upon the knowledge, skills, and experience of the participants in the process. The projected initial fielding of JEM and JOEF, with fielding completed in the early far term, provide enhanced automated capabilities for CBRND.

⁵ Stovepiped Service logistics systems exist for maintenance, stocks, transport, and requisitioning. However, these systems are not interoperable and integrated. Predominantly manual means are applied to obtain and aggregate information, generally using manual reporting processes. General logistics DOTLPF are in place and support manual processes. However, the information is not integrated into the COP for awareness and for rapid or immediate COA decisioning support. CBRN units are identified and tracked at the unit level. The specific status of the unit, to include available resources, is current as of the last report by the unit. Assessment processes and integration into COA development is generally performed manually. The effectiveness of CBRND logistics management is dependent upon the experience, skill, knowledge, and training of the assigned staff personnel, quality and accuracy of the base information, and varies between staffs. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. The programmed initial fielding of JOEF and JEM in the mid term provides the staff with tools to identify and assess COAs supporting the effective allocation of CBRND resources. However, the process will remain unchanged. Completed fielding of JEM and JOEF is expected in the early far term.

⁶ Doctrinal mechanisms are in place for processing CBRN/TIM information and subsequent decisioning. Process is predominantly manual, time-consuming, and labor-intensive. Information sources are either not interoperable or possess limited interoperability. CBRN information must compete for resources with other priority operational information processes. Processing and decisioning may be delayed due to lack of dedicated C4ISR capabilities for CBRN information collection, processing, interpretation, and dissemination. The projected mid-term initial fielding of JWARN, JOEF, and JEM, with fielding expected to be completed during the early far term, to operational units provides the staff with tools and capabilities to perform aspects of the process; however, the largely manual nature of the process will remain.

⁷ Doctrinal processes are applied to track unit mission capability status, critical issues, and projected/estimated corrective dates. This is a predominantly manual, time-consuming, labor-intensive, and information-minimizing process. Continued advances in automated technologies, systems, and tools, coupled with net-centric operations and DISA data standardization, may cause the gradual movement to automated processes and systems that are interoperable, integrate information from a variety of sources, and reduce manpower requirements.

⁸ Limited training is provided to staff personnel for the conduct of CBRN/TIM response and mitigation management. Consistent formal and refresher training on immediate or local battlefield CBRN incident response and mitigation COA development and implementation is not regularly and routinely performed. Limited routine training is provided and often is not focused until preparation for operations with threat. The fielding of JEM and JOEF provide capability to refine skills as part of local training and exercising/evaluations. However, supporting and requiring DOTLPF is necessary to ensure attainment and maintenance of capability.

⁹ Doctrine, policies, procedures, and TTPs exist are sufficient for the manual performance of effective CBRN incident assessment. This statement is not true for current, emerging, and projected automated and simulated-based assessment tools. Doctrine, policies, procedures, and TTPs must evolve to accommodate changes in tactics, systems, capabilities, and situations.

¹⁰ Existing DOTLPF adequately addresses the performance of critical aspects of this task, although predominantly using manual means. DOTLPF requires improvement to sufficiently address areas increasingly important for the transformed force and the changing operational environment. DOTLPF will continue to need to evolve as systems, tactics, and situations change.

9.24.3 Functional Solution Analysis

9.24.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Inadequate ability to process CBRN/TIM information rapidly to meet decision needs.
Partial Non-Materiel Solutions: *Doctrine:* Reinforce in doctrine the need for rapid analysis and response to CBRN/TIM events. *Training:* Enhance training reinforcing rapid analysis and response to CBRN/TIM events.
- 2. Deficiency:** Inadequate staff training programs.
Non-Materiel Solutions: *Training:* Enhance training of staff personnel to ensure adequate acquisition and maintenance of ability to effectively handle CBRN mitigation and response.
- 3. Deficiency:** Inadequate timeliness in the warning process affecting timely protective measure implementation.
Partial Non-Materiel Solutions: *Doctrine:* Expand doctrine including the range of “Man in the Loop” in the warning process.
- 4. Deficiency:** Lack of ability to assess equipment adequacy.
Partial Non-Materiel Solutions: *Organization:* Review table of organization and equipment standards against actual organization and personnel to ensure adequate to support CBRN assessments. *Personnel:* Acquire and maintain adequate and sufficient CBRN personnel to support CBRN requirements.
- 5. Deficiency:** Interoperability barriers exist that limit force collaboration with interagencies and coalition partners.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, procedures, and processes addressing the establishment and maintenance of collaborative arrangements with interagencies and coalition partners. *Training:* Integrate into initial and recurrent training of unit command staff personnel the application of means and processes for the establishment and maintenance of effective collaboration with interagencies and coalition partners. Incorporate into exercise and evaluation criteria requirements challenging unit command staff establishment and application of collaborative arrangements. *Leadership:* Ensure recognition of criticality to operations of effective collaboration with interagencies and coalition partners.

9.24.3.2 IMA Assessment Summary

Table 9.24-4 is a list of ideas for material approaches and a corresponding description of each idea. Material approaches to accomplish this task identify the automation and management of historical, technical and sensor data, as well as analytical tools and linkages to the COP. Table

9.24-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.24-4. TASHA 24: Materiel Approaches

Idea for Materiel Approach	Description
Lessons learned databases	Develop/consolidate databases for operational and training lessons learned.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Management of databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Database	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots, and overlays and verify receipt of reports and plots. Transmission of data uses existing communications nets.
Link to GIS	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to COP

Table 9.24-5. TASHA 24: IMA Assessment

<div style="display: flex; justify-content: space-between;"> Identified Gaps Ideas for Material Approaches (IMA) </div>	Lessons Learned Databases	Reach back Capability	Management of Databases	Simulations and Models	Database	Link to GIS	Risk Factor Templates	Collect, Exchange, and Disseminate Information
Inadequate ability to process CBRN/TIM information rapidly to meet decision needs.		X		X	X	X	X	X
Inadequate timeliness in the warning process affecting timely protective measure implementation.				X		X	X	X
Lack of ability to assess equipment adequacy.	X		X	X	X	X	X	X

9.25 Task TASHA 25: Provide tactical CBRN/TIM weapons information to the combatant commander

9.25.1 Functional Area Analysis

9.25.1.1 Definition

To obtain information and data from all sources that provide information about the CBRN/TIM weapons situation on the battlefield and in the JOA. These data are provided to the combatant commander.

9.25.1.2 Derivation

OPSENS 1.

9.25.1.2.1 Supported Task: OPSHA 10

9.25.1.2.2 Lateral Task: N/A

9.25.1.2.3 Supporting Task: N/A

9.25.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Minimal time available. (C2.1.5)
2. Negligible to marginal intelligence database. (C2.4.4)
3. Negligible to difficult theater intelligence access. (C2.4.4)
4. Little or no certitude of data. (C2.4.6)
5. Nuclear, chemical and biological threat form. (C2.9.2)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. No international organization support. (C3.1.2.5)

9.25.2 Functional Needs Analysis

9.25.2.1 Capability and Deficiency Assessment Summary

Table 9.25-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the

mid- to far-term fielding of JWARN, JEM and JOEF initial fielding to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Existing doctrine and training provide manual mechanisms to manage CBRND information for the combatant commander. Deficiencies include the lack of automated warning and reporting system for CBRN attacks and the lack of reachback capability to CBRND databases.

Projected Near/Mid-Term Capability and Deficiency

The projected fielding of the JWARN, JOEF, and JEM suite enhances and provides visibility of CBRND information and processes. JWARN, JOEF, and JEM are projected for initial fielding in the mid term. However, adequate DOTLPF to capitalize upon the potential benefits of these systems does not currently exist. Further, integration of disparate sensor systems must be realized.

Projected Far-Term Capability and Deficiency

JWARN, JOEF, and JEM are expected to complete fielding in the early far term. Sensors and IDN capabilities are in development with stated fielding sometime in the far term. This achievement is dependent upon the progression of sensor technologies necessary for an IDN.

Table 9.25-1. TASHA 25: Capability and Deficiency Assessment

Capability: Provide Tactical CBRN/TIM Weapons Information To The Combatant Commander	M1	M2	M3	M4	M5	M6
Current Overall Capability	2 ¹	5 ²	2 ^{1,2}	4 ²	6 ³	5 ⁴
Near/Mid-Term Overall Capability	4	5	4	5	8	5
Far-Term Overall Capability	6	8	6	8	9	5

	FAA Measure	Scale
M1	CBRN/TIM weapon capabilities on the battlefield can be detected.	<p>8–10: Integrated, interoperable, and interactive battlefield automated systems and sensor networks collect, validate, correlate, compile, and process weapons data with known weapons characteristics to detect and identify CBRN/TIM weapon capabilities in near-real time for dissemination to forces of alerting and warning of hazards. CBRN/C4ISR, and COP systems are continuously updated with information.</p> <p>4–7: Battlefield systems and sensor networks exist. Information and data are predominantly manually processed by CBRN and unit personnel against known weapons characteristics to detect and identify CBRN/TIM weapons capabilities. Doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge are the foundation for this action and will vary between staffs based upon experience and acquired capabilities. CBRN, C4ISR, and COP systems are updated with information.</p> <p>1–3: Battlefield systems and sensor networks and/or CBRN and unit staff personnel knowledge and capabilities are inadequate to support survival and operational requirements for the identification and detection of CBRN/TIM weapons capabilities.</p> <p>0: Battlefield systems and sensor networks are nonexistent or CBRN and unit staff personnel are trained to detect and identify CBRN/TIM weapons capabilities.</p>
M2	CBRN/TIM weapon capabilities on the battlefield can be identified.	<p>8–10: Integrated, interoperable, and interactive battlefield automated systems collect, validate, process, and correlate weapons data with known weapons characteristics to identify CBRN/TIM weapons capabilities in near-real time for situation assessment and COA determination. Information is posted on the COP.</p> <p>4–7: CBRN and unit personnel predominantly depend upon manual processes for identification of CBRN/TIM weapon capabilities. Doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge are the foundation for this action and will vary between in experience and capabilities between staff.</p> <p>1–3: Battlefield identification of CBRN/TIM weapon capabilities is inadequate to support operational requirements.</p> <p>0: Battlefield identification of CBRN/TIM weapon capabilities is nonexistent.</p>

M3	Time to detect CBRN/TIM weapon capabilities is adequate.	<p>8–10: Integrated and interoperable battlefield automated systems and sensor networks exist and are in place. Information from these systems are collected, correlated, validated, compiled and processed in near-real time for input to integrated, interoperable, and interactive automated systems that process and correlate weapons data with known weapons characteristics to identify CBRN/TIM weapons capabilities in near-real time for dissemination to forces of alerting and warning of hazards. CBRN, C4ISR, and COP systems are continuously updated with information.</p> <p>4–7: Battlefield systems and sensor networks exist. Information and data are manually compiled and processed for dissemination to Forces of altering and warning of hazards. CBRN staff cell and unit personnel predominantly depend upon manual processes for identification of CBRN/TIM weapon capabilities. Doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge are the foundation for this action and will vary between in experience and capabilities between staff. CBRN, C4ISR, and COP systems are updated with information.</p> <p>1–3: Battlefield systems and sensor networks are inadequately or not integrated and/or interoperable, and/or are inadequate to support survival and operational requirements; or identification of CBRN/TIM weapon capabilities is inadequate to effectively support operational requirements.</p> <p>0: Battlefield systems and sensor networks s are nonexistent or identification of CBRN/TIM weapon capabilities nonexistent.</p>
M4	Time to identify CBRN/TIM weapon capabilities is adequate.	<p>8–10: Integrated, interoperable, and interactive automated systems collect, validate, process, and correlate weapons data with known weapons characteristics to identify CBRN/TIM weapons capabilities in near-real time for situation assessment and COA determination. Information is posted on the COP.</p> <p>4–7: CBRN staff cell and unit personnel predominantly depend upon manual processes for identification of CBRN/TIM weapon capabilities. Doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge are the foundation for this action and will vary between in experience and capabilities between staff. The time period taken to identify weapon capabilities is adequate to meet operational requirements.</p> <p>1–3: Timeliness for identification is inadequate to support operational requirements or identification capabilities are inadequate to meet operational requirements.</p> <p>0: Timeliness for identification does not support operational requirements or identification cannot be performed.</p>
M5	Time to provide CBRN/TIM weapon information to the combatant commander is adequate.	<p>8–10: Integrated, interoperable, and interactive automated systems substantially collect, validate, compile, process, and evaluate CBRN/TIM weapon information in near-real time for assessment and COA determination. Information is posted on the COP.</p> <p>4–7: Doctrine, policies, procedures, TTPs, and formats exist and are applied and are generally performed manually for collection and determination of CBRN/TIM weapon information. Timeliness is contingent upon receipt of data/information, operational considerations, and unit/personnel capabilities.</p> <p>1–3: The timeliness of CBRN/TIM weapon information is inadequate to support survival and operational needs.</p> <p>0: The timeliness of CBRN/TIM weapon information fails to support survival and operational needs.</p>
M6	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Limited battlefield systems and local sensor networks exist for the purpose of detecting a release or, as with missile tracking systems, weapons. However, these systems and networks are not interoperable and integrated. Manual processes using largely manual resources are the predominant means of performing this task and are generally reliant upon

the knowledge and experience of the CBRN and unit staff personnel. Networking battlefield systems and sensors using JWARN will permit the ability to reach back to CBRND databases to improve identification and detection accuracy and speed. JWARN is projected for initial fielding in the mid term with completion of fielding expected in the far term. The concurrent fielding of JEM and JOEF with JWARN will automate functions and provide interface to the COP to update and disseminate information.

² Current processes are predominantly manual, time-consuming, and labor-intensive. Determinations are dependent upon the experience, knowledge, and training of the performing personnel as well as available reference material. Networking CBRN sensors using JWARN will permit the ability to reach back to CBRND databases to improve identification accuracy and speed. JWARN is projected for initial fielding in the mid term with completion of fielding expected in the far term.

³ Current processes are predominantly manual, time-consuming, and labor-intensive. Determinations are dependent upon the experience, knowledge, and training of the performing personnel. The current manual method of providing alarm and warning to units/warfighters as well as situational awareness information to combatant commanders is slow and prone to errors. The projected initial mid-term fielding to operational units of JWARN, JEM, and JOEF will automate functions and provide interface to the COP to keep operational commanders informed. Fielding is projected for completion in the early far term.

⁴ Current DOTLPF include the ability to conduct this task using largely manual processes and available communications systems. However, processes and procedures for the dissemination of information to neighboring units is not adequate. The retransmission of the information by higher echelon to all units potentially at risk or affected by a CBRN/TIM event is performed as a work-around and assurance of notification. The fielding of JWARN, JOEF, and JEM initially performed during the mid term provides the capability to perform horizontal notification and information dissemination in addition to existing vertical capabilities. JWARN, JOEF, and JEM are projected for completion of fielding in the early far term. Lack of IDN and disparate sensor maturity prohibits development of supporting and associated DOTLPF. DOTLPF will need to evolve as systems, tactics, and situations change.

9.25.3 Functional Solution Analysis

9.25.3.1 DOTLPF Assessment Summary.

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of automated warning and reporting system for CBRN attacks.
Partial Non-Materiel Solutions: *Doctrine:* Update and enhance doctrine, policies, procedures, TTPs, and SOPs to support and integrate disparate sensors, JWARN, JEM, and JOEF for effective CBRND. *Training:* Incorporate standards and criteria into formal and informal training, exercises, and evaluation for the integration of disparate sensors and the application of JWARN for effective CBRN warning and reporting.
- 2. Deficiency:** Lack of reachback capability to CBRND databases and SMEs.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policies, procedures, and TTPs requirements, guidelines, and processes for the rapid, secure, and accurate capability to reach back to CBRN/TIM information essential to rapid and accurate field analysis and response. *Organization:* Establish SME centers of excellence and structures to support reachback activities. *Training:* Institute formal and informal training on reachback processes and acquire and maintain SME capabilities. *Personnel:* Identify, acquire, and maintain SME expertise to support CBRND Reachback. *Facilities:* Institute necessary infrastructure to support reachback activities.

9.25.3.2 IMA Assessment Analysis

Table 9.25-4 is a list of ideas for material approaches and a corresponding description of each idea. The ability to reach back to any CBRN/TIM information data locations is critical to the effective accomplishment of this task and cannot be overemphasized. Table 9.25-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.25-4. TASHA 25: Materiel Approaches

Idea for Materiel Approach	Description
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots, and overlays and verify receipt of reports and plots. Transmission of data uses existing communications nets.
Simulations and models	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Databases	Develop a system for obtaining information, archiving data, accessing databases, performing information/data queries, and exchanging data files in support of CBRN functions and activities.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Link to GIS	Develop a system resident in standard C4ISR systems with interface to GIS to provide input to the COP.

Table 9.25-5. TASHA 25: IMA Assessment

Identified Gaps / Ideas for Material Approaches (IMA)	Collect, Exchange, and Disseminate Information	Simulations and Models	Database	Reachback Capability	Link to GIS
Lack of automated warning and reporting system for CBRN attacks.	X				X
Lack of reachback capability to CBRND databases and SMEs.		X	X	X	X

9.26 Task TASHA 26: Establish battlespace CBRND information integration and connectivity**9.26.1 Functional Area Analysis****9.26.1.1 Definition**

Ensures the smooth integration and rapid dissemination of CBRN information across the GIG within the immediate battlespace. Interoperability is a key component of the integration and connectivity. The integration plan addresses CBRN system and software interoperability and accreditation issues to facilitate the effective movement of essential CBRND information across the defense information infrastructure and common operating environment. Operation center, cell, or hub connectivity and interoperability support CBRND information activities and tasks. Connectivity and inoperability with coalition partners and appropriate indigenous agencies and NGOs are critical components. Operations centers of all echelons receive and transmit essential and routine CBRND information. Connectivity to the IDN supports situational awareness.

9.26.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense.

9.26.1.2.1 Supported Task: OPSHA 11**9.26.1.2.2 Lateral Task: N/A****9.26.1.2.3 Supporting Task: N/A****9.26.1.3 Condition**

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Low military systems reliability. (C2.2.5.3)
3. Some interoperability. (C2.2.6)
4. Intermittent communications connectivity. (C2.3.1.6)
5. High information volume. (C2.3.1.9)
6. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.26.2 Functional Needs Analysis

9.26.2.1 Capability and Deficiency Assessment Summary

Table 9.26-1 discusses individual capabilities to perform this task to the designated standards. There are one current and three expected near-future capabilities used to accomplish this task. The capabilities include the current manual method of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability currently is rated “red.” Improvements in the near/mid term raise the assessment to “yellow” and continue into the far term. Although improvements between the near/mid-term and far-term periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to further change the overall assessed color rating for this task in the far term.

Current Capability and Deficiency

Current methods for exchanging CBRND information are cumbersome and slow, consisting of manual calculations and oral or written communication. Deficiencies include lack of automated capability to process and disseminate CBRN information, lack of compatibility among CBRND systems, and lack of information surety controls for CBRND.

Projected Near/Mid-Term Capability and Deficiency

Improvements in capabilities are envisioned with the fielding of the programmed JWARN, JOEF, and JEM systems. JWARN, JOEF, and JEM are projected for initial fielding in the mid term. Enhancements of existing information systems provide for potential integration of various systems to provide current and detailed information for decisioning and action. However, interoperability and integration is a DoD specific goal and is not mandatory upon other involved agencies. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND. Interoperability and integration will be a gradual process.

Projected Far-Term Capability and Deficiency

The fielding of JWARN, JOEF, and JEM is expected to be completed in the early far term. All legacy systems are projected to either be in compliance with, or replaced by new systems that are compliant with, DISA standards and fully support net-centric operations in the far term. Otherwise, no change is projected for this task.

Table 9.26-1. TASHA 26: Capability and Deficiency Assessment

Capability: Battlespace CBRND Information Integration and Connectivity	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability	3 ¹	6 ²	2 ³	5 ⁴	2 ³	4 ⁵	1 ³	4 ⁶
Near/Mid-Term Overall Capability	5	6	5	5	5	5	2	4
Far-Term Overall Capability	8	7	7	7	7	5	3	5

	FAA Measure	Scale
M1	CBRND information is easily disseminated onto the GIG.	<p>8–10: Interoperable and integrated automated systems, processes, and tools collect, compile, correlate, and process CBRN/TIM information for decisioning, planning, warning, reporting, and visualization. Information is continuously processed and updated over the GIG and posted on the COP in near-real time.</p> <p>4–7: Manual processes are predominantly applied to the collection, compilation, correlation, and processing of CBRN/TIM information for decisioning, planning, warning, and reporting. Information is updated periodically and posted on the COP.</p> <p>1–3: Processes are inadequate for the collection, compilation, correlation, processing, and/or dissemination of CBRN/TIM information; or information dissemination is performed manually using existing communications systems.</p> <p>0: Processes are nonexistent for the collection, compilation, correlation, processing, and/or dissemination of CBRN/TIM information; or information dissemination cannot be accomplished using existing communications systems.</p>
M2	CBRND data and information formats are interoperable across the coalition.	<p>8–10: Processes and formats exist generating detailed CBRND data and information. The data elements and formats are standardized and interoperable among all coalition partners.</p> <p>4–7: Manual processes and broad-based, and general formats exist and are employed for the dissemination of selected CBRND data and information to most need-to-know centers. Data elements and format are standardized and recognized.</p> <p>1–3: Data format and information interoperability are inadequate to support operational needs and requirements.</p> <p>0: Data format and information interoperability are nonexistent.</p>
M3	Operation center systems are interoperable with force systems.	<p>8–10: Automated operation center systems are interoperable with all force systems, and data elements and formats are standardized and interoperable and integrated between all coalition partners, participating agencies, and force components. Information is disseminated using the GIG and displayed on the COP.</p> <p>4–7: A combination of manual and automated processes are applied within the operation center to process and disseminate information to all need-to-know centers. Information is updated periodically and posted on the COP. Manual processes and broad-based, and general formats exist and are employed for the dissemination of selected CBRND data and information. Data elements and format are standardized and recognized.</p> <p>1–3: Operation center systems are not adequately interoperable with force, coalition, and/or participating agency systems; and/or data elements and/or formats are inadequately interoperable and integratable across participating entities.</p> <p>0: Operation center systems are not interoperable with force, coalition, and/or participating agency systems; or data elements and/or formats are not interoperable and integratable across participating entities.</p>

M4	Operation center systems possess connectivity with force systems.	<p>8–10: Automated operation center systems possess secure and uninterrupted connectivity with all force, coalition, and participating agency systems with sufficient bandwidth to support the exchange of electronic information and data at a rate commensurate with intense operational activities.</p> <p>4–7: Existing C4ISR systems provide connectivity to force, coalition, and participating agency systems on a priority and as-available need basis. Connectivity and bandwidth is adequate to support most operations.</p> <p>1–3: Operation center systems possess inadequate connectivity with similar force, coalition partner, and/or participating agency systems; and/or necessary bandwidth.</p> <p>0: Operation center systems possess inadequate or do not possess connectivity with similar force, coalition partner, and/or participating agency systems; and/or bandwidth.</p>
M5	Operation center software is interoperable with force software and formats.	<p>8–10: Automated operation center systems are interoperable with all force systems and data elements and formats are standardized and interoperable and integrated between all coalition partners, participating agencies, and force components. Information is disseminated using the GIG and displayed on the COP.</p> <p>4–7: A combination of manual and automated processes are applied within the operation center to process and disseminate information to all need-to-know centers. Information is updated periodically and posted on the COP. Manual processes and broad-based and general formats exist and are employed for the dissemination of selected CBRND data and information. Data elements and format are standardized and recognized.</p> <p>1–3: Operation center systems are not adequately interoperable with force, coalition, and/or participating agency systems; or data elements and/or formats are inadequately interoperable and integratable across participating entities.</p> <p>0: Operation center systems are not interoperable with force, coalition, and/or participating agency systems; or data elements and/or formats are not interoperable and integratable across participating entities.</p>
M6	Information surety controls are active.	<p>8–10: Active and in-depth automated information surety controls and processes correlate and validate received information for authenticated originator, authorized coding sequence, data format, verification with other sources, and indicators of tampering, secondary transport, or other information assurance surveillance requirements.</p> <p>4–7: Manual and automated controls and processes are applied to validate and verify received information for potential indications of adversary origination, tampering, and to ensure information is verified with other sources for accuracy and completeness.</p> <p>1–3: Information surety controls are inadequate to assure received and applied information is not affected by adversary information warfare activities.</p> <p>0: Information surety controls are nonexistent to assure received and applied information is not affected by adversary information warfare activities.</p>
M7	CBRN data and information are interoperable across other agencies.	<p>8–10: Processes and formats exist generating detailed CBRND data and information. The data elements and formats are standardized and interoperable among all participating agencies.</p> <p>4–7: Manual processes and broad-based and general formats exist and are employed for the dissemination of selected CBRND data and information to most need-to-know centers. Data elements and format are standardized and recognized.</p> <p>1–3: Data format and information interoperability is inadequate to support operational needs and requirements.</p> <p>0: Data format and information interoperability is nonexistent.</p>

M8	There is effective DOTLPPF in place to conduct task.	8–10: DOTLPPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations 4–7: Most critical aspects of DOTLPPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPPF is inadequate for accomplishment of this task. 0: DOTLPPF does not exist for this task.
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¹ CBRND information is not generally disseminated through the GIG. Information is disseminated using manually prepared formats and textual messages using existing C4ISR communications systems. Posting on the COP, when accomplished, is performed manually. The projected mid-term initial fielding of JWARN, JEM, and JOEF will provide the ability to disseminate CBRND information over the GIG enterprise service using C4ISR information systems and the COP. Completed fielding is expected in the early far term. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term.

² The ATP-45 process, data elements, and formats are standardized throughout all NATO partners. ATP-45 is standard to all U.S. Forces and is generally recognized by most coalition partners. ATP-45 is currently a manual process providing broad-based CBRND data and information. The mid-term initial fielding of JWARN, JEM, and JOEF will automate many of the current manual processes. Completion of fielding of these systems is expected in the early far term. However, JWARN will continue to apply the ATP-45 data elements and processes. Current processes will remain. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, and other agencies may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers.

³ Operations center systems are not interoperable with most force, coalition, and participating agency systems. Other than the ATP-45 data elements and formats, most data elements and formats are not interoperable with and between these systems. The mid-term initial fielding of JWARN, JEM, and JOEF does not resolve data interoperability and integration issues. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, and other agencies may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. Fielding of JWARN, JOEF, and JEM is expected to be completed early in the far term.

⁴ Current C4ISR systems in operation centers are generally stovepipe systems. Connectivity with other force, coalition partner, and participating agency systems is on a priority, as-available basis and manually performed, provided connectivity and data exchange is not otherwise negated by data structures and transmission protocols. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, and other agencies may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. Bandwidth is adequate to support most operational requirements. However, the increasing demand for bandwidth to support net-centric operations and to support interoperability and near-real-time data exchange in the mid to far term is likely to exceed available bandwidth, to the potential detriment of operations.

⁵ A combination of manual and automated information surety controls and processes are currently applied to ensure information is complete, verified, authenticated, and untampered. The process is time-consuming and the potential exists for errors to occur during periods of high OPTEMPO. JWARN, JEM, and JOEF—projected for initial fielding in the mid term—include automated information surety controls and processes. These will assist in the process; however, these systems will require manual oversight and operation. Fielding of these systems is expected to be completed in the early far term. Net-centric operations and DISA data standards address interoperability and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are

projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. Interoperability with coalition partners, especially non-NATO partners, and other agencies may be a continuing issue requiring maintenance of attentiveness and awareness by the responsible centers. Net-centric requirements and DISA standards will, over the course of the mid and far term through updates to legacy systems and software or their replacement, increase integration of automated information surety controls and processes. But information surety issues will remain with coalition partner and participating agency system information and data.

⁶ Current DOTLPF addresses the critical aspects of this task, although applying predominantly manual means for attainment. DOTLPF requires improvement to sufficiently address information surety integration into force software and systems. This is especially critical with the increasing application of information systems on the battlefield within net-centric operations. DOTLPF must continue to evolve as systems, tactics, and situations change.

9.26.3 Functional Solution Analysis

9.26.3.1 DOTMLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** DOTMLPF is inadequate to support and effectively apply joint systems and standards, and emerging technologies.

Partial Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs must ensure the integration of information assurance capabilities into legacy, evolving, and emerging battlefield information technologies. Continued emphasis upon standardization of data elements, formats, and the interoperability and connectivity of Force systems is required. *Organization:* Ensure that organizational structures, processes, and capabilities support implementation and the effective application of joint systems and emerging technologies/systems. *Training:* Incorporate lessons learned and emerging technologies and systems into initial, recurring and advanced training. Formulate standards and criteria for challenging exercises and evaluations. *Leadership:* Ensure interoperability, connectivity, and integration of deploying systems and standardization of data elements and formats are pursued and accomplished. *Facilities:* Supporting necessary infrastructure.

2. **Deficiency:** Insufficient emphasis upon compatibility and interoperability of CBRND systems.

Partial Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs must ensure the interoperability of deploying systems and standardization of data elements and formats.

3. **Deficiency:** Inadequate doctrine and training of the force.

Non-Materiel Solutions: *Doctrine:* Doctrine, policies, procedures, and TTPs require ongoing update and enhancement to maintain currency with materiel developments and operational needs. *Training:* Formal and recurring training, as well as challenging exercises and evaluations, are essential to maintaining force capabilities and currency with materiel developments and operational requirements.

9.26.3.2 IMA Assessment Analysis

Table 9.26-4 is a list of ideas for materiel approaches and a corresponding description of each idea. The ability to obtain and process sensor data and tools to allow collaboration and information exchange while maintaining the integrity of that information is essential to this task. Table 9.26-5 identifies which of the materiel approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.26-4. TASHA 26: Materiel Approaches

Idea for Materiel Approach	Description
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input, generates, edits, and disseminates NBC reports, including downwind-hazard plots and overlays, and verify receipt of reports and plots. Transmission of data uses existing communications nets.
CBRN staff collaboration tools	Develop automated system among and between CBRND specialists and other functions (e.g., operations, logistics) to allow collaboration between these functional areas and link to the COP.
Information assurance	Develop a CBRND system that processes and transmits information in accordance with Information Assurance Defense in Depth Standards, including certification and accreditation in accordance with DoD and CJCS guidance.

Table 9.26-5. TASHA 26: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Collect, Exchange, and Disseminate Information</p>	<p>CBRN Staff Collaboration Tools</p>	<p>Information Assurance</p>
<p>DOTMLPF is inadequate to support and effectively apply Joint systems and standards, and emerging technologies.</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Insufficient emphasis upon compatibility and interoperability of CBRND systems</p>	<p>X</p>	<p>X</p>	<p>X</p>

9.27 Task TASHA 27: Ensure the means to collaboratively plan, assess, and manage**9.27.1 Functional Area Analysis****9.27.1.1 Definition**

Ensures planners and staffs possess the appropriate means to collaboratively assess, plan, and manage. Encompasses access to automated collaborative workspace tools that are integrated and interoperable with existing C4ISR systems. Also encompasses movement of essential CBRN information across networks and the GIG. Includes interactive access to information repositories and expert advice. This task applies to all levels of command across the joint forces. This task enables situational awareness, situational understanding, and effective decision making.

9.27.1.2 Derivation

UJTL (ST 2.2.1, ST 2.4.1, ST 2.5, ST 5, ST 5.1, ST 5.1.1, ST 5.1.2, ST 5.1.3, ST 5.1.4, ST 5.1.6, ST 5.2, ST 5.2.1, ST 5.3.1.1, ST 5.3.1.2, ST 5.3.1.3, ST 5.3.1.4, ST 5.3.3, ST 5.4.1, ST 5.4.3, ST 6, ST 6.2, ST 7.1.1, ST 8.1.4, ST 9, ST 9.3, ST 9.4, ST 9.5, ST 9.6), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense.

9.27.1.2.1 Supported Task: OSHA 11

9.27.1.2.2 Lateral Task: N/A

9.27.1.2.3 Supporting Task: N/A

9.27.1.3 Condition

Perform this task under conditions.

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Some interoperability. (C2.2.6)
3. Partial joint staff integration. (C2.3.1.1)
4. Partial multinational integration. (C2.3.1.2)
5. Restricted information exchange. (C2.3.1.8)
6. High information volume. (C2.3.1.9)

Civil

1. Fair information management. (C3.3.7.4)

9.27.2 Functional Needs Analysis

9.27.2.1 Capability and Deficiency Assessment Summary

Table 9.27-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Collaborative planning and management of CBRND activities is a manual and time-intensive process. Some limited access is available to archived CBRN data. Current deficiencies include absence of advanced tools for planning and assessment management; no robust capability for remote situations; and absence of compliance with emerging network centric capability.

Projected Near/Mid-Term Capability and Deficiency

The fielding of the JWARN, JOEF, and JEM suite will significantly improve the capability of the staff to plan, assess, and manage CBRND activities. Initial fielding is projected for the mid term. However, improvements to this programmed capability are necessary. These include the ability to access out-of-network experts, improved bandwidth, and expanded supporting DOTLPF.

Projected Far-Term Capability and Deficiency

Fielding of JWARN, JOEF, and JEM is expected in the early far term.

Table 9.27-1. TASHA 27: Capability and Deficiency Assessment

Capability: Means of Collaboratively Planning, Assessing, and Managing	M1	M2	M3	M4	M5	M6
Current Overall Capability	5 ¹	5 ¹	3 ²	3 ²	4 ³	3 ⁴
Near/Mid-Term Overall Capability	5	5	3	3	5	4
Far-Term Overall Capability	6	6	3	3	7	5

	FAA Measure	Scale
M1	Participants are able to exchange information.	<p>8–10: Secure, interoperable, and interactive electronic processes and workspaces with automated tools exist and are predominantly applied by all relevant echelons of the joint force, coalition partners, and other authorized entities.</p> <p>4–7: Collaborative and interoperable manual processes are predominantly applied by most planning staffs of the joint force, coalition partners, and other authorized entities. Collaboration is performed via formal and informal review and comments of drafted material, on-site representation, and/or voice discussions.</p> <p>1–3: Collaborative processes are inadequate or are not adequately collaborative or interoperable within or between elements of the joint force, coalition partners, and other authorized entities.</p> <p>0: Collaborative processes do not exist or are not collaborative or interoperable within or between elements of the joint force, coalition partners, and other authorized entities.</p>
M2	Planning, assessment, and management tools are interoperable.	<p>8–10: Secure, interoperable, and interactive electronic processes, workspaces, and automated tools exist and are predominantly applied by all relevant echelons of the joint force, coalition partners, and other authorized entities.</p> <p>4–7: Collaborative and interoperable manual processes and tools are predominantly applied by most staffs of the joint force, coalition partners, and other authorized entities.</p> <p>1–3: Tools and process are inadequate or are not adequately collaborative and interoperable within or between elements of the joint force, coalition partners, and other authorized entities.</p> <p>0: Tools and processes are nonexistent or are not collaborative and interoperable within or between elements of the joint force, coalition partners, and other authorized entities.</p>
M3	CBRND information repositories are routinely accessible.	<p>8–10: CBRN staff cell, unit staff, and automated systems possess unrestricted access to stored data and SMEs for CBRN/TIM agents and CBRND actions. CBRN/TIM agents and CBRND data sets are integrated and interoperable with CBRN systems. Additional information support is available using electronic reachback and connectivity to information sources and SMEs located outside the area of operations. Reachback is transparent to the user.</p> <p>4–7: CBRN staff cell and unit personnel predominantly depend upon doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge for evaluation and assessment of CBRN/TIM agents and determination of CBRND actions as well as operational considerations. Reachback is routinely performed manually, although dependent upon availability of communications resources.</p> <p>1–3: Access to CBRN, TIM, and/or CBRND information repositories and/or SMEs is inadequate to support operations.</p> <p>0: Access to CBRN, TIM, and/or CBRND information repositories and/or SMEs is nonexistent for support of operations.</p>

M4	Expert advice is routinely accessible.	<p>8–10: CBRN staff cell, unit staff, and automated systems possess unrestricted access to stored data and SMEs for CBRN/TIM agents and CBRND actions. CBRN/TIM agents and CBRND data sets are integrated and interoperable with CBRN systems. Additional information support is available using electronic reachback and connectivity to information sources and SMEs located outside the area of operations. Reachback is transparent to the user.</p> <p>4–7: CBRN staff cell and unit personnel predominantly depend upon doctrine, policies, procedures, TTPs, reference material, and acquired training and knowledge for evaluation and assessment of CBRN/TIM agents and determination of CBRND actions as well as operational considerations. Reachback is routinely performed manually, although dependent upon availability of communications resources.</p> <p>1–3: Access to CBRN, TIM, and/or CBRND information repositories and/or SMEs is inadequate to support operations.</p> <p>0: Access to CBRN, TIM, and/or CBRND information repositories and/or SMEs is nonexistent for support of operations.</p>
M5	CBRN information is processed using existing C4ISR assets.	<p>8–10: Interoperable and integrated automated systems, processes, and tools collect, compile, correlate, and process CBRN/TIM information from systems and resources on the GIG for decisioning, information/action dissemination, warning and reporting, and situational awareness. Information is continuously processed, updated, and posted on the COP.</p> <p>4–7: Manual processes are predominantly applied for the collection, compilation, correlation, and processing of CBRN/TIM information. The process may be restricted as C4ISR systems access by CBRN personnel is shared with other staff personnel and there may exist conflicting operational demands.</p> <p>1–3: CBRN information processing is inadequate to support operations.</p> <p>0: CBRN information processing is nonexistent for support operations.</p>
M6	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ CBRN/TIM and CBRND planning, assessments, and management currently require collaboration using traditional means such as telephone calls, personal visits, mail routing, e-mail, and other similar means. There is an absence of electronic collaborative workspaces and tools that are interoperable and integrated through which differing functions and activities are able to cooperatively assist and participate in the evaluation, assessment, planning, and decisioning process without time delay and the need for physical presence. Automated tools could effectively enhance and be enhanced by collaborative workspaces. Collaborative workspaces and tools support net-centric operations. The mid-term initial fielding of JWARN and its siting on existing C4ISR systems permits the reception and dissemination of CBRN/TIM event information. JWARN fielding is expected to be completed in the early far term. However, the largely manual nature of current processes remains.

² Predominantly manual access to CBRND information and guidance is performed to selected support entities and higher echelon of command. CBRN/TIM and CBRND repositories do exist but are fragmented and generally not accessible by field units. SMEs and knowledge centers do exist for various aspects of CBRND but are generally not known or accessible to deployed units. Reachback is performed in selected circumstances and is dependent upon operational considerations, available communications resources, and personal knowledge of contacts for information. CBRN staff cell and unit personnel essentially rely upon electronic and hardcopy reference material taken by the staff and the training and experience of the performing personnel.

³ Current processes are predominantly manual with limited automation. Process is labor- and time-consuming, and dependent upon the training, experience, and availability of performing personnel as well as the quality of the collected information. The current capability is achieved using doctrine. CBRN staff cell and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technologies to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The communication of CBRN information is performed using existing and available C4ISR resources but is not otherwise processed by these assets. The programmed mid-term initial fielding of JWARN, JOEF, and JEM, although CBRND-supporting technologies, will likely reside

upon resident C4ISR hardware and not dedicated CBRND hardware resources. However, these systems are expected to reduce the time required to perform tasks and the dissemination of information. JWARN, JOEF, and JEM are expected to be fully fielded in the early far term. These systems provide CBRN information processing capabilities. ⁴ -DOTLPF does address the collaborative assessment, planning, and management of CBRN/TIM incidents and CBRND. However, DOTLPF does not adequately address dedicated CBRND staff cell information technology resources, information repositories, SMEs and SME centers, and automated tools and workspaces within the net-centric environment. DOTLPF does not effectively support CBRND operations in a net-centric environment. DOTLPF must evolve to meet current and future needs resulting from changes in systems, tactics, and situations.

9.27.3 Functional Solution Analysis

9.27.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of CBRND information, data, and support systems meeting standards.
Partial Non-Materiel Solutions: *Doctrine:* Enhance doctrine, policies, procedures, and TTPs to address the full scope of activities involving CBRN/TIM and CBRND information. Include format, access, availability, transmission, processing, dissemination, and other activities and functions critical to timely and accurate decisioning and response activities. *Training:* Emphasis in formal and recurring training, as well as challenging criteria for exercises and evaluations, upon means and methods ensuring timely, accurate, and effective CBRN/TIM and CBRND planning, assessment, management, decisioning, and response.
- 2. Deficiency:** Absence of advanced tools for planning and assessment management.
Partial Non-Materiel Solutions: *Training:* Expand formal and recurring training, and exercise and evaluation criteria, to include CBRN/TIM planning and assessment tools as they are fielded.
- 3. Deficiency:** Lack of robust capability for very remote situations requiring high capacity and competitiveness for bandwidth.
Partial Non-Materiel Solutions: *Doctrine:* Include mechanisms in doctrine, policy, procedures, and TTPs for means and processes enabling remote locations to obtain needed CBRND information. *Training:* Include mechanisms in formal and recurring training, and their implementation and use in exercises and evaluations, for means and processes addressing the ability of remote locations to obtain needed CBRND information.
- 4. Deficiency:** Absence of compliance with emerging network-centric capability.
Partial Non-Materiel Solutions: *Doctrine:* Ensure doctrine, policies, procedures, and TTPs address the exchange CBRN/TIM and CBRND data and information across the network and posting on the COP. *Training:* Ensure formal and recurring training, as well as exercise and evaluation criteria, address the exchange of CBRN/TIM and CBRND data information across the network and posting on the COP.

9.27.3.2 IMA Assessment Summary

Table 9.27-4 is a list of ideas for materiel approaches and a corresponding description of each idea. Approaches here span the spectrum of approaches in previous paragraphs, including sensor data acquisition and processing, modeling and simulation for planning and warning and, of course, the ability to actively collaborate between units, commands, services, other agencies and coalition partners. Table 9.27-5 identifies which of the materiel approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.27-4. TASHA 27: Materiel Approaches

Idea for Materiel Approach	Description
Information assurance	Develop a CBRND system that processes and transmits information in accordance with Information Assurance Defense in Depth Standards, including certification and accreditation in accordance with DoD and CJCS guidance.
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input; generates, edits, and disseminates NBC reports, including downwind-hazard plots and overlays; and verify receipt of reports and plots. Transmission of data uses existing communication nets.
Link to GIS	Develop a system resident in standard C4ISR systems with interface with GIS to provide input to the COP.
Simulations and models	Develop a system that will enable operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of COAs.
Database	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Link to COP	Develop a CBRND information system resident in standard C4ISR systems with interface with GIS to provide input to the COP.

Table 9.27-5. TASHA 27: IMA Assessment

Identified Gaps	Information Assurance	Collect, Exchange, and Disseminate Information	Link to GIS	Simulations and Models	Database	Reachback Capability	Risk Factor Templates	Link to Common Operating Picture
Lack of CBRND information, data, and support systems meeting standards	X	X	X	X	X	X	X	X
Absence of advanced tools for planning and assessment management.			X	X	X	X	X	X
Lack of robust capability for very remote situations requiring high capacity and competitiveness for bandwidth.		X	X					X
Absence of compliance with emerging network centric capability.	X	X	X					X

9.28 Task TASHA 28: Ensure CBRND information and data**9.28.1 Functional Area Analysis****9.28.1.1 Definition**

Ensures adherence to the appropriate information security procedures and protocols. The ability to gain and maintain information superiority enables speed of command and self-synchronization. This task provides the warfighter the ability to make risk-based decisions in a timely manner. Ensure that an appropriate level of information confidentiality, integrity, authentication, nonrepudiation, and availability is maintained. Deny the enemy comparable advantages and exploit weaknesses. Information must be in accordance with protocols. Ensures quality, timeliness, and utility of information processes.

9.28.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense, DoDI 8500.2.

9.28.1.2.1 Supported Task: OPSHA 5**9.28.1.2.2 Lateral Task: N/A****9.28.1.2.3 Supporting Task: N/A****9.28.1.3 Condition**

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. High information volume. (C2.3.1.9)
3. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.28.2 Functional Needs Analysis**9.28.2.1 Capability and Deficiency Assessment Summary**

Table 9.28-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method (ATP-45) of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards.

The overall capability currently is rated “red.” Improvements in the near/mid term raise the assessment to “yellow” and continue into the far term. Although improvements between the near/mid-term and far-term periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to further change the overall assessed color rating for this task in the far term.

Current Capability and Deficiency

The accuracy and assurance of disseminated CBRND information are dependent on the individual ability of the person performing the analysis and assessment. Current deficiencies include absence of automated tools, (which impacts accuracy of produced information); lack of access to communication and data processing tools; and challengeable information assurance.

Projected Near/Mid-Term Capability and Deficiency

The fielding of the programmed JWARN, JOEF, and JEM systems significantly improves assurance of information. JWARN, JOEF, and JEM are projected for initial fielding in the mid term. The systems are designed to comply with Information Assurance Defense In-Depth Standards and to be certified and accredited under the DoD Information Technology Security Certification and Accreditation Process (DITSCAP) process. However, improvements to supporting DOTLPF are necessary to effectively implement and apply the new systems, as well as other evolving technologies. The mechanism for information assurance requires improvement to maintain pace with these new technologies and systems. Increased information processing and transfer capabilities place a high demand upon available bandwidth and will exceed current allocations. Increased bandwidth is needed to accommodate this demand. Increased processing and transmission/reception speeds may help mitigate the demand. However, interoperability and integration is a DoD-specific goal and is not mandatory upon other involved agencies. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND. Interoperability and integration will be a gradual process.

Projected Far-Term Capability and Deficiency

The fielding of JWARN, JOEF, and JEM is expected to be completed in the early far term. All legacy systems are projected to either be replaced by, or be in compliance with, Information Assurance Defense in Depth Standards (IADDS)/DISA standards and fully support net-centric operations in the far term. Otherwise, no change is projected for this task.

Table 9.28-3. TASHA 28: Capability and Deficiency Assessment

Capability: CBRND Information and Data Assurance	M1	M2	M3	M4	M5
Current Overall Capability	2 ¹	5 ²	5 ³	3 ⁴	2 ⁵
Near/Mid-Term Overall Capability	4	6	6	5	5
Far-Term Overall Capability	8	8	7	6	8

	FAA Measure	Scale
M1	Information assurance is in accordance with current doctrine.	8–10: All CBRN information processes and systems strictly adhere to IADDS including certification and accreditation of automated processes and systems in accordance with DoD and CJCS guidance. 4–7: Automated CBRN information and standards generally conform to IADDS. Critical automated CBRN systems and processes possess certification and accreditation outlined in DoD and CJCS guidelines. 1–3: CBRN information processes and systems generally do not adhere to IADDS or are not certified or accredited as specified in DoD and CJCS guidance. 0: CBRN information processes and systems do not adhere to IADDS and are not certified and accredited as specified in DoD and CJCS guidance.
M2	Information assurance controls are challenge free.	8–10: Information assurance processes and controls preclude the dissemination and application of erroneous, unsubstantiated, and/or tampered information. No impact. 4–7: Information assurance processes and controls generally preclude the dissemination and application of erroneous, unsubstantiated, and/or tampered information. However, impact is minor and does not adversely impact mission success. 1–3: Information assurance process and controls are inadequate to preclude dissemination and application of erroneous, unsubstantiated, and/or tampered information and possess the potential to seriously impact mission success. 0: Information assurance process and controls do not exist to preclude dissemination and application of erroneous, unsubstantiated, and/or tampered information and possess the potential to prevent mission success.
M3	Disseminated information is accurate.	8–10: CBRN information is correlated and processed with other source information and, as a composite, is disseminated in near-real time to requiring users. The disseminated data are accurate, current, and updated as new information is received and processed. 4–7: CBRN information is predominantly manually correlated and processed with other source information and, as a composite, disseminated to requiring users. The disseminated data are accurate as of the last update. 1–3: Disseminated CBRN information is contains inaccuracies, not adequately integrated with other source data, or is based upon incomplete/unverified data. 0: Disseminated CBRN information is inaccurate, not integrated with other source data, or is based upon erroneous data.

M4	Processed information reaches requiring units/ action personnel in a timely manner.	<p>8–10: Means exist and are employed for the near-real-time dissemination of processed CBRND information to all need-to-know centers and activities.</p> <p>4–7: Limited means exist and are employed for the dissemination of CBRND information to all need-to-know centers and activities prior to potential serious affect by agent(s) upon unit operational capabilities.</p> <p>1–3: Means employment and/or timeliness is inadequate for the dissemination of CBRND information to requiring need-to-know centers to preclude serious impact upon unit and/or activity operational capabilities.</p> <p>0: Means do not exist or employment and/or timeliness is unable to support the dissemination of CBRND information to requiring need-to-know centers to preclude loss of unit and/or activity operational capabilities with significant potential for non-success of mission/operations.</p>
M5	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Current CBRN information processes and systems are not in compliance with IADDS including certification and accreditation in accordance with DITSCAP. JWARN, JOEF, and JEM, projected to be initially fielded during the mid term, are to comply with IADDS and DITSCAP. JWARN, JOEF, and JEM are expected to complete fielding in the early far term. The standards incorporate and provide for information assurance. However, these systems will be resident on existing C4ISR systems. These systems are expected to comply with these requirements during the mid term. Net-centric operations, DISA, and IADDS data standards address interoperability, information assurance, and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the IADDS and DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with IADDS/DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, IADDS/DISA standards and net-centric capable in the far term.

² Information assurity measures for CBRN information and data are a mix of manual and automated measures (predominantly manual). The potential for the application and/or dissemination of erroneous, unsubstantiated, and/or tampered information exists. The impact is dependent upon the information and operations. Generally, however, flawed information is rapidly identified and rectified. JWARN, JOEF, and JEM, projected to be initially fielded during the mid term, are to comply with IADDS and DITSCAP. JWARN, JOEF, and JEM are expected to complete fielding in the early far term. The standards incorporate and provide for information assurance. However, these systems will be resident on existing C4ISR systems. These systems are expected to comply with these requirements during the mid term. Net-centric operations, DISA, and IADDS data standards address interoperability, information assurance, and the interchange of information among DoD systems and elements. DoD systems are expected to be increasingly in compliance with the IADDS and DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with IADDS/DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, IADDS/DISA standards and net-centric capable in the far term. Oversight and review will continue to be necessary until standards and controls are adequate across all involved systems.

³ CBRN/TIM incident, agent characterization, and CBRND information and data correlation, validation, processing, and dissemination are predominantly manual and time- and labor-intensive. Reporting is performed using the ATP-45 process and formats. Accuracy of disseminated data and information is contingent upon availability of information and the training, experience, and knowledge of the performing individuals. Updates are disseminated as additional information is received, validated, and processed. The projected mid-term initial fielding of JWARN, JOEF, and JEM will improve the process and reduce the potential for dissemination of flawed information and data. JWARN, JOEF, and JEM are expected to complete fielding in the early far term.

⁴ Limited means exist for the rapid and timely dissemination of CBRN data and information to requiring units and/or action personnel. Existing ATP-45 processes and reports generally flow upward within a unit's command structure. The higher echelon then disseminates the information downward in the structure to other units and upward to the next higher echelon of command of a Service. The echelon commanding or supporting differing Service elements initiates the cross notification and downward dissemination of the data. Notification of adjacent units is often delayed, especially if the adjacent units are not of the same immediate command structure. The projected mid-term initial deployment of JWARN provides for warning and reporting of CBRN information and data to all requiring units and applies the NATO standard ATP-45 reporting formats. JWARN is expected to be fully fielded in the early far term. Net-centric operations and DISA data standards address interoperability, information assurance, and the interchange of information among

DoD systems and elements. DoD systems are expected to be increasingly in compliance with the DISA standards and net-centric capable, as appropriate, during the mid term. New DoD systems are currently required to be in compliance with DISA standards and net-centric capable when fielded. All remaining legacy systems are projected to either be replaced by, or be fully compliant with, DISA standards and net-centric capable in the far term. However, not all potential partners and participating agencies will be interoperable and integrated with the C4ISR system or trained to rapid interpret ATP-45 data and information.

⁵ Current DOTLPF address the performance of this task. Work-arounds enabling the cross-notification between adjacent units of hazards are often established locally by the units. However, DOTLPF remains inadequate for the rapid and timely lateral notification of units within a hazard area. DOTLPF must ensure readiness to fully implement and apply JWARN, JOEF, and JEM when these systems are fielded. DOTLPF must evolve as systems, tactics, and situations change for survival and successful mission accomplishment.

9.28.3 Functional Solution Analysis

9.28.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Absence of automated tools impacts accuracy.
Partial Non-Material Solutions: *Doctrine:* Expand and enhance doctrine, policies, procedures, and TTPs provide in-depth guidance and requirements supporting the collection, movement, application, and dissemination of information, using automated tools where appropriate, that is accurate and timely. Include requirement for CBRN/TIM and CBRND data and information be posted and maintained on the COP. *Training:* Emphasize formal and recurring training and exercise and evaluation criteria that support the vertical and lateral movement of CBRN/TIM and CBRND data and information and the application of automated tools to increase accuracy and timeliness.
- 2. Deficiency:** Lack of or limited access to communication and data processing tools.
Partial Non-Material Solutions: *Doctrine:* Emphasize and enable within doctrine, policies, procedures, and TTPs the essential nature of CBRN information exchange and promoting the allocation of necessary resources essential for IDN and automated CBRND tools effectiveness. *Training:* Implement attainment and maintenance of task skills through formal and recurring training and challenging exercises and evaluations stressing the effective allocation of necessary resources and conduct of CBRN/TIM information exchange, processing, and dissemination that is accurate and timely. *Leadership:* Emphasize criticality of effective and timely processing of CBRN/TIM and CBRND data and information upon force survival and successful mission accomplishment. Ensure necessary resources are allocated and applied to support this task.

9.28.3.2 IMA Assessment Summary

Table 9.28-4 is a list of ideas for material approaches and a corresponding description of each idea. Approaches to this task center around an automated system to obtain, process, and disseminate CBRND/TIM information while maintaining the integrity and validity of that information. Table 9.28-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.28-4. TASHA 28: Materiel Approaches

Idea for Materiel Approach	Description
Information assurance	Develop a CBRND system that processes and transmits information in accordance with IADDS, including certification and accreditation in accordance with DoD and CJCS guidance.
Simulations and models	Develop a system that will enable operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of COAs.
Database	Develop a system enabling operational commanders to efficiently execute “what if” scenarios and facilitate the evaluation of plausible adversary and friendly COAs, CBRN employment, and TIM ROTA.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Risk factor templates	Develop a system merging CBRN, intelligence, and operational data and plans into standardized automated formats for application to effectively and rapidly accomplish CBRN/TIM functions and activities.
Link to GIS	Develop a system resident in standard C4ISR systems with interface with GIS to provide input to the COP.

Table 9.28-5. TASHA 28: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Information Assurance</p>	<p>Simulation and Models</p>	<p>Database</p>	<p>Reachback Capability</p>	<p>Risk Factor Templates</p>	<p>Link to GIS</p>
<p>Absence of automated tools impacts accuracy.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Lack of or limited access to communication and data processing tools.</p>		<p>X</p>				<p>X</p>

9.29 Task TASHA 29: Coordinate the allocation and access to C4ISR assets to support battlespace CBRND operating requirements

9.29.1 Functional Area Analysis

9.29.1.1 Definition

Ensures access to or availability of the appropriate C4ISR and CBRND information systems throughout the theater to include small units on independent operations. Sufficient C4ISR assets are required for effective performance of CBRND tasks by units and staff cells. Stand-alone processing capability enhances performance in austere, expeditionary, and widely dispersed force positions. Network access to higher-capacity C4ISR systems and information technology enhances performance.

9.29.1.2 Derivation

UJTL (TA 5, TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach, Transformation Planning Guidance, An Operational Concept for Biological Defense.

9.29.1.2.1 Supported Task: OPSHA 5

9.29.1.2.2 Lateral Task: N/A

9.29.1.2.3 Supporting Task: N/A

9.29.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Intermittent communications connectivity. (C2.3.1.6)

Civil

1. Fair information management. (C3.3.7.4)

9.29.2 Functional Needs Analysis

9.29.2.1 Capability and Deficiency Assessment Summary

Table 9.29-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the

mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

NBC staff must share access to C4ISR terminals with other staff functions. This limits their ability to keep the COP updated with accurate CBRN situational awareness and their ability to stay informed of other units’ status. Current deficiencies include the need for CBRND units and staffs to be properly equipped and have sufficient access to C4ISR assets to accomplish their missions.

Projected Near/Mid-Term Capability and Deficiency

The programmed JWARN, JOEF, and JEM systems will provide the CBRN staff with current information and visibility in the COP. JWARN, JOEF, and JEM are projected for initial fielding in the mid term. The importance of and reliance upon increasingly networked systems means additional connective nodes will be required for information access.

Projected Far-Term Capability and Deficiency

Completion of fielding of JWARN, JOEF, and JEM is expected in the early far term. Additional connective nodes will be required to support the increasingly networked systems and to support operational requirements.

Table 9.29-1. TASHA 29: Capability and Deficiency Assessment

Capability: C4ISR Asset Allocation and Access Coordination Supporting Battlespace CBRND Operating Requirements	M1	M2	M3	M4
Current Overall Capability	4 ¹	4 ²	5 ³	5 ⁴
Near/Mid-Term Overall Capability	5	5	6	5
Far-Term Overall Capability	7	5	7	5

	FAA Measure	Scale
M1	CBRN Information is processed using existing C4ISR assets.	8–10: Interoperable and integrated automated systems, processes, and tools collect, compile, correlate, and process CBRN/TIM information from systems and resources on the GIG for decisioning, information/action dissemination, warning and reporting, and situational awareness. Information is continuously processed, updated, and posted on the COP. 4–7: Manual processes are predominantly applied for the collection, compilation, correlation, and processing of CBRN/TIM information. The process may be restricted as C4ISR systems access by CBRN personnel is shared with other staff personnel and there may exist conflicting operational demands. 1–3: CBRN information processing is inadequate to support operations. 0: CBRN information processing is nonexistent for support of operations.
M2	CBRND units and staff cells can access C4ISR assets.	8–10: CBRND units and staff cells possess dedicated information technology resources and tools with unrestricted (as applicable) access to C4ISR systems for the accomplishment and performance of their duties and responsibilities. These are used to support operational and training requirements. 4–7: CBRND units and staff cell personnel are able to access C4ISR systems using shared information technology resources and tools for operational requirements and training. 1–3: CBRND units and staff cell personnel possess inadequate access to C4ISR systems to support operations and training requirements. 0: CBRND units and staff cell personnel do not possess access to C4ISR systems to support operations and training requirements.
M3	CBRN information processing available when network is no longer available.	8–10: Local CBRN systems possess sufficient resident capability and alternative connectivities to maintain data collection, correlation, validation, processing, and dissemination of CBRN/TIM information to support ongoing OPTEMPO in the event network connectivity is interrupted for any length of time. 4–7: Manual CBRN processes with limited automated tools and capabilities provide CBRN information processing support of operations should network connectivity be temporarily interrupted. 1–3: CBRN information processing is inadequate for effective support of operations if network connectivity is interrupted. 0: CBRN information processing cannot support operations, and/or nonexistent if network connectivity is interrupted.
M4	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Current processes are predominantly manual with limited automation. Process is labor- and time-consuming and dependent upon the training, experience, and availability of performing personnel as well as the quality of the collected information. The current capability is achieved using doctrine. CBRN staff cell and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technologies to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The communication of CBRN information is performed using existing and available C4ISR resources but is not otherwise processed by these assets. The programmed mid-term initial fielding of JWARN, JOEF, and JEM, although CBRND-supporting technologies, will likely reside upon resident C4ISR hardware and not dedicated CBRND hardware resources. JWARN, JOEF, and JEM are expected to complete fielding in the early far term. These systems provide CBRN information processing capabilities.

² CBRN staff cell personnel and unit personnel possess access to shared information technology resources and tools. CBRN personnel do not possess dedicated information technology to perform training and operational requirements. Available resources are shared with other requiring activities and functions. The programmed mid-term initial fielding of JWARN, JOEF, and JEM, although sited upon resident C4ISR hardware, are expected to reduce the time required for CBRN staff cell personnel to perform their tasks and responsibilities. JWARN, JOEF, and JEM are expected to complete fielding in the early far term.

³ Current processes are predominantly manual with limited automated tools and capabilities. Capability currently exists to perform CBRN information processing without access to automated network resources. The project mid-term initial fielding of JWARN, JOEF, and JEM and increasing reliance upon networked automated systems requires possession of resident capabilities and alternative connectivities within local CBRN systems to maintain support of operations through a period of interruption. JWARN, JOEF, and JEM are expected to complete fielding in the early far term. JWARN, JOEF, and JEM do possess the capability to work off-network with manual interface and support when the circumstances require.

⁴ Current DOTLPF supports the manual processing of CBRN information and data. However, the projected fielding of JWARN, JOEF, and JEM in the mid term and the increasing application and dependence upon networked automated systems dictates the investigation and determination of alternative connectivities and processes to accomplish this task during periods of network interruption. DOTLPF must address short-term and long-term interruptions of primary connectivity due to natural, system-based, or adversary-imposed situations. DOTLPF must evolve as systems, tactics, and situations change and to promote and maintain net-centric operations.

9.29.3 Functional Solution Analysis

9.29.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. Deficiency: Lack of dedicated C4ISR assets for CBRND units and staffs.

Partial Non-Materiel Solutions: *Doctrine:* Adjust doctrine to establish either CBRN staff priority access to C4ISR terminals during CBRN threat/incident situations or dedicated CBRN staff C4ISR access and terminals. *Organization:* Structure operations center to afford and support CBRN staff priority access to C4ISR systems. *Training:* Include doctrinal adjustments in staff training. *Leadership:* Provide specific leadership development training and exercises to reinforce the essential nature of CBRND information.

9.29.3.2 IMA Assessment Summary

Table 9.29-4 is a list of ideas for material approaches and a corresponding description of each idea. The need for additional C4ISR assets is identified in this analysis along with the material approach of developing an automated CBRND system that will reside on current and future C4ISR systems.

Table 9.29-4. TASHA 29: Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Lack of dedicated C4ISR assets for CBRND units and staffs	CBRN staff cell C4ISR equipment	Procure and field dedicate C4ISR equipment to CBRN staff cells enabling connectivity with the COP and the performance of their responsibilities and tasks.
	Enhanced C4ISR systems	Expand existing and programmed C4ISR systems capabilities to support increasing demands upon resources.

9.30 Task TASHA 30: Initiate CBRN/TIM event history archiving

9.30.1 Functional Area Analysis

9.30.1.1 Definition

Encompasses the collecting, compiling, and archiving of CBRN/TIM event data, information, and related decision and response actions. Includes such things as event time history, response actions, hazard prediction and effects modeling, along with the dynamic and deliberate staff actions and management tools utilization. IDN nodes archive sensor and characterization data. The archived data are used in studies and analyses to assess what occurred and contribute to improving future responses. Includes information assurance considerations.

9.30.1.2 Derivation

UJTL (TA 5.2.1, TA 7, TA 7.1), Protection Joint Functional Concept, Military Transformation: A Strategic Approach.

9.30.1.2.1 Supported Task: OSHA 5

9.30.1.2.2 Lateral Task: N/A

9.30.1.2.3 Supporting Task: N/A

9.30.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Low military systems reliability. (C2.2.5.3)
3. Restricted information exchange. (C2.3.1.8)
4. High information volume. (C2.3.1.9)
5. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.30.2 Functional Needs Analysis

9.30.2.1 Capability and Deficiency Assessment Summary

Table 9.30-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include the current manual method of preparing incident assessments and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The

current overall capability is rated “red,” and the near/mid and far-term overall capabilities are rated “yellow.”

Current Capability and Deficiency

Current capability is extremely limited. Event histories are compiled from operations center logs as current IDN systems are restricted to real-time information transmission and do not possess internal archiving.

Projected Near/Mid-Term Capability and Deficiency

When fielded, JWARN, as an integral part of the IDN, will be capable of storing, modifying, retrieving, displaying, archiving and transferring data including location of attacks and sources of attack. JWARN is projected for initial fielding in the mid term. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND. Interoperability and integration will be a gradual process.

Projected Far-Term Capability and Deficiency

Fielding of JWARN is expected to be completed in the early far term. All legacy systems are projected to either be replaced by, or in compliance with, DISA standards and full support net-centric operations in the far term. Sensors and IDN capabilities are in development with stated fielding sometime in the far term. This is dependent upon the progression of sensor technologies necessary for an IDN. Otherwise, no change is projected for this task.

Table 9.30-1. TASHA 30: Capability and Deficiency Assessment

Capability: CBRN/TIM Event History Archival	M1	M2	M3
Current Overall Capability	0 ¹	4 ²	4 ³
Near/Mid-Term Overall Capability	2	5	4
Far-Term Overall Capability	5	5	4

	FAA Measure	Scale
M1	IDN able to archive and make available sensor track data over time.	8–10: IDN nodes and sensors possess resident automated data-retention capabilities for sensor-reading information and data, as well as node activities such as adjustments, corrections, etc. Each node registers, records, and disseminates information on lower-level node and sensor readings and node activities. Node-retained data are accessible and supports extended periods of operation. 4–7: IDN system possesses resident automated data-retention capabilities for subordinate nodes and sensors. Node-retained data are accessible and entries are cleared on a routine basis. 1–3: IDN system possesses inadequate resident automated data-retention capabilities for subordinate nodes and sensors. Nodes do not possess data-retention capabilities. 0: IDN does not possess resident automated data-retention capabilities, data are not accessible, and/or data memory retention is inadequate.
M2	Operations centers compile event histories.	8–10: Integrated and interoperable systems collect and compile event information from all systems within operations centers. Data entries are identified to source, date/time, performing activity, etc., and retained in time sequence blocks. Information is accessible by time and/or system. The automated event history permits manual notations and entries and provides a detailed and in-depth history of an event. 4–7: Manual event histories are compiled following an event, or as time permits, through the use of logs, documentation, system information, and other sources. The compiled event history provides a detailed history of an event. 1–3: Event histories are inadequate. 0: Event histories are nonexistent.
M3	There is effective DOTLPF in place to conduct task.	8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations. 4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds. 1–3: DOTLPF is inadequate for accomplishment of this task. 0: DOTLPF does not exist for this task.

¹ Fielded IDN systems for CBRN/TIM do not currently exist. Systems are in development and fielding is expected in the far term but are contingent upon sensor technology progression. JWARN, to be initially fielded to operational units in the mid term and into the early far term, includes IDN data repository capabilities.

² Current event histories are compiled generally after-the-fact based upon manual logs, documentation, extracted system information, interviews, and other sources of information. The compilation is manual and time- and labor-intensive. The event histories do provide a detailed chronological history of an event and are usually divided into functional segments with an overall summary. The projected mid-term fielding of JWARN provides an additional source of information. However, an overall system that collects from the various systems within the center to compile a comprehensive event history does not exist and is not programmed. The lack of interoperability and integration of existing systems impede the potential for a collection and compilation program for event histories. New DoD systems are required to meet DISA standards and be net-centric capable. Legacy systems, however, are not required to be in meet these standards and requirements until they are replaced or undergo substantial upgrades. However, all DoD systems are to meet

the standards and requirements in the far term. The mix of legacy and compliant systems will continue to require staff intervention for the compilation of event histories until the legacy systems are either replaced or modified for compliance.

³ Current DOTLPF does address the compilation and performance of event histories and their application as lessons learned for adjustments to existing DOTLPF and the application of material. However, the process is predominantly manual and is time- and labor-intensive. Information and the exact chronology of events are often lost since much of the data and information is not documented and the performance of this task is performed after-the-fact, sometimes at some length following the event. DOTLPF must evolve as systems, tactics, and situations change and to promote and draw-upon the inherent capabilities of net-centric operations.

9.30.3 Functional Solution Analysis

9.30.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Absence of automatic means to record and compile event histories.
Partial Non-Materiel Solutions: *Doctrine:* Expand doctrine, policies, procedures, and TTPs to address automated collection, compilation, and processing of ongoing information for event histories. *Training:* Incorporate automated event history training into formal and recurring training of operations center staff personnel.

9.30.3.2 IMA Assessment Summary

Table 9.30-4 is a list of ideas for material approaches and a corresponding description of each idea. The approaches to this task include an automatic system to obtain and process sensor data and archive CBRN/TIM event histories; the key is the automation of the process.

Table 9.30-4. TASHA 30: Materiel Approaches

Identified Deficiency	Idea for Materiel Approach	Description
Absence of automatic means to record and compile event histories	IDN interface for sensors	Ensure developmental CBRN sensors include the ability to interface with an IDN. Develop adaptors to interface existing CBRN sensors to the IDN. Develop history logging capability for IDN sensors.
	Collect, exchange, and disseminate information	Develop a system that will collect and analyze CBRN sensor inputs, generate, edit, and disseminate NBC reports, including downwind-hazard plots and overlays, and verify receipt of reports and plots.
	Event history archival	Develop a system accepting manual and automatic CBRN/TIM event data input then modifies, retrieves, displays, archives, and transfers data (e.g., intelligence, location of attack, source and sensor information) to repositories.

9.31 Task TASHA 31: Provide CBRN lessons learned and attack/release information**9.31.1 Functional Area Analysis****9.31.1.1 Definition**

The deliberate collecting and compiling of lessons learned support post-event operational assessments and studies. Includes the archiving of relevant information regarding analytical efforts and training improvements. Immediate lessons learned access by the joint force supports immediate post-event assessments and continued operational evaluations to enhance current and future operations preparations and planning. Also supports revisions to TTPs, operational plans, and training plans. Includes information assurance considerations.

9.31.1.2 Derivation

UJTL (TA 7, TA 7.1), Military Transformation: A Strategic Approach, Transformation Planning Guidance, Protection Joint Functional Concept.

9.31.1.2.1 Supported Task: OPSHA 5**9.31.1.2.2 Lateral Task: TASENS 17****9.31.1.2.3 Supporting Task: N/A****9.31.1.3 Condition**

Perform this task under conditions of:

Physical. N/A

Military

1. Limited modern military systems. (C2.2.5)
2. Restricted information exchange. (C2.3.1.8)
3. High information data. (C2.3.1.9)
4. Intelligence dissemination and receipt partially exists. (C2.4.7)

Civil. N/A

9.31.2 Functional Needs Analysis**9.31.2.1 Capability and Deficiency Assessment Summary**

Table 9.31-1 discusses individual capabilities to perform this task to the designated standards. The capabilities include preparing lessons learned and attack/release information and the mid- to far-term fielding of JWARN, JEM and JOEF to meet the identified standards. The overall capability for current, near/mid, and far term are assessed “yellow.”

Current Capability and Deficiency

The services have their own CBRND information repositories. The center for Army lessons learned includes information gleaned from CBRN events as well as other lessons. Deficiencies include lack of emphasis on collecting and preserving CBRN data; insufficient repository access; absence of automated archiving capability; and lack of Joint access to information.

Projected Near/Mid-Term Capability and Deficiency

The JWARN capability for archiving event history provides a basis for common CBRND event history archiving. JWARN will be initially fielded to operational units in the mid term. New DoD systems are expected to be in compliance with DISA standards and net-centric capable, as appropriate during the current and near term for interoperability and net-centric operations. Substantial upgrades to legacy systems are required to include DISA standards and net-centric capabilities. Further, the mix of legacy and compliant systems will continue to require the attentiveness and awareness of staffs to ensure effective collection, integration, and dissemination of information until the legacy systems are either replaced or modified for compliance. However, the current deficiencies remain and the potential opportunities afforded by the DoD initiative and enhanced automation capabilities are not fully realized for CBRND. Interoperability and integration will be a gradual process.

Projected Far-Term Capability and Deficiency

Fielding of JWARN is expected to be completed in the early far term. All legacy systems are projected to either be replaced by, or in compliance with, DISA standards and full support net-centric operations in the far term. Sensors and IDN capabilities are in development with stated fielding sometime in the far term. This achievement is dependent upon the progression of sensor technologies necessary for an IDN. Otherwise, no change is projected for this task.

Table 9.31-1. TASHA 31: Capability and Deficiency Assessment

Capability: CBRN Lessons Learned and Attack/Release Information	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability	5 ¹	5 ²	5 ³	5 ⁴	5 ³	5 ⁵	5 ⁶
Near/Mid-Term Overall Capability	5	5	5	5	5	5	5
Far-Term Overall Capability	6	6	5	6	5	5	5

	FAA Measure	Scale
M1	All units submit assessments and lessons learned.	<p>8–10: Integrated and interoperable systems collect and compile event information from all systems within operations centers. The automated event history permits manual notations and entries and provides a detailed and in-depth history of an event. Assessments of the events are performed and lessons learned are identified and entered. The event history, assessment, and lessons learned are submitted to a central center for review, archival, and recommendations for change to DOTMLPF.</p> <p>4–7: Manual event histories are compiled following an event, or as time permits, through the use of logs, documentation, system information, and other sources. The compiled event history provides a detailed history of an event. Assessments of the events are performed and lessons learned are identified. The event history, assessment, and lessons learned are submitted for review, archival, and recommendations for change to DOTMLPF.</p> <p>1–3: Event histories, assessments, and/or lessons learned are inadequate, not submitted by a number of units, not centralized and archived, or are inadequately reviewed and applied to recommendations for DOTMLPF changes.</p> <p>0: Event histories, assessments, and/or lessons learned are nonexistent, not submitted, not centralized, not archived, and not applied to recommendations for DOTMLPF changes.</p>
M2	Affected units can record and compile lessons learned.	<p>8–10: Integrated and interoperable systems collect and compile event information from all systems within operations centers. The automated event history permits manual notations and entries and provides a detailed and in-depth history of an event. Assessments of the events are performed and lessons learned are identified and entered. The event history, assessment, and lessons learned are submitted to a central center for review, archival, and recommendations for change to DOTMLPF.</p> <p>4–7: Manual event histories are compiled following an event, or as time permits, through the use of logs, documentation, system information, and other sources. The compiled event history provides a detailed history of an event. Assessments of the events are performed and lessons learned are identified. The event history, assessment, and lessons learned are submitted for review, archival, and recommendations for change to DOTMLPF.</p> <p>1–3: Event histories, assessments, and/or lessons learned are inadequate, not submitted by a number of units, not centralized and archived, or are inadequately reviewed and applied to recommendations for DOTMLPF changes.</p> <p>0: Event histories, assessments, and/or lessons learned are nonexistent, not submitted, not centralized, not archived, and not applied to recommendations for DOTMLPF changes.</p>

M3	Information repository is available to all users.	<p>8–10: Central common repository maintains secure, interoperable, and integrated automated systems hosting databases and data sets possessing CBRN/TIM and/or CBRND information and data. This includes event histories, assessments, lessons learned, plans, policies, technical data, and other necessary information. Internal and external links enable movement by users to relevant information. The systems and information structures comply with DISA, IADDS, and DITSCAP requirements. Authorized users are able to access the repository easily and without regard to their location or mode of connection.</p> <p>4–7: Repositories exist and maintain a mix of electronic and hard-copy CBRN/TIM and/or CBRND information and data. Authorized users may possess limited access to electronic information. Hard copies must be requested.</p> <p>1–3: Repositories are not designated, do not as a group fully cover CBRN/TIM and CBRND requirements, do not possess adequate connectivity, do not comply with DISA/IADDS and/or DITSCAP requirements, and/or do not possess adequate data and information to support operations and/or requirements.</p> <p>0: Repositories do not exist for CBRN/TIM and CBRND.</p>
M4	An archiving process exists to record event history.	<p>8–10: Integrated and interoperable systems collect and compile event information from all systems within operations centers. Data entries are identified to source, date/time, performing activity, etc., and retained in time sequence blocks. Information is accessible by time and/or system. The automated event history permits manual notations and entries and provides a detailed and in-depth history of an event.</p> <p>4–7: Manual event histories are compiled following an event, or as time permits, through the use of logs, documentation, system information, and other sources. The compiled event history provides a detailed history of an event.</p> <p>1–3: Event histories are inadequate.</p> <p>0: Event histories are nonexistent.</p>
M5	Routine access is available to CBRN/TIM lessons learned information.	<p>8–10: Central common repository maintains secure, interoperable, and integrated automated systems hosting databases and data sets possessing CBRN/TIM and/or CBRND information and data, including event histories, assessments, lessons learned, plans, policies, technical data, and other necessary information. Internal and external links enable movement by users to relevant information. The systems and information structures comply with DISA, IADDS, and DITSCAP requirements. Authorized users are able to access the repository easily and without regard to their location or mode of connection.</p> <p>4–7: Repositories exist and maintain a mix of electronic and hard-copy CBRN/TIM and/or CBRND information and data. Authorized users may possess limited access to designated electronic information. Hard copies must be requested.</p> <p>1–3: Repositories are not designated, do not as a group fully cover CBRN/TIM and CBRND requirements, do not possess adequate connectivity, do not comply with DISA/IADDS and/or DITSCAP requirements, and/or do not possess adequate data and information to support operations and/or requirements.</p> <p>0: Repositories do not exist for CBRN/TIM and CBRND.</p>
M6	Provides ability to track action items, including responsible command, point of contact, and resolution.	<p>8–10: Central common repository center automated systems track action items to include action item identifying information, suspending information, action command and point of contact, status, and resolution information. Detailed progress reports are electronically entered by the point of contact directly to the action item record. Center staff possess the ability to query system on status of action items individually or collectively.</p> <p>4–7: Repository centers apply both manual and automated systems to track action items and the responsible action agency actions. Determinations are provided by hard copy to the center by the point of contact.</p> <p>1–3: Repository centers do not possess adequate capability or any capability to track action items from initiation to completion.</p> <p>0: Repository centers do not exist.</p>

M7	There is effective DOTLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>
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¹ DOTLPF exists for the conduct of event histories, assessments, and lessons learned. These are generally manually performed after the fact by the unit and are time- and labor-intensive. Each Service maintains repositories and centers for lessons learned (for example, the U.S. Army’s Center for Army Lessons Learned). The repositories/centers are tasked to review submitted reports for concepts, shortfalls, and other potentials for DOTMLPF changes and to make recommendations for review and action. While the services attempt to collect all lessons learned information, inevitably some units will not submit the data, so enforcement is needed. A joint repository and center for lessons learned does not exist.

² Current event histories, assessments, and lessons learned are generally performed after the fact based upon manual logs, documentation, extracted system information, interviews, and other sources of information. The process is manual and time- and labor-intensive. Doctrine provides guidelines for the performance of this process. However, an overall system that collects from the various systems within the center to compile a comprehensive log of events does not exist and is not automated. The lack of interoperability and integration of existing systems impede the potential for a collection and compilation program for event histories, lessons learned, and assessments. New DoD systems are required to meet DISA standards and be net-centric capable. Legacy systems, however, are not required to be in meet these standards and requirements until they are replaced or undergo substantial upgrades. However, all DoD systems are to meet the standards and requirements in the far term. The mix of legacy and compliant systems will continue to require staff intervention for the collection and preparation of assessments, lessons learned, and histories until the legacy systems are either replaced or modified for compliance.

³ Each Service maintains repositories and centers for lessons learned (for example, the U.S. Army’s Center for Army Lessons Learned). A single common joint repository and center for lessons learned does not exist. Access to the repositories is established by the individual Service and restrictions exist for access and data set content review and retrieval. Some repositories and centers require the user to submit requests for the information to be reviewed and do not permit direct access. Much of the information is in hard copy and must be requested. Many of the repositories are not known to potential users.

⁴ Current event histories are compiled generally after the fact based upon manual logs, documentation, extracted system information, interviews, and other sources of information. The compilation is manual and time- and labor-intensive. The event histories do provide a detailed chronological history of an event and are usually divided into functional segments with an overall summary. The projected mid-term initial fielding of JWARN provides an additional source of information. JWARN is expected to complete fielding in the early far term. However, an overall system that collects from the various systems within the center to compile a comprehensive event history does not exist and is not automated. The lack of interoperability and integration of existing systems impede the potential for a collection and compilation program for event histories, lessons learned, and assessments. New DoD systems are required to meet DISA standards and be net-centric capable. Legacy systems, however, are not required to be in meet these standards and requirements until they are replaced or undergo substantial upgrades. However, all DoD systems are to meet the standards and requirements in the far term. The mix of legacy and compliant systems will continue to require staff intervention for the collection and preparation of assessments, lessons learned, and histories until the legacy systems are either replaced or modified for compliance.

⁵ Service repository and lesson learned centers apply automated and manual tracking systems for disseminated action items. These systems generally are administrative suspense control in nature, and entries are usually removed upon completion. Status reporting and final determinations are submitted by the action office in hard copy.

⁶ Current DOTLPF does address the compilation and performance of event histories and their assessment and application as lessons learned for adjustments to existing DOTLPF and the application of material. However, the process is predominantly manual and is time- and labor-intensive. Information and the exact chronology of events are often lost since much of the data and information is not document and the performance of this task is performed after the fact, sometimes at some length following the event. Often, lessons learned from prior actions and activities are not researched and compared to recent events. Further, the Service-based lessons learned centers do not interrelate and correlate information on a routine basis. The joint community and the transformation of forces for joint Concept of Operations require a centralized center with oversight and connectivity to Service lessons-learned centers and systems. DOTLPF must evolve as systems, tactics, and situations change and to promote and draw upon the inherent capabilities of net-centric operations and joint interoperability and operations.

9.31.3 Functional Solution Analysis

9.31.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of emphasis upon importance of collecting and preserving data and information about CBRN events.
Non-Material Solutions: *Doctrine:* Highlight the importance of collecting and preserving data and info about CBRN event. *Training:* Modify training to amplify the need to collect and preserve data and info on CBRN events. *Leadership:* Modify training programs to amplify the need to collect and preserve data and info on CBRN events.
- 2. Deficiency:** Insufficient repository access.
Partial Non-Material Solutions: *Doctrine:* Establish standardized joint doctrine, policy, and procedures for establishing, maintaining, and operating repositories to include access procedures and processes. *Organization:* Establish organizational structures, processes, and procedures to support repositories and accessibility. *Training:* Include repository identification and accessing processes to all appropriate personnel. *Leadership:* Maintain emphasis upon availability and application of repository information for planning, training, and operations. *Facilities:* Establish supporting infrastructure enabling repository operations and accessibility.
- 3. Deficiency:** Lack of central joint repository.
Partial Non-Material Solutions: *Doctrine:* Establish standardized joint doctrine, policy, and procedures for establishing, maintaining, and operating central joint repository to include access procedures and processes. *Organization:* Establish organizational structures, processes, and procedures to support repository and accessibility. *Training:* Include repository identification and accessing processes to all appropriate personnel. *Leadership:* Maintain emphasis upon availability and application of repository information for planning, training, and operations. *Facilities:* Establish supporting infrastructure enabling repository operations and accessibility.
- 4. Deficiency:** Inadequate means to timely record and compile lessons learned.
Partial Non-Material Solutions: *Doctrine:* Establish standardized joint doctrine, policy, and procedures for the automated collection and compilation of information for development of lessons learned. *Training:* Conduct advanced training of staff on the automated collection and compilation of information; and the preparation of lessons learned and event histories. *Leadership:* Maintain emphasis upon availability and application of lessons learned information for planning, training, and operations.

9.31-3.2 IMA Assessment Summary

Table 9.31-4 is a list of ideas for material approaches and a corresponding description of each idea. Once CBRN/TIM event histories are automatically archived in lessons learned databases, the approaches to accomplish this task will also include the ability to reach back into those databases and extract pertinent information to aid in future CBRND missions. Table 9.31-5 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 9.31-4. TASHA 31: Materiel Approaches

Idea for Materiel Approach	Description
Lessons learned databases	Develop/consolidate databases for operational and training lessons learned.
Reachback capability	Develop a system providing the ability to rapidly and securely reach back and contact CBRN experts and obtain CBRND plans, procedures, information, and lessons learned.
Management of Databases	Develop a system to link and manage the accuracy, adequacy, and availability of CBRND information databases. Includes access management, content control, and the conduct of data set management. Also includes process to identify database actions such as consolidation of similar databases, establishment of new databases, archiving of obsolete databases, etc.
Collect, exchange, and disseminate information	Develop a system that collects and analyzes CBRN information and sensor input; generates, edits, and disseminates NBC reports, including downwind-hazard plots and overlays; and verify receipt of reports and plots. Transmission of data uses existing communication nets.
Event history archival	Develop a system accepting manual and automatic CBRN/TIM event data input then modifies, retrieves, displays, archives, and transfers data (e.g., intelligence, location of attack, source and sensor information) to repositories.

Table 9.31-5. TASHA 31: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Lessons learned Databases</p>	<p>Reachback Capability</p>	<p>Management of Databases</p>	<p>Collect, Exchange, and Disseminate Information</p>	<p>Event History Archival</p>
<p>Insufficient repository access.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Lack of central Joint repository.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Inadequate means to timely record and compile lessons learned.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>

9.32 Task TASHA 32: Prepare for the WMD elimination mission

9.32.1 Functional Area Analysis

9.32.1.1 Definition

Accomplishes activities that prepare applicable forces to dispose of WMD resources by removal, destruction, and disabling; to preserve material available for dual use; and to secure sites and material for forensic and scientific investigation. Reference the charter of the Executive Agent for WMD Elimination mission (TBD).

9.32.1.2 Derivation

UJTL (TA 5, TA 6, TA 7, TA 7.1), Military Transformation: A Strategic Approach, Transformation Planning Guidance, Protection Joint Functional Concept, Combatant Commander's Planning Guide for WMD Elimination Operations.

9.32.1.2.1 Supported Task: OPSHA 6

9.32.1.2.2 Lateral Task: N/A

9.32.1.2.3 Supporting Task: N/A

9.32.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Limited personnel experience. (C2.2.4.5)
2. Partial joint staff integration. (C2.3.1.1)
3. Limited staff expertise. (C2.3.1.3)
4. Difficult theater intelligence access. (C2.4.4)

Civil

1. Limited domestic political support. (C3.1.1)
2. Limited foreign government support. (C 3.1.2.3)
3. Limited industrialization. (C3.3.5.1)

9.32.1.4 Functional Needs Analysis

This task is assessed in the WMD Interdiction and Elimination JCIDS Analysis.

CHAPTER 10. STRATEGIC NATIONAL SHIELD TASKS

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10.0 Strategic National Shield

10.0.1 Introduction

Strategic level of war is divided into two sublevels: strategic national (SN) and strategic theater (ST). This chapter focuses upon the SN level of war at the national (U.S. Department of Defense [DoD]/Service/interagency) level of task development and implementation. At this level, national authorities, often in cooperation with other nations, establish national or multinational (alliance or coalition) security objectives and guidance and develop and apply national resources to accomplish these objectives. Decisions and activities at the SN level establish national and multinational military objectives, specify the sequencing of activities and actions, develop global plans and means to attain these objectives, delineate limits and assess risks for the application of military and other tools of national power, and provide military forces and other capabilities as outlined in strategic plans.¹

This chapter, detailing the Strategic National Shield (SHLD) area, estates relevant information from the chemical, biological, radiological, and nuclear defense (CBRND) Functional Area Analysis (FAA), including a description of each of the 12 SNSHLD tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. Solutions for SNSHLD are non-materiel and are reflected in one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. Annotations under “Materiel” are non-materiel in nature but do not align in one of the six non-materiel aspects of DOTLPP. These annotations include research, analysis, and other actions to address and establish solutions for the deficiencies.

Most of the SNSHLD tasks involve doctrine, policies, and procedures providing parameters for planning, decisioning, and actions or activities to accomplish the tasks. These range from the establishment of foundational standards, criteria, and metrics for Shield systems and measures to equipping and training of forces (national and multinational) for sustained CBRND operations encompassing both chemical, biological, radiological, and nuclear (CBRN) and toxic industrial material (TIM) agents.

Tasks associated with forces includes constituent elements of the transforming force, such as civilians, military working animals (MWAs), coalition/alliance forces, and third-party nationals. Increasing reliance upon nonmilitary personnel (such as government employees and contractors) as operational enablers dictated their inclusion as force members.

10.0.2 FNA Summary

The below table summaries the overall current and proejcted capability to perform the SNSHLD tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current

¹ Appendix A to Enclosure B, para. 3a, CJCMS 3500.04C, *Universal Joint Task List*, July 2002, CJCS.

time frame is assessed as “red.” There are key deficiencies in DoD’s ability to protect populations other than military members as well as support concurrent CBRND operations, especially those associated with sustained and expeditionary operations within a CBRN/TIM environment. It is projected that the overall status will improve to “Yellow” in the near/mid term with some improvements in specific measures within specific tasks.

Table 10.0-1. Strategic National Shield Summary FNA Findings

CBRN Strategic National Shield Task Number	CBRN Strategic National Shield Task Title	Capability		
		Current	Near/Mid	Far
SNSHLD 1	Establish interoperability and protection standards and criteria for protective equipment and supplies	●	●	●
SNSHLD 2	Establish protection policies, standards, and criteria for medical CBRN/TIM protective countermeasures	●	●	●
SNSHLD 3	Establish standards, criteria, and procedures for training, equipping, and protecting force members and eligible civilians supporting the mission from threat CBRN/TIM agents	●	●	●
SNSHLD 4	Establish standards, criteria, and procedures for training, equipping, and protecting eligible civilians not supporting the mission from threat CBRN/TIM agents	●	●	●
SNSHLD 5	Establish standards, criteria, and procedures for training, equipping, and protecting MWAs from threat CBRN/TIM agents	●	●	●
SNSHLD 6	Establish standards, criteria, and procedurs for training, equipping, and protecting all classes of supplies from contamination by threat CBRN/TIM agents	●	●	●
SNSHLD 7	Establish standards, criteria, and procedures for hazardous or contaminated materials and samples marking, packing, storage, handling, and transportation	●	●	●
SNSHLD 8	Establish standards, criteria, and procedures for safe handling and safely transporting CBRN/TIM-exposed or -contaminated casualties and MWAs	●	●	●

SNSHLD 9	Establish standards, criteria, and procedures for safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains	●	●	●
SNSHLD 10	Determine CBRN/TIM protection requirements and means supporting CBRND national and strategic guidance, intent, plans, and taskings	●	●	●
SNSHLD 11	Manage the provisioning of the force with CBRN/TIM protection systems, equipment and supplies addressing identified threats	●	●	●
SNSHLD 12	Allocate protection resources for CBRND	●	●	●
OVERALL		●	●	●

10.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTLPF solutions for the capability gaps identified in the FNA section. The summaries also address the non-materiel solutions annotated under “Materiel” as discussed earlier. SNSHLD addresses non-materiel actions and activities. Therefore, materiel solutions are not applicable to this level of war.

10.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with the the level of protection afforded by CBRND systems and measures and the readiness of force populations for CBRND activities and actions. Non-materiel solutions are identified. These solutions include such actions as the establishment of baseline CBRND standards, criteria, and metrics adequately addressing the needs of the force and its constituent populations; doctrine encompassing those populations; applicable training programs, infrastructures and organizational structures supporting CBRND operations within sustained CBRN/TIM environments for the transformed force; leadership CBRND awareness and decisioning enablers; and criteria for civilian personnel performing mission-related activities within a CBRN/TIM environment.

10.0.3.2 IMA

All solutions identified for the Strategic National level of war within Shield are non-materiel approaches. Since materiel solutions are not applicable to this Shield level of war, assessments of Ideas for Materiel Solutions (IMAs) are not applicable.

10.1 Task SNSHLD 1: Establish interoperability and protection standards and criteria for protective equipment and supplies

10.1.1 Functional Area Analysis

10.1.1.1 Definition

To reduce the impact of CBRN/TIM releases on U.S., allied, friendly, or nonaligned military forces and eligible civilians, MWAs, and equipment, supplies, and facilities. This task includes interoperability,² protection standards, and baseline requirements for protective equipment and supplies required for survival and operations within a CBRN/TIM environment. The criteria establish requisite metrics. The standards specify characteristics for protective equipment and supplies required for survival and operations within a CBRN/TIM environment. The standards establish and define “clean,” “safe,” and “dirty” hazard levels for the application and performance of protective equipment and supplies. The supporting criteria stipulate baseline requirements for CBRN/TIM protective equipment and supplies. The criteria establish requisite metrics that optimize protection, function/task accomplishment, and mission capabilities for operations within CBRN/TIM environments while minimizing hazards, encumbrances, limitations, and adverse impacts.

NOTE: Interoperability, as defined in JP 0-2, includes “the development and fielding process that provides materiel that is fully compatible to systems of all Services.” North Atlantic Treaty Organization (NATO) and other alliance standards are negotiated separately and assimilated into the requirements and acquisition process as necessary.

10.1.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 3.4.4, SN 4.3.4, SN 5.1.1, SN 6.1, SN 7.5, SN 9, SN 9.1.3, SN 9.2.1).

10.1.1.2.1 Supported Task: N/A

10.1.1.2.2 Lateral Task: SNSHA 3

10.1.1.2.3 Supporting Task: N/A

10.1.1.3 Condition

Perform this task under conditions of:

² Interoperability includes “the development and fielding process that provides material that is fully compatible to systems of all Services.” (JP 02, *Unified Action Armed Forces*) NATO and other alliance standards are negotiated separately and assimilated into the requirements and acquisition process as necessary.

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partial joint staff integration. (C2.3.1.1)
2. Partial multinational integration. (C2.3.1.2)
3. Some interoperability. (C2.2.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.1.2 Functional Needs Analysis

10.1.2.1 Capability and Deficiency Assessment Summary

Table 10.1-1 discusses the only capability that currently exists to perform the task to the designated standard. The Chairman of the Joint Chiefs of Staff (CJCS)/joint staff promulgates and establishes joint Service baseline standards, criteria, and metrics for the development and fielding of CBRND protective equipment and supplies.

Current Capability and Deficiency

Interoperability and protection standards, measures, and criteria for CBRND protective equipment and supplies exist for specific assets and are established during the development, acquisition, and fielding process. Doctrine, policy, procedures, and tactics, techniques, and procedures (TTPs) are currently available for employment of CBRND protective equipment and measures; however, task performance within a contaminated environment by individual protective equipment (IPE)-encumbered personnel is not generally addressed. Deficiencies include the lack of a single set of overarching CBRND standards, measures, criteria, and metrics for CBRND assets. The overall current assessment is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.1-1. SNSHLD 1: Capability and Deficiency Assessment

Capability: CJCS/ Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	R ⁶	Y ⁷	Y ⁷	Y ⁷	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹²	Y ¹³	Y ¹³	Y ¹³	Y ¹²	Y ¹²	Y ¹³						
Near/Mid-Term Overall Capability	R	R	R	R	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	R	R	R	R	R	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

	FAA Measure	Scale
M1	“Clean” hazard levels are specifically defined in terms of route of entry, exposed area, exposure rate and duration, material concentration and physical state, accumulated dose, and impact on life, health, and the environment.	G: An overarching single set of specific measures defining “Clean” hazard levels exist for application to all systems, equipment, and assets that address the full range of protected resources. Y: Specific “Clean” hazard levels and measures are defined for specific systems, equipment, and assets. R: “Clean” hazard levels are not defined.
M2	“Safe” hazard levels are specifically defined in terms of route of entry, exposed area, exposure rate and duration, material concentration and physical state, accumulated dose, and impact on life, health, and the environment.	G: An overarching single set of specific measures defining “Safe” hazard levels exist for application to all systems, equipment, and assets that address the full range of protected resources. Y: Specific “Safe” hazard levels and measures are defined for specific systems, equipment, and assets. R: “Safe” hazard levels are not defined.
M3	“Dirty” hazard levels are specifically defined in terms of route of entry, exposed area, exposure rate and duration, material concentration and physical state, accumulated dose, and impact on life, health, and the environment.	G: An overarching single set of specific measures defining “Dirty” hazard levels exist for application to all systems, equipment, and assets that address the full range of protected resources. Y: Specific “Dirty” hazard levels and measures are defined for specific systems, equipment, and assets. R: “Dirty” hazard levels are not defined.
M4	Criteria for employing CBRN/TIM protective equipment and measures have been adequately described to include timing and level of protection required.	G: Doctrine, policy, procedures, and TTPs adequately address the employment of protective equipment and measures across the full range of protected resources and eligible personnel, including non-U.S. Y: Doctrine, policy, procedures, and TTPs adequately address the employment of protective equipment and measures for U.S. forces. R: Doctrine, policy, procedures, and TTPs do not or inadequately address the employment of protective equipment and measures for U.S. forces.

M5	Measures identify the quantity of CBRN/TIM material released into the environment that requires donning IPE, activation of collective protection system (CPS), or initiating other protective measures.	<p>G: Specific measures identify the quantity of CBRN/TIM material released into the environment requiring the implementation of protective measures and are applied.</p> <p>Y: General measures or alternative processes exist address the detection of CBRN material in the environment and the employment of protective measures.</p> <p>R: Measures and processes do not exist or are inadequate for the detection of CBRN material in the environment and the employment of protective measures.</p>
M6	Measures identify the quantity of CBRN/TIM material against which protective equipment must be tested for each agent.	<p>G: An overarching single set of specific measures for CBRN agent testing, by agent, exist for application to all systems, equipment, and assets that address the full range of protected resources.</p> <p>Y: Specific CBRN measures are defined for specific systems, equipment, and assets.</p> <p>R: CBRN measures are not defined.</p>
M7	Measures specify the minimum period of time required for test quantities of CBRN/TIM material to permeate the protective material.	<p>G: An overarching single set of specific measures for CBRN agent testing exist for application to all systems, equipment, and assets that address the full range of protected resources.</p> <p>Y: Specific CBRN measures are defined for specific systems, equipment, and assets.</p> <p>R: CBRN measures are not defined.</p>
M8	Metrics specify the minimum period of time required for test quantities of CBRN/TIM material to penetrate the protective material.	<p>G: An overarching single set of specific metrics for CBRN agent testing exist for application to all systems, equipment, and assets that address the full range of protected resources.</p> <p>Y: Specific CBRN metrics are defined for specific systems, equipment, and assets.</p> <p>R: CBRN metrics are not defined.</p>
M9	Metrics specify the minimum period of time required for test quantities of CBRN/TIM material to saturate the protective material.	<p>G: An overarching single set of specific metrics for CBRN agent testing exist for application to all systems, equipment, and assets that address the full range of protected resources.</p> <p>Y: Specific CBRN metrics are defined for specific systems, equipment, and assets.</p> <p>R: CBRN metrics are not defined.</p>
M10	Metrics specify the maximum period of time required to don or activate protective equipment or initiate other protective measures.	<p>G: Specific metrics identify the maximum period of time for donning or activation of protective equipment or the implementation of protective measures and are applied.</p> <p>Y: General metrics or alternative processes exist address the detection of CBRN material in the environment and the employment of protective equipment and measures.</p> <p>R: Metrics and processes do not exist or are inadequate for the detection of CBRN material in the environment and the employment of protective equipment and measures.</p>
M11	Standards adequately address sustained survival and operational requirements within a CBRN/TIM environment.	<p>G: Doctrine, policy, procedures, and TTPs incorporate standards that adequately address sustained survival and operational requirements within a CBRN/TIM environment across the full range of protected resources and eligible personnel, including non-U.S.</p> <p>Y: Doctrine, policy, procedures, and TTPs incorporate standards that address survival and operational requirements within a CBRN/TIM environment for U.S. forces.</p> <p>R: Doctrine, policy, procedures, and TTPs do not incorporate standards for, or inadequately address, sustained survival and operational requirements within a CBRN/TIM environment for U.S. forces.</p>

M12	Standards and criteria support interoperability.	<p>G: An overarching single set of specific standards and criteria supporting CBRND interoperability exist and are applied to all systems, equipment, and assets across the Services addressing the full range of protected resources and personnel, including non-U.S.</p> <p>Y: Specific CBRN interoperability standards and criteria are defined for specific U.S. systems, equipment, assets, and forces.</p> <p>R: CBRN interoperability standards and criteria are not defined for U.S. systems, equipment, assets, and forces.</p>
M13	Standards identify the period of time for test quantities of CBRN/TIM material to penetrate and defeat filtration.	<p>G: An overarching single set of specific standards for CBRN agent testing exist for application to all systems, equipment, and assets that address the full range of protected resources.</p> <p>Y: Specific CBRN standards are defined for specific systems, equipment, and assets.</p> <p>R: CBRN standards are not defined.</p>
M14	Criteria and metrics optimize sustained task and function performance within a contaminated environment and in high-stress circumstances.	<p>G: An overarching single set of specific criteria and metrics for optimization of sustained task and function performance within a contaminated environment and in high-stress circumstances exist for application to all systems, equipment, and assets that address the full range of protected resources and personnel, including non-U.S.</p> <p>Y: Specific CBRN criteria and metrics for task and function performance within a contaminated environment and in high-stress circumstances are defined for specific U.S. systems, equipment, assets, and forces.</p> <p>R: CBRN metrics are not defined for sustained task and function performance within a contaminated environment and in high-stress circumstances.</p>
M15	Criteria and metrics minimize encumbrances, hazards, limitations, and restrictions of CBRN/TIM protective equipment and supplies.	<p>G: An overarching single set of specific criteria and metrics addressing the minimization of encumbrances, hazards, limitations, and restrictions of CBRN/TIM protective equipment and supplies exist and are applied.</p> <p>Y: Specific criteria and metrics addressing the reductions of encumbrances, hazards, limitations, and restrictions of CBRN/TIM protective equipment and supplies are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the minimization of encumbrances, hazards, limitations, and restrictions of CBRN/TIM protective equipment and supplies are not defined.</p>
M16	Criteria and metrics optimize safety and well-being of forces operating within a contaminated environment.	<p>G: An overarching single set of specific criteria and metrics addressing the optimization of the safety and well-being of forces (including eligible civilians and non-U.S. forces) operating within a CBRN/TIM environment exist and are applied.</p> <p>Y: Specific criteria and metrics addressing the safety and well-being of U.S. forces operating within a CBRN/TIM environment are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the optimization of the safety and well-being of U.S. forces within a CBRN/TIM environment are not defined.</p>

M17	Criteria and metrics minimize logistic support costs and user Total Ownership Cost.	<p>G: An overarching single set of specific criteria and metrics addressing the minimization of logistical support costs and Total Ownership Cost exist and are applied.</p> <p>Y: Specific criteria and metrics addressing reductions in logistical support costs and Total Ownership Cost are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the minimization of logistical support costs and Total Ownership Cost are not defined.</p>
M18	Criteria and metrics maximize compatibility and integration with individual combat equipment and systems.	<p>G: An overarching single set of specific criteria and metrics addressing the maximization of compatibility and integration of CBRND assets with individual combat equipment and systems exist and are applied.</p> <p>Y: Specific criteria and metrics addressing compatibility and/or integration of CBRND assets with individual combat equipment and systems are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the maximization of compatibility and integration of CBRND assets with individual combat equipment and systems are not defined.</p>
M19	Criteria and metrics maximize compatibility and integration with combat weapons and support systems.	<p>G: An overarching single set of specific criteria and metrics addressing the maximization of compatibility and integration of CBRND assets with combat equipment and support systems exist and are applied.</p> <p>Y: Specific criteria and metrics addressing compatibility and/or integration of CBRND assets with combat equipment and support systems are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the maximization of compatibility and integration of CBRND assets with combat equipment and support systems are not defined.</p>
M20	Criteria and metrics optimize worldwide application in the expected combat and climatic conditions.	<p>G: An overarching single set of specific criteria and metrics addressing the optimization of worldwide application of CBRND assets in the expected combat and climatic conditions by forces (including eligible civilians and non-U.S. forces) exist and are applied.</p> <p>Y: Specific criteria and metrics addressing application of CBRND assets in the expected combat and climatic conditions by U.S. forces are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the optimization of the worldwide application of CBRND assets in the expected combat and climatic conditions by U.S. forces are not defined.</p>
M21	Criteria and metrics minimize training and maintenance resources.	<p>G: An overarching single set of specific criteria and metrics addressing the minimization of CBRND training and maintenance resources by forces (including eligible civilians and non-U.S. forces) exist and are applied.</p> <p>Y: Specific criteria and metrics addressing the reduced levels of required CBRND training and maintenance resources by U.S. forces are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the minimization of CBRND training and maintenance resources by U.S. forces are not defined.</p>
M22	Criteria and metrics optimize shelf life in prolonged storage under any climatic condition.	<p>G: An overarching single set of specific criteria and metrics addressing the optimization of CBRND asset shelf life in prolonged storage under any climatic condition exist and are applied.</p> <p>Y: Specific criteria and metrics addressing CBRND asset shelf life in prolonged storage under any climatic condition are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the optimization of CBRND asset shelf life in prolonged storage under any climatic condition are not defined.</p>

M23	Criteria and metrics minimize impact upon warfighter load.	<p>G: An overarching single set of specific criteria and metrics addressing the minimization of CBRND asset impact upon the warfighter load exist and are applied.</p> <p>Y: Specific criteria and metrics addressing CBRND asset impact upon the warfighter load are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the minimization of CBRND asset impact upon the warfighter are not defined.</p>
M24	Criteria and metrics minimize transport requirements.	<p>G: An overarching single set of specific criteria and metrics addressing the minimization of CBRND asset transport requirements exist and are applied.</p> <p>Y: Specific criteria and metrics addressing CBRND asset transport requirements are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the minimization of CBRND asset transport requirements are not defined.</p>
M25	Criteria and metrics optimize serviceable life of protective equipment and supplies.	<p>G: An overarching single set of specific criteria and metrics addressing the optimization of CBRND asset service life exist and are applied.</p> <p>Y: Specific criteria and metrics addressing CBRND asset service life are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the optimization of CBRND asset service life are not defined.</p>
M26	Criteria and metrics optimize decontaminability of protective equipment and supplies.	<p>G: An overarching single set of specific criteria and metrics addressing the optimizing the decontaminability of CBRND assets exist and are applied.</p> <p>Y: Specific criteria and metrics addressing CBRND asset decontaminability are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing the optimization of CBRND asset decontaminability are not defined.</p>
M27	Criteria and metrics minimize storage footprint, packaging size, and weight.	<p>G: An overarching single set of specific criteria and metrics addressing the minimizing CBRND asset storage footprint, packaging, size, and weight exist and are applied.</p> <p>Y: Specific criteria and metrics addressing minimizing CBRND asset storage footprint, packaging, size, and weight are defined for specific systems, equipment, and assets.</p> <p>R: Criteria and metrics addressing minimizing CBRND asset storage footprint, packaging, size, and weight are not defined.</p>
M28	Criteria and metrics minimize infrared (IR)/electronic emissions.	<p>G: DOTLPF provides common guidance across all Services, ensures the safety and well-being of forces (including eligible civilians and non-U.S. members), and enables sustained operations within a CBRN/TIM environment.</p> <p>Y: DOTLPF is common across all Services, ensures the safety and well-being of U.S. forces (including eligible civilians), and supports sustained operations within a CBRN/TIM environment.</p> <p>R: DOTLPF is not common across services, inadequate, or nonexistent for the safety and well-being of U.S. forces (including eligible civilians and non-U.S. members) and does not enable or is inadequate for sustained operations within a CBRN/TIM environment.</p>

¹ DOTLPF for task performance within a CBRN/TIM hazard environment is inadequate and insufficient. DOTLPF generally does not discuss task performance within a contaminated environment by personnel encumbered with IPE. DOTLPF considering MWAss, civilians, and non-U.S. forces (forces not part of a treaty organization such as NATO) is inadequate.

² “Clean” hazard levels currently are not specifically defined.

³ “Safe” hazard levels are currently not specifically defined.

⁴ “Dirty” hazard levels are currently not specifically defined.

⁵ Sufficient doctrine, policy, procedures, and TTPs are currently available for the employment of protective equipment and measures by U.S. forces. However, criteria applicable to MWAs, civilians, and non-U.S. forces are not promulgated.

⁶ Quantities of CBRN/TIM material within the environment for implementation of protective measures are not identified. However, detection of the presence of CBRN/TIM within the environment by sensors (manual and/or automated) is linked to the implementation of associated protective measures. MWAs, civilians, and non-U.S. forces are not adequately addressed.

⁷ Measures are established for specific systems, equipment, and assets, when determined applicable, during the acquisition and development process, including protective material incorporated into the end item. Additionally, no single set of measures exists as an overarching basis for testing. Measures considering MWAs, civilians, and non-U.S. forces are not adequately addressed.

⁸ Metrics maybe established for specific systems, equipment, and assets, when determined applicable, during the acquisition and development process. Doctrine, policies, procedures, and TTPs identify time periods for the donning of protective equipment and the initiation of other protective measures. However, detection of the presence of CBRN/TIM within the environment by sensors (manual and/or automated) is linked to the implementation of associated protective measures. Metrics considering MWAs, civilians, and non-U.S. forces are not adequately addressed.

⁹ Sufficient doctrine, policy, procedures, and TTPs are currently available for the employment of protective equipment and measures. Standards considering MWAs, civilians, and non-U.S. forces are not adequately addressed.

¹⁰ Standards and criteria are established for specific systems, equipment, and assets (when determined applicable) during the acquisition and development process. However, interoperability may not be a factor in some Service specific programs. Standards considering MWAs, civilians, and non-U.S. forces (forces not part of a treaty organization such as NATO) are not adequately addressed.

¹¹ Standards are established during the acquisition and development process. No single set of standards exist as an overarching basis.

¹² Criteria and metrics are established for specific systems, equipment, and assets, when determined applicable, during the acquisition and development process. No single set of criteria and metrics exists as an overarching basis. Criteria and metrics considering MWAs, civilians, and non-U.S. forces (forces not part of a treaty organization such as NATO) are not adequately addressed.

¹³ Criteria and metrics are established for specific systems, equipment, and assets, when determined applicable, during the acquisition and development process. No single set of criteria and metrics exists as an overarching basis.

10.1.3 Functional Solution Analysis

10.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with interoperability and protection standards, measures, criteria, and metrics for CBRND protective equipment and supplies. The deficiencies can be addressed with non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include research, development, and engineering (RD&E) to define “Clean,” “Safe,” and “Dirty” and their associated hazard levels for CBRN/TIM, as well as determining minimal CBRN/TIM quantities in the environment for implementation of CBRND protection. This foundational information provides the basis for development of overarching standards, measures, criteria, and metrics for the development, acquisition, fielding and employment of CBRND protective equipment and supplies. The derived joint standards, measures, criteria, and metrics should address other protected populations such as MWAs, eligible civilians, and non-U.S. forces and be integrated into doctrine, policy, procedures, TTPs, and training. These non-materiel requirements should also establish minimal qualifications for eligible civilians supporting the mission to ensure their safe application of CBRND protective measures and materiel for survival.

- 1. Deficiency:** “Clean” hazard levels currently are not specifically defined.
Non-Materiel Solutions: Doctrine: Define “Clean” and identify threshold hazard levels for CBRN/TIM agents within the environment and include in doctrine, policy, procedures, and TTPs.
- 2. Deficiency:** “Safe” hazard levels are currently not specifically defined.
Non-Materiel Solutions: Doctrine: Define “Safe” and identify threshold hazard levels for CBRN/TIM agents within the environment and include in doctrine, policy, procedures, and TTPs.
- 3. Deficiency:** “Dirty” hazard levels are currently not specifically defined.
Non-Materiel Solutions: Doctrine: Define “Dirty” and identify threshold hazard levels for CBRN/TIM agents within the environment and include in doctrine, policy, procedures, and TTPs.
- 4. Deficiency:** Quantities of CBRN/TIM material within the environment for implementation of protective measures are not identified.
Non-Materiel Solutions: Doctrine: Identify and link ranges of quantities of CBRN/TIM material to Mission-Oriented Protective Posture (MOPP) levels and protective measures and include in doctrine, policy, procedures, and TTPs.
- 5. Deficiency:** MWAs, civilians, and non-U.S. forces (forces not part of a treaty organization such as NATO) are not adequately addressed.
Non-Materiel Solutions: Doctrine: Address application of MOPP levels and protective measures for MWAs, civilians, and non-U.S. forces and include in doctrine, policy, procedures, and TTPs.

- 6. Deficiency:** No single set of measures, standards, metrics, and criteria exists as an overarching basis CBRND.
Non-Materiel Solutions: *Doctrine:* Promulgate, establish, and enforce the application of an overarching CBRND set of measures, standards, and metrics for CBRND equipment and supplies.
- 7. Deficiency:** Interoperability may not be a factor in some Service-specific programs.
Non-Materiel Solutions: *Doctrine:* Enforce DoD mandate for single CBRND program and interoperability. *Leadership:* Leadership of Service Components support and enforce DoD mandate.
- 8. Deficiency:** DOTLPF generally does not discuss task performance within a contaminated environment by personnel encumbered with IP.
Non-Materiel Solutions: *Doctrine:* Consider implications of IP encumbrances upon task performance within a CBRN/TIM environment for training and task development.
Organization: Consider limitations of IP encumbered personnel within a CBRN/TIM environment for task structuring. *Training:* Include task performance within a CBRN/TIM environment during formal and unit training and as an essential requirement element.
Leadership: Leadership training and awareness of limitations and restrictions associated with task performance within a CBRN/TIM environment. *Personnel:* Ensure personnel are both psychologically and physiologically matched with specialty for task completion requirements within a CBRN/TIM environment.
- 9. Deficiency:** DOTLPF considering MWAs, civilians, and non-U.S. forces (forces not part of a treaty organization such as NATO) is inadequate.
Non-Materiel Solutions: *Doctrine:* Address the provision of CBRN/TIM protection to MWAs, eligible civilians, and non-U.S. forces in doctrine, policy, procedures, and TTPs.
Organization: Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to MWAs, eligible civilians, and non-U.S. forces. *Training:* Include MWAs and eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Leadership awareness of criticality of MWD resources and increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission meet minimum standards for safe use of CBRND resources.

10.1.3.1.2 IMA Assessment Summary

N/A

10.2 Task SNSHLD 2: Establish protection policy, standards, and criteria for medical CBRN/TIM protective countermeasures

10.2.1 Functional Area Analysis

10.2.1.1 Definition

To reduce the impact of CBRN/TIM releases on U.S., allied, friendly, or nonaligned military forces and eligible civilians and MWAs. Policy provides guidance on the management, eligibility, and administration of medical CBRN/TIM protective countermeasures. The standards specify medical CBRN/TIM protective countermeasures for acquired immunity or preventive mitigation of the effects of CBRN/TIM hazards. These countermeasures may include vaccines, pretreatments, prophylaxes, surfactant, or other medical pre- and postexposure (presymptomatic) measures for entity survival. The supporting criteria stipulate baseline requirements for the standard. Depending upon the standard, the criteria may address efficacy, level of afforded protection, duration of effectiveness, maximum number of administrations to achieve specified protection level, method(s) of administration, potential for adverse reactions and long-term effects, and ability to tailor to performed function. The criteria establish requisite metrics that optimize protection for operations within CBRN/TIM environments while minimizing hazards, limitations, and adverse impacts.

10.2.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 3.4.4, SN 4.3.4, SN 5.1.1, SN 6.1, SN 7.5, SN 9, SN 9.1.3, SN 9.2.1).

10.2.1.2.1 Supported Task: N/A

10.2.1.2.2 Lateral Task: SNSHA 3

10.2.1.2.3 Supporting Task: N/A

10.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partial joint staff integration. (C2.3.1.1)
2. Partial multinational integration. (C2.3.1.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.2.2 Functional Needs Analysis

10.2.2.1 Capability and Deficiency Assessment Summary

Table 10.2-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff promulgates and establishes joint Service baseline standards, criteria, and metrics for CBRN/TIM medical protective countermeasures.

Current Capability and Deficiency

Protection policies, standards, measures, criteria, and metrics exist for specific medical CBRND countermeasures and their application by the force. Standards, measures, criteria, and metrics, however, are established during the research and development process for each specific medical CBRND countermeasure. Deficiencies include the lack of a single set of overarching medical CBRND countermeasure standards, measures, criteria, and metrics for CBRND assets. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.2-1. SNSHLD 2: Capability and Deficiency Assessment

Capability: CJCS— Medical	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26
Current Overall Capability¹	Y ²	R ³	Y ⁴	R ⁵	R ⁶	R ⁷	R ⁸	R ⁹	R ¹⁰	R ¹¹	R ¹²	R ¹³	R ¹⁴	R ¹⁵	R ¹⁶	R ¹⁷	R ¹⁸	R ¹⁸	Y ¹⁹	R ¹⁶	R ¹⁶	Y ¹⁶				
Near/Mid-Term Overall Capability	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	R	R	Y
Far-Term Overall Capability	Y	R	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	Y	R	R	Y

	FAA Measure	Scale
M1	Policies outline the management, eligibility, and administration of medical CBRN/TIM protective countermeasures.	<p>G: Doctrine, policies, standards, and TTPs provide specific guidance and requirements for the management, eligibility, and administration of medical protective countermeasures for all eligible populations, including U.S. military members, MWAs, eligible civilians, and non-U.S. force personnel.</p> <p>Y: Doctrine, policies, standards, and TTPs adequately address the management, eligibility, and administration of medical protective countermeasures by U.S. military members.</p> <p>R: Doctrine, policies, standards, and TTPs are inadequate or nonexistent for the management, eligibility, and administration of medical protective countermeasures by U.S. forces.</p>
M2	Standards and supporting criteria address medical CBRN/TIM protective countermeasures for all threat biological agents.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for all threat biological agents, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet Food and Drug Administration (FDA) criteria for approval, and are applied.</p> <p>Y: Standards and supporting criteria are established for specific high-threat biological agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Standards and supporting criteria are nonexistent or established for specific biological agent countermeasures based upon known achievable, do not address all threat biological agents, meet FDA criteria for investigational new drug (IND) approval only and address U.S. military members only.</p>
M3	Standards and supporting criteria address medical CBRN/TIM protective countermeasures against the effects of radiological exposures.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for radiological exposure, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Specific standards and criteria addressing CBRN/TIM protective countermeasures for the radiological exposure are defined for specific medical countermeasures, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Standards and supporting criteria are nonexistent or established for specific CBRN/TIM protective countermeasures for radiological exposure, are based upon known achievable, do not address preexposure and presymptomatic exposures, meet FDA criteria for IND approval only, and address U.S. military members only.</p>

M4	Standards and supporting criteria address medical CBRN/TIM protective countermeasures for all threat chemical warfare agents.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for all threat chemical agents, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Standards and supporting criteria are established for specific high-threat chemical agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Standards and supporting criteria are nonexistent or established for specific chemical agent countermeasures based upon known achievable, do not address all threat chemical agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M5	Standards and supporting criteria address medical CBRN/TIM protective countermeasures for all high-threat toxic industrial chemical (TIC) agents.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for all threat TIC agents, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Standards and supporting criteria are established for specific high-threat TIC agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Standards and supporting criteria are nonexistent or established for specific TIC agent countermeasures based upon known achievable, do not address all threat TIC agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M6	Standards and supporting criteria address medical CBRN/TIM protective countermeasures for all high-threat toxic industrial biological (TIB) agents.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for all high-threat TIB agents, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Standards and supporting criteria are established for specific high-threat TIB agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Standards and supporting criteria are nonexistent or established for specific TIB agent countermeasures based upon known achievable, do not address all high-threat TIB agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M7	Standards and supporting criteria for medical CBRN/TIM protective countermeasures consider prominent endemic diseases for threat areas.	<p>G: An overarching single set of specific standards and criteria address CBRN/TIM protective countermeasures for all prominent endemic diseases for threat areas, address all force members (including MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Standards and supporting criteria for CBRN/TIM protective countermeasures are established for prominent endemic diseases for specific threat areas, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: CBRN/TIM protective countermeasure standards and supporting criteria are nonexistent or established for specific prominent endemic diseases within a select threat area, do not address all prominent endemic disease agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>

M8	Standards and supporting criteria address differing population groups (e.g., military forces, eligible civilians supporting the mission, eligible civilians not supporting the mission, and MWAs).	<p>G: Medical CBRN countermeasures and standards address all eligible populations groups (including military personnel, eligible civilians, MWAs, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRN countermeasure standards and criteria address U.S. military personnel, MWD, and eligible civilians directly supporting the mission; and meet FDA criteria for approval.</p> <p>R: Medical CBRN countermeasure standards and criteria address U.S. military members only, and meet FDA criteria for IND approval only.</p>
M9	Standards and supporting criteria define and address presymptomatic low-dose exposures and cumulative long-term effects.	<p>G: An overarching single set of standards and criteria define and address presymptomatic low-dose exposures and cumulative long-term effects for all threat biological agents, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRN countermeasure standards and criteria address and define presymptomatic low-dose exposures and cumulative long-term effects for specific CBRN agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Medical CBRN countermeasure standards and criteria do not or inadequately address and define presymptomatic low-dose exposures and cumulative long-term effects, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M10	Metrics specify the required efficacy of medical CBRN/TIM protective countermeasures for biological agents by identified population groups.	<p>G: An overarching single set of metrics establish minimal level of efficacy of CBRN/TIM protective countermeasures for all threat biological agents, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure minimal efficacy metrics are established for specific high-threat biological agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Efficacy metrics are nonexistent or established for specific biological agent countermeasures based upon known achievable, do not address all threat biological agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M11	Metrics specify the required efficacy of medical CBRN/TIM protective countermeasures against effects of radiological exposures by identified population groups.	<p>G: An overarching single set of metrics establish minimal level of efficacy of CBRN/TIM protective countermeasures for radiological exposures, meet FDA criteria for approval, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), and are applied.</p> <p>Y: Medical CBRND countermeasure minimal efficacy metrics are established for specific radiological exposures, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Efficacy metrics are nonexistent or established for specific radiological countermeasures based upon known achievable, do not address all threat biological agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>

M12	Metrics specify the required efficacy of medical CBRN/TIM protective countermeasures against chemical warfare agents by identified population groups.	<p>G: An overarching single set of metrics establish minimal level of efficacy of CBRN/TIM protective countermeasures for chemical agents, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure minimal efficacy metrics are established for specific chemical agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Efficacy metrics are nonexistent or established for specific chemical agent countermeasures based upon known achievable, do not address all threat chemical agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M13	Metrics specify the required efficacy of medical CBRN/TIM protective countermeasures against high-threat TIC agents by identified population groups.	<p>G: An overarching single set of metrics establish minimal level of efficacy of CBRN/TIM protective countermeasures for all high-threat TIC agents, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure minimal efficacy metrics are established for specific high-threat TIC agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Efficacy metrics are nonexistent or established for specific TIC agent countermeasures based upon known achievable, do not address all threat TIC agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M14	Metrics specify the required efficacy of medical CBRN/TIM protective countermeasures against high-threat toxic industrial biological agents by identified population groups.	<p>G: An overarching single set of metrics establish minimal level of efficacy of CBRN/TIM protective countermeasures for all high-threat TIB agents, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure minimal efficacy metrics are established for specific high-threat TIB agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Efficacy metrics are nonexistent or established for specific TIB agent countermeasures based upon known achievable, do not address all threat TIB agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M15	Metrics establish the period of time for attainment of required level of afforded prophylactic protection.	<p>G: An overarching single set of metrics establish the maximum period of time for the attainment of the required level of afforded prophylactic protection by CBRN/TIM protective countermeasures, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure metrics for attainment of a required level of afforded prophylactic protection are established for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Prophylactic protection-level attainment metrics are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>

M16	Metrics specify the maximum number of applications required to attain required level of afforded protection.	<p>G: An overarching single set of metrics establish the maximum number of applications to attain the required level of afforded protection by CBRN/TIM protective countermeasures, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure metrics for the number of applications to attain a required level of afforded protection are established for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Protection-level attainment metrics for the maximum number of required applications are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M17	Metrics specify the required level of afforded protection.	<p>G: An overarching single set of metrics establish the required level of afforded protection by CBRN/TIM protective countermeasures, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure metrics for the required level of afforded protection are established for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Protection-level metric requirements are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military members only.</p>
M18	Metrics specify the maximum percentage of population experiencing adverse reactions.	<p>G: An overarching single set of metrics establish the maximum percentage of each eligible population experiencing adverse reactions to CBRN/TIM protective countermeasures, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure metrics for the maximum percentage of the target population experiencing adverse reactions are established for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Adverse reaction percentage metric requirements for targeted populations are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M19	Metrics specify the maximum percentage of population experiencing long-term effects.	<p>G: An overarching single set of metrics establish the maximum percentage of each eligible population experiencing long-term effects from CBRN/TIM protective countermeasures, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure metrics for the maximum percentage of the target population experiencing long-term effects are established for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Long-term effects percentage metric requirements for targeted populations are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>

M20	Metrics specify presymptomatic low-dose exposure levels by CBRN/TIM agent.	<p>G: An overarching single set of medical CBRND metrics specify presymptomatic low-dose exposure levels, by CBRN/TIM agent, for each eligible population, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND metrics identify presymptomatic low-dose exposure levels for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Presymptomatic low-dose exposure level metric requirements for targeted populations are nonexistent or established for specific threat agent countermeasures based upon readily measured and observed, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M21	Metrics specify maximum allowable presymptomatic cumulative low-dose exposure limit for operational period by CBRN/TIM agent.	<p>G: An overarching single set of medical CBRND metrics specify the maximum allowable presymptomatic cumulative low-dose exposure levels, by CBRN/TIM agent, for each eligible population for a realistic operational period (operational period covers the time period beginning with predeployment and ending following return to home location), address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND metrics identify the maximum allowable presymptomatic cumulative low-dose exposure levels for specific agents over a defined operational period, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Maximum allowable presymptomatic cumulative low-dose exposure level metric requirements for targeted populations over a selected operational period are nonexistent, are suggested, or are established for specific threat agent countermeasures based upon readily measured and observed, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M22	Metrics specify maximum allowable lifetime presymptomatic cumulative exposure limit by CBRN/TIM agent.	<p>G: An overarching single set of medical CBRND metrics specify the maximum allowable lifetime presymptomatic cumulative low-dose exposure levels, by CBRN/TIM agent for each eligible population, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND metrics identify the maximum allowable presymptomatic lifetime cumulative low-dose exposure levels for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Maximum allowable presymptomatic cumulative lifetime low-dose exposure level metric requirements for targeted populations are nonexistent, are suggested, or are established for specific threat agent countermeasures based upon readily measured and observed, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M23	Metrics specify administration method for countermeasure (e.g., oral, injection, epidermal application, nasal, respiratory, etc.).	<p>G: An overarching single set of metrics establish the administration methods for CBRN/TIM protective countermeasures, address all eligible population members (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND countermeasure administration method metrics are established for specific agents, meet FDA criteria for approval, and address U.S. force members, including eligible civilians and MWAs.</p> <p>R: Medical CBRND countermeasure administration method metrics are nonexistent, do not address all threat agents, and are not approved by the FDA for administration to other than U.S. forces.</p>

M24	Metrics specify the duration of effectiveness once required level of afforded prophylactic protection is attained.	<p>G: An overarching single set of medical CBRND metrics specify the duration of effectiveness upon attainment of the required level of afforded prophylactic protection, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND metrics specify the duration of effectiveness upon attainment of the required level of afforded prophylactic protection for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Duration of effectiveness upon attainment of required level of afforded prophylactic protection metric requirements for targeted populations are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M 25	Metrics specify the minimum period for readministration to retain required level of afforded protection once attained (e.g., annually, weekly, daily, etc.).	<p>G: An overarching single set of medical CBRND metrics specify the minimum period for readministration to maintain the required level of afforded prophylactic protection - once attained, address all eligible populations (including U.S. military, MWAs, eligible civilians, and non-U.S. force members), meet FDA criteria for approval, and are applied.</p> <p>Y: Medical CBRND metrics specify the period of readministration for protection maintenance upon attainment of the required level of afforded prophylactic protection for specific agents, meet FDA criteria for approval, and address all U.S. force members, including eligible civilians and MWAs.</p> <p>R: Metric requirements for readministration frequency for maintenance of the required level of afforded prophylactic protection for targeted populations are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>
M26	Metrics specify the limitations upon administration (e.g., gender, age, medical condition, etc.).	<p>G: Medical CBRN countermeasures metrics specify limitations for administration within all eligible populations groups (including military personnel, eligible civilians, MWAs, and non-U.S. force members) to include limitations for gender, age, medical condition, allergies, and other potentially limiting factors.</p> <p>Y: Medical CBRN countermeasure metrics address limitations upon administration to U.S. military personnel.</p> <p>R: Metric requirements addressing limitations upon administration are nonexistent or established for specific threat agent countermeasures based upon known achievable, do not address all threat agents, meet FDA criteria for IND approval only, and address U.S. military population only.</p>

¹ DOTLPF currently exists to support the issuance and administration of medical CBRN/TIM protective countermeasures by the force. However, DOTLPF does not adequately impose concise standards, supporting criteria, and metrics for the RD&E of medical CBRN/TIM protective countermeasures adequately protecting the force throughout the deployment cycle. DOTLPF does not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

² Doctrine, policies, standards, and TTPs adequately address the management, eligibility, and administration of medical CBRN/TIM protective countermeasures by the force. Policies do not address the administration of medical CBRN/TIM protective countermeasures by or to other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

³ Standards and supporting criteria are established for specific biological agent countermeasures during the research and development process. However, the standards and criteria are often dependent upon the known achievable rather than a required level of protection. Standards and supporting criteria do not address all threat biological agents. Nor do standards and supporting criteria consider presymptomatic medical CBRN/TIM countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁴ Standards and supporting criteria are established during the research and development process for a specific countermeasure. However, current standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁵ Standards and supporting criteria are established during the research and development process. Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all threat chemical warfare agents. Further, standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁶ Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all high-threat TIC agents. TICs are a relatively recent consideration as a potential threat. Therefore, TICs are not currently addressed for presymptomatic medical CBRN/TIM protective countermeasures for the force. Further, standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁷ Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all high-threat TIB agents. TIB is a relatively recent consideration as a potential threat. Therefore, TIBs are not currently addressed for presymptomatic medical CBRN/TIM protective countermeasures for the force. Further, standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁸ Medical CBRN/TIM countermeasures standards and supporting criteria do not consider prominent endemic diseases for threat areas. Endemic disease prevention is considered a non-CBRN/TIM task. Standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

⁹ Medical CBRN/TIM countermeasures standards and criteria are designed for the force. Differing populations beyond the force profile are not considered. These absent populations include other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁰ Standards and supporting criteria do not define and address presymptomatic low-dose exposures and cumulative long-term effects.

¹¹ Metrics are established for specific biological agent countermeasures during the research and development process. However, the metrics are often dependent upon the known achievable rather than a required level of protection. Metrics do not address all threat biological agents. Nor do metrics consider presymptomatic medical CBRN/TIM countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹² Metrics are established during the research and development process for a specific countermeasure. However, current metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹³ Metrics are established during the research and development process for a specific countermeasure. Medical CBRN/TIM countermeasures metrics do not exist for all threat chemical warfare agents. Further, metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁴ Medical CBRN/TIM countermeasures metrics do not exist for all high-threat TIC agents. TICs are a relatively recent consideration as a potential threat. Therefore, TICs are not currently addressed for presymptomatic medical CBRN/TIM protective countermeasures for the force. Further, metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁵ Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all high-threat TIB agents. TIB is a relatively recent consideration as a potential threat. Therefore, TIBs are not currently addressed for presymptomatic medical CBRN/TIM protective countermeasures for the force. Further, standards and supporting criteria do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁶ Metrics are established during the research and development process for a specific countermeasure. However, the metrics are often dependent upon the known achievable rather than a required level of protection. The metrics must meet FDA criteria for approval. The metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁷ Metrics do not define and address presymptomatic low-dose exposures and cumulative long-term effects. Metrics are established during the research and development process for a specific countermeasure. However, the metrics are often dependent upon the known achievable rather than a required level of protection. Additionally, the application of a countermeasure is dependent upon detection and characterization of the agent for selection of the applicable countermeasure. The metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).

¹⁸ Metrics do not define and address presymptomatic low-dose exposures and cumulative long-term effects.

¹⁹ Metrics are established during the research and development process for a specific countermeasure. The metrics do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.). which may be different due to age and physical conditioning.

10.2.3 Functional Solution Analysis

10.2.3.1 DOTLPF Assessment Summary

The deficiencies can be addressed with non-materiel solutions. Non-materiel solutions include development of an overarching set of standards, measures, criteria, and metrics for medical CBRND countermeasures against all threat CBRN/TIM agents. This overarching set should address other protected populations such as MWAs, eligible civilians, and non-U.S. forces and account for presymptomatic low-dose CBRN/TIM exposures and their potential cumulative long-term effects. Further, the determined set of standards, measures, criteria, and metrics must be based upon the true protection requirements of their targeted populations and not the known or believed achievable. Integration of these joint medical CBRND countermeasure standards, measures, criteria, and metrics into doctrine, policy, procedures, and TTPs provides the basis for development, acquisition, fielding, and employment of medical CBRND countermeasures.

- 1. Deficiency:** Standards and supporting criteria do not address all threat biological agents
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application standards and criteria for protection against all threat biological agents.
Leadership: Enforce compliance with established standards and criteria (see “Doctrine”).
- 2. Deficiency:** Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all threat chemical warfare agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application standards and criteria for protection against all threat chemical warfare agents.
Leadership: Enforce compliance with established metrics (see “Doctrine”) for standards and criteria.
- 3. Deficiency:** Medical CBRN/TIM countermeasures metrics do not exist for all high-threat TIC agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application standards and criteria of metrics for standards and criteria for protection against all high-threat TIC agents. *Leadership:* Enforce compliance with established standards and criteria (see “Doctrine”).
- 4. Deficiency:** TICs are not currently addressed for presymptomatic medical CBRN/TIM protective countermeasures for the force.
Non-Materiel Solutions: *Doctrine:* Address presymptomatic medical CBRN/TIM protective countermeasures against TIB agents in doctrine, policy, and procedures.
- 5. Deficiency:** Medical CBRN/TIM countermeasures standards and supporting criteria do not exist for all high-threat TIB agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and criteria for all high-threat TIB agents. *Leadership:* Enforce compliance with established metrics (see “Doctrine”) for standards and criteria.

- 6. Deficiency:** The application of a countermeasure is dependent upon detection and characterization of the agent for selection of the applicable countermeasure.
Non-Materiel Solutions: *Doctrine:* Development of doctrine and processes for the development of multivalent countermeasures, including protection for other than U.S. force members (e.g., eligible civilians, non-U.S. forces, MWAs, etc.).
- 7. Deficiency:** Metrics do not define and address presymptomatic low-dose exposures and cumulative long-term effects.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for low-dose exposure limits and cumulative long-term low-dose exposures. *Leadership:* Enforce compliance with established metrics (see “Doctrine”) for standards and criteria.
- 8. Deficiency:** Standards, supporting criteria, and metrics are often dependent upon the known achievable rather than a required level of protection.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures emphasis upon required levels of CBRN/TIM protection for development of standards, criteria, and metrics. *Leadership:* Enforce doctrine.
- 9. Deficiency:** Standards, supporting criteria, and metrics do not address administration of medical CBRN/TIM protective countermeasures to other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration of medical CBRN/TIM protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, MWAs, etc.). *Leadership:* Ensure standards, criteria, and metrics address the administration of medical CBRN/TIM protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, MWAs, etc.).
- 10. Deficiency:** DOTLPF does not adequately impose concise standards, supporting criteria, and metrics for the RD&E of medical CBRN/TIM protective countermeasures adequately protecting the force throughout the deployment cycle.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures requirement for CBRN/TIM protective standards, criteria, and metric protecting the force through the deployment cycle. *Organization:* Establish organizational incentives to address CBRN/TIM protective standards, criteria, and metrics providing protection of the force throughout the deployment cycle. *Leadership:* Ensure standards, criteria, and metrics for CBRN/TIM medical prophylaxis RD&E are concise and adequately protect the force throughout the deployment cycle.
- 11. Deficiency:** DOTLPF does not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces (includes MWAs, civilians, non-U.S. forces, etc.).
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRN/TIM protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, MWAs, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM

protection to MWAs, eligible civilians, and non-U.S. forces. *Training:* Include MWAs and eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Leadership awareness of criticality of MWD resources and increased dependence of military operations upon civilians. *Personnel:* Requirement eligible civilians supporting the mission meet minimum standards for safe use of CBRND resources.

10.2.3.2 IMA Assessment Summary

N/A

10.3 Task SNSHLD 3: Establish standards, criteria, and procedures for training, equipping, and protecting force members and eligible civilians supporting the mission from threat CBRN/TIM agents

10.3.1 Functional Area Analysis

10.3.1.1 Definition

To reduce the impact of CBRN/TIM releases or collateral release other than attack (ROTA) on U.S., allied, friendly, or nonaligned military forces and eligible civilians supporting the mission and military operations. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate weapons of mass destruction (WMD) vulnerabilities. Specifies common and interoperable standards addressing protection activities and resources. These include preparing forces (military and supporting eligible civilians) to survive and operate in threat CBRN/TIM environments and provision of clear and understandable procedures. The standards establish and define “eligible civilians supporting the mission,” and specify that these civilians shall possess equivalent protection afforded their military counterparts performing similar functions. The standards and procedures address the following:

- Training (formal and unit level) of personnel to survive and perform sustained operations within a CBRN/TIM environment.
- Equipping of units, personnel, and identified civilians for sustained operations within a toxic environment.
- Outlining protective equipment, medical measures, and other programs supporting survivability.
- Development of Shield professional resources.
- Specifying the conduct and evaluation of assessment exercises focused upon CBRN/TIM operations readiness.

10.3.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 3.4.4, SN 4.3.4, SN 5.1.1, SN 6.1, SN 7.5, SN 9, SN 9.1.3, SN 9.2.1).

10.3.1.2.1 Supported Task: N/A

10.3.1.2.2 Lateral Task: SNSHA 3

10.3.1.2.3 Supporting Task: N/A

10.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.3.2 Functional Needs Analysis

10.3.2.1 Capability and Deficiency Assessment Summary

Table 10.3-1 discusses the only capability that currently exists to perform the task to the designated standard. CJCS/joint staff Medical promulgates and establishes joint Service baseline and comprehensive program, maximizing protection afforded by medical CBRN/TIM protective countermeasures, both short and long term, and does not adversely affect health and well-being.

Current Capability and Deficiency

Standards, criteria, and procedures are adequate for establishing and defining the military force, training of the military force for implementation of CBRND protective measures, and the provision of CBRN/TIM-protective IPE to the military force. Deficiencies include inadequate standards, criteria, and procedures to support sustained operations within a CBRN/TIM environment. Overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.3-1. SNSHLD 3: Capability and Deficiency Assessment

Capability: CJCS—Medical	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	Y ²	Y ³	R ⁴	R ⁵	R ⁴	Y ⁶	R ⁷	R ⁸	R ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	Y	Y	R	R	R	Y	R	R	R	Y
Far-Term Overall Capability	Y	Y	R	R	R	Y	R	R	R	Y

	FAA Measure	Scale
M1	Standards establish and define the force to include eligible civilians supporting the mission and military operations.	<p>G: Standards establish and define, clearly and concisely, the force, including the defining and inclusion of eligible civilians supporting the mission/military operations.</p> <p>Y: Standards are adequate for defining and establishing the military force, but does not adequately define eligible civilians supporting the mission/military operations and include them as a member of the force.</p> <p>R: Standards do not or inadequately define the military force.</p>
M2	Standards address development of Shield professional resources.	<p>G: Standards exist for Shield resources and provide for the continuing development of Shield professional resources within the joint and Service communities.</p> <p>Y: Standards exist for Shield resources but do not adequately provide for the development of Shield professional resources within the joint and Service communities.</p> <p>R: Standards do not exist for Shield resources and do not provide or are inadequate for the development of Shield professional resources within the joint and Service communities.</p>
M3	Standards address training personnel to operate in CBRN/TIM hazards.	<p>G: Standards address the training and evaluation of all at-risk members (military members, eligible civilians, MWD, and non-U.S. force members) for the attainment and assessment of the skills, knowledge, and abilities to operate within CBRN/TIM hazards, including sustained operations.</p> <p>Y: Standards are adequate for U.S. forces (military members, eligible civilians supporting the mission/operations, and MWD) to operate in CBRN/TIM hazards.</p> <p>R: Standards are inadequate or do not address the training of all at-risk members and sustained operations within a CBRN/TIM environment.</p>
M4	Standards address equipping units and personnel for survival and sustained operations within a CBRN/TIM environment.	<p>G: Standards provide clear and detailed guidance and requirements addressing the equipage of units and at-risk members for survival and sustained operations within a toxic and persistent CBRN/TIM environment.</p> <p>Y: Standards are adequate and address the equipage of U.S. military units and personnel (including MWAs) for sustained operations within a CBRN/TIM environment.</p> <p>R: Standards are inadequate or do not address the equipage of units and at-risk members to survive and operate within a sustained CBRN/TIM environment.</p>
M5	Force personnel are trained to operate in CBRN/TIM hazards.	<p>G: Standards address the training and evaluation of all at-risk members (military members, eligible civilians, MWD, and non-U.S. force members) for the attainment and assessment of the skills, knowledge, and abilities to operate within CBRN/TIM hazards, including sustained operations.</p> <p>Y: Standards are adequate for U.S. forces (military members, eligible civilians supporting the mission/operations, and MWD) to operate in CBRN/TIM hazards.</p> <p>R: Standards are inadequate or do not address the training of all at-risk members and sustained operations within a CBRN/TIM environment.</p>

M6	Medical prophylaxis standards are established for personnel that might operate in a CBRN/TIM environment.	<p>G: Medical CBRND countermeasure standards exist for all threat CBRN agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasure standards exist for selected high-threat CBRN agents for U.S. military members.</p> <p>R: Medical CBRND countermeasure standards are not established.</p>
M7	Protective equipment is available for force personnel.	<p>G: CBRND protective equipment is available for all at-risk force members, including nonmilitary members, and IPE is issued prior to entry into the Area of Responsibility (AOR).</p> <p>Y: CBRND protective equipment is available and IPE is issued to deploying military and MWAs prior to arrival within the AOR.</p> <p>R: CBRND protective equipment is not available for all force members (including eligible nonmilitary personnel and MWAs) prior to arrival within the AOR.</p>
M8	All base/facility/units conduct annual CBRND exercises.	<p>G: Annual CBRND exercises fully involve all personnel and activities, address sustained operations within a toxic CBRN/TIM environment, and involve all personnel and activities as integral participants.</p> <p>Y: Annual CBRND exercises fully involve direct mission personnel (military and eligible civilians directly supporting the mission) and MWAs, and address sustained operations within a toxic CBRN/TIM environment.</p> <p>R: Annual CBRND exercises are not conducted or do not address sustained operations within a CBRN/TIM environment, and do not fully integrate eligible at-risk civilians as participants.</p>
M9	CBRND exercises fully integrate civilians supporting the mission.	<p>G: CBRND exercises fully integrate all eligible civilians supporting the mission as exercise participants and are evaluated for their ability to perform their tasks in a toxic CBRN/TIM environment.</p> <p>Y: CBRND exercises integrate more than 50% of civilians supporting the mission as exercise participants and evaluate their ability to perform their tasks in a toxic CBRN/TIM environment.</p> <p>R: CBRND exercises integrate less than 50% of civilians supporting the mission as exercise participants and/or does not adequately evaluate their ability to perform their tasks in a toxic CBRN/TIM environment.</p>
M10	DoD-level exercise evaluation criteria, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment. Service specific exercises and evaluations are developed based upon the DoD and joint plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation requirements exist and include CBRN/TIM operations as components. Operations within a toxic CBRN/TIM environment are addressed in Service exercises and evaluations.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not address CBRN/TIM operations.</p>

¹ DOTLPF exists for military forces. However, civilian personnel and operations supporting the mission are not adequately addressed. Sustained operations within a CBRN/TIM hazard is not adequately addressed in current DOTLPF.

² Standards are adequate for defining and establish the military force. However, the definition of eligible civilians supporting the mission/military operations and their inclusion as a member of the force is inadequate.

³ Standards are inadequate for the development of Shield professional resources within the joint community and Services.

⁴ Standards are adequate for training personnel to prepare for the implementation of protective measures upon notification of a CBRN/TIM hazard. However, training and evaluation for sustained operations within a CBRN/TIM hazard is inadequate. MWAs and nonmilitary personnel are not trained and considered for CBRN/TIM operations.

⁵ Standards are inadequate for equipping units and personnel to survive and sustain operations within a CBRN/TIM environment. MWAs and nonmilitary personnel are not trained and considered for CBRN/TIM operations.

⁶ Medical prophylaxis standards exist for a number of CBRN agents. The availability of medical countermeasures is dependent upon knowledge of the threat and logistical limitations. Medical prophylaxis standards are absent for many threat agents. Additionally, standards are threat agent specific and vary between prophylaxes. MWAs and nonmilitary personnel are not considered for CBRN/TIM prophylaxis.

⁷ Adequate protective equipment is available for deploying force personnel. However, this equipment may not be issued to force members until arrival in the AOR. Additionally, no protective equipment is available for MWAs. Protective equipment for nonmilitary personnel is an issue.

⁸ Base, facilities, and units are required to conduct CBRND exercises. However, these exercises do not fully involve all personnel and activities. Nor do they address sustained operations within a contaminated environment. Nonmilitary personnel, although potentially at risk, are not integrated as participants.

⁹ Nonmilitary personnel, although potentially at risk, are not integrated as participants in CBRND exercises.

¹⁰ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations.

10.3.3 Functional Solution Analysis

10.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with standards, criteria, and procedures for training, equipping, and protecting the force from threat CBRN/TIM agents. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include defining and integrating eligible civilians supporting the mission/military operations into CBRND standards, criteria, doctrine, policy, and procedures for training, equipping, and protection. Similar integration of MWAs, particularly MWD, is identified as a deficiency. A full solution set supporting sustained operations within a CBRN/TIM environment includes the establishment in doctrine, policy, and procedures of sustained operations standards and the supporting training, equipping, exercising, and evaluation to prepare and enable the force. Analysis to determine standards for development of Shield professional resources and to equip forces for sustained operations within a CBRN/TIM environment; and RD&E for standards for prophylactic protection against threat agents for targeted populations are specified in the DOTLPF Assessment Summary.

- 1. Deficiency:** The definition of eligible civilians supporting the mission/military operations and their inclusion as a member of the force is inadequate.

Non-Materiel Solutions: *Doctrine:* Define eligible civilians supporting the mission/military operations for CBRND and establish their inclusion in the force within doctrine, policy, procedures, and TTPs. *Organization:* Identify organizational services dependent upon civilians for mission/military operations success. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRND training, exercised, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians supporting the mission/military operations. *Personnel:* Personnel meeting the definition of eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 2. Deficiency:** Standards are inadequate for the development of Shield professional resources within the joint community and Services.

Non-Materiel Solutions: *Doctrine:* Doctrine, policies, and procedures for the development of Shield professional resources. *Organization:* Organizational structure facilitating and supporting development and application of Shield professional resources. *Training:* Establish training structure for the career development of Shield professional resources. *Leadership:* Ensure recognition of value of resource and provide management for development and application of Shield professional resource. *Personnel:* Personnel possessing the intellectual and physiological aptitudes to acquire, maintain, and apply the requisite knowledge, skills, abilities, and competencies of a career Shield professional resource. *Facilities:* Develop infrastructure and support for the development and support of Shield professional resources.
- 3. Deficiency:** Standards are inadequate for equipping units and personnel to survive and sustain operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the standards for sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force against the standards for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing skills to manage forces in these circumstances, and willingness to implement necessary changes and activities to prepare the force.

4. **Deficiency:** Training and evaluation for sustained operations within a CBRN/TIM hazard is inadequate.

Non-Materiel Solutions: *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing skills to manage forces in these circumstances, and willingness to implement and pursue necessary changes and activities to prepare the force

5. **Deficiency:** The availability of medical countermeasures is dependent upon knowledge of the threat and logistical limitations.

Non-Materiel Solutions: *Doctrine:* Develop doctrine and processes for development of multivalent countermeasures, including protection for other than U.S. force members (e.g., eligible civilians, non-U.S. forces, MWAs, etc.).

6. **Deficiency:** There is a lack of doctrine for risk management of forces operating in radiologically contaminated environments. Current guidance is based on cold-war assumptions and does not reflect modern threats and mission priorities.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, and procedures that address appropriate operationally oriented command dose levels for low-level radiation exposure based on mission priority across the range of military operations. *Training:* Train leaders and personnel on operationally oriented low-level radiation exposure control standards and procedures

7. **Deficiency:** There is a lack of doctrine and data supporting risk management of forces exposed to low-level chemical contamination.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, and procedures that address appropriate operationally oriented exposure limits and how to keep personnel from exceeding those limits using available detection and monitoring equipment and techniques. *Training:* Train leaders and personnel on operationally oriented low-level chemical exposure control standards and procedures.

8. **Deficiency:** Standards are threat agent specific and vary between prophylaxes.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 20 above) for prophylactic CBRND protection.

- 9. Deficiency:** MWAs and nonmilitary personnel are not considered for CBRN/TIM prophylaxis and CBRN/TIM operations.
Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures addressing MWAs and nonmilitary personnel during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and nonmilitary personnel and conduct CBRND training, exercised, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWD and nonmilitary personnel.
- 10. Deficiency:** Base-, facility-, unit-level exercises do not fully involve all personnel and activities.
Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel and activities in CBRND exercises. *Organization:* All affected entities are aware of and participate in comprehensive exercises. *Training:* All personnel (military and nonmilitary), as well as MWAs, are trained in CBRND and in the accomplishment of related tasks, as appropriate. *Leadership:* Recognition of the value of comprehensive exercises to enhance readiness, survival, and promote interaction between activities.
- 11. Deficiency:** Base-, facility-, unit-level exercises do not address sustained operations within a contaminated environment.
Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing skills to manage forces in these circumstances, and willingness to implement necessary changes and activities to prepare the force.
- 12. Deficiency:** Nonmilitary personnel, although potentially at risk, are not integrated as participants in CBRND exercises.
Non-Materiel Solutions: *Doctrine:* Address CBRND of nonmilitary personnel in doctrine, policy, and procedures; and include CBRND preparatory activities such as training and exercises. *Organization:* Identify organizational services performed by nonmilitary personnel. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for nonmilitary personnel and conduct CBRND training, exercised, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of nonmilitary personnel.
- 13. Deficiency:** Joint exercise plans are not the foundation for development of Service-specific exercise and evaluations.
Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for development of Service-specific exercises and evaluations based upon joint exercise plans. *Leadership:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.

14. Deficiency: There is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations.

Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures and require specific exercising and evaluations for these operations. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing skills to manage forces in these circumstances, and willingness to implement necessary changes and activities to prepare the force.

15. Deficiency: Civilian personnel and operations supporting the mission are not adequately addressed.

Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations supporting the mission; and conduct CBRND training, exercised, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of civilian personnel and operations supporting the mission. *Personnel:* Civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

16. Deficiency: Sustained operations within a CBRN/TIM hazard is not adequately addressed in current DOTLPF.

Non-Materiel Solutions: *Doctrine:* Address sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing skills to manage forces in these circumstances, and willingness to implement necessary changes and activities to prepare the force.

10.3.3.2 IMA Assessment Summary

N/A

10.4 Task SNSHLD 4: Establish standards, criteria, and procedures for training, equipping, and protecting eligible civilians not supporting the mission from threat CBRN/TIM agents

10.4.1 Functional Area Analysis

10.4.1.1 Definition

To reduce the impact of CBRN/TIM releases or collateral ROTA on U.S. and allied-, friendly-, or nonaligned-nation eligible civilians. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities. These eligible civilians may include

- detained civilians and evacuees,
- military dependents,
- indigenous or third-nation national labor pool, and
- other defined and identified civilians not addressed by SNSHLD 3.

Specifies common and interoperable standards addressing protection activities and resources. These include preparing non-mission support civilians (where possible) to survive in threat CBRN/TIM environments and providing clear and understandable procedures. The standards establish and define “civilians not supporting the mission” and specify the minimal level of protection enabling survival. The standards and procedures recognize the wide variance in body types, ages, and physical capabilities of the identified civilian populace. The standards and procedures address

- training of civilians to survive within a CBRN/TIM environment;
- equipping of identified civilians for survival operations within a toxic environment;
- outlining protective equipment, medical measures, and other programs supporting survivability; and
- specifying the conduct and evaluation of assessment exercises focused upon CBRN/TIM operations readiness that include these civilians where possible.

10.4.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 3.4.4, SN 4.3.4, SN 5.1.1, SN 6.1, SN 7.5, SN 9, SN 9.1.3, SN 9.2.1).

10.4.1.2.1 Supported Task: N/A

10.4.1.2.2 Lateral Task: SNSHA 3

10.4.1.2.3 Supporting Task: N/A

10.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.4.2 Functional Needs Analysis

10.4.2.1 Capability and Deficiency Assessment Summary

Table 10.4-1 discusses the only capability that currently exists to perform the task to the designated standard. CJCS/joint staff promulgates, defines, and establishes a comprehensive program of CBRN/TIM defense for eligible non-mission support civilians including prophylaxis, training, equipment, processes, exercising and evaluation, and DOTLPF.

Current Capability and Deficiency

Procedures exist in Noncombatant Evacuation Operations plans for the selected provisioning of non-mission support civilians (primarily military dependents at high-threat area (HTA) fixed-site locations) with minimal protective equipment that is generally drawn from mission stocks or obtained via commercial off-the-shelf (COTS) sources. The Guardian Program is reviewing and assessing selected COTS assets for installation populace. The primary focus is currently upon first responders and is expected to expand to other personnel. Deficiencies include inadequate standards, criteria, and procedures for CBRND of non-mission support civilians. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

The determination and procurement of selected COTS protective material will continue under the Guardian Program. However, types and quantities are under review and consideration. No other change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 10.4-1. SNSHLD 4: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	R ²	R ³	Y ⁴	R ⁵	Y ⁶	R ⁷	R ⁸	R ⁹	R ¹⁰	Y ¹¹
Near/Mid-Term Overall Capability	R	R	Y	Y	Y	Y	R	R	R	Y
Far-Term Overall Capability	R	R	Y	Y	Y	Y	R	R	R	Y

	FAA Measure	Scale
M1	Standards establish and define eligible civilians not supporting the mission and military operations.	<p>G: Standards define and identify requirements for the protection of eligible civilians not supporting the mission and military operations for CBRND.</p> <p>Y: Eligible civilians not supporting the mission and military operations are defined and generally addressed in CBRND standards.</p> <p>R: Eligible civilians not supporting the mission and military operations are inadequately or not addressed and defined in CBRND standards.</p>
M2	Standards address training non-mission support civilians to operate in CBRN/TIM hazards.	<p>G: CBRND training standards exist for eligible non-mission support civilians and establish specific requirements.</p> <p>Y: CBRND training standards provide general requirements for CBRND training of eligible non-mission support civilians.</p> <p>R: CBRND standards do not exist or are inadequate for CBRND training of eligible non-mission support civilians.</p>
M3	Standards address equipping non-mission support civilians for survival within a CBRN/TIM environment.	<p>G: CBRND provisioning standards establish specific requirements for the provisioning of at-risk eligible non-mission support civilians with CBRND protective equipment and are address in CBRND planning.</p> <p>Y: Plans establish requirements and exist for the provisioning of eligible non-mission support civilians with CBRND protective equipment and is primarily limited to Outside the Continental United States (OCONUS) HTAs.</p> <p>R: Plans do not exist or do not establish CBRND requirements for the provisioning of eligible non-mission support civilians.</p>
M4	Standards and procedures address protection equipment for the full range of body types, ages, and physical capabilities inherent to the non-mission support civilian populace.	<p>G: CBRND standards and procedures provide specific guidance and requirements for the provisioning of protective equipment to eligible non-mission support civilians and fully address the complete range of body types, ages, and physical capabilities within the population.</p> <p>Y: CBRND standards and procedures are limited and general or address only the predominant characteristics of at-risk eligible non-mission support civilian populations.</p> <p>R: Standards and procedures do not or inadequately address the full range of body types, ages, and physical capabilities within the at-risk eligible non-mission support civilian populace.</p>
M5	Standards established for medical prophylaxis for non-mission support civilians that might encounter a CBRN/TIM environment.	<p>G: CBRND standards are established and address the characteristics (e.g., age, gender, medical condition, etc.) inherent within an eligible non-mission support civilian population.</p> <p>Y: Force CBRND prophylactic standards are applied to a segment of an eligible at-risk non-mission support civilian population when determined essential by authorized medical authorities. Standard medical practices, modified as necessary by medical authorities, are applied when possible to protect other segments of the population.</p> <p>R: CBRND prophylactic standards do not exist or cannot be applied for the protection of eligible non-mission support civilians.</p>

M6	Protective equipment available for non-mission support civilians for the full range of body types, ages, and physical capabilities inherent to the non-mission support civilian populace.	<p>G: CBRND protective equipment is authorized and available for provisioning and survival of all members of an eligible at-risk non-mission support civilian population.</p> <p>Y: CBRND protective equipment is available and provided for segments of an eligible at-risk non-mission support civilian population.</p> <p>R: Authorized and available CBRND protective equipment is not existent or is inadequate for the protection of eligible at-risk non-mission support civilians.</p>
M7	Non-mission support civilians routinely at base/facility/unit are trained to operate in CBRN/TIM hazards.	<p>G: Recurrent CBRND training is provided to eligible at-risk non-mission support civilians and is sufficient in depth and scope to promote survivability in a CBRN/TIM environment.</p> <p>Y: Familiarization CBRND training is provided to eligible at-risk non-mission civilians upon entry into an OCONUS HTA and is limited in scope and/or depth.</p> <p>R: CBRND training and/or training requirements of eligible at-risk civilians are inadequate or nonexistent for survival in a CBRN/TIM environment.</p>
M8	All base/facility/units conduct annual CBRND exercises.	<p>G: Annual CBRND exercises address sustained operations within a toxic CBRN/TIM environment, and involve all personnel (military and civilian) and activities as integral participants.</p> <p>Y: Annual CBRND exercises involve limited segments of an eligible at-risk non-mission support population and address sustained operations within a toxic CBRN/TIM environment.</p> <p>R: Annual CBRND exercises are not conducted or do not address sustained operations within a CBRN/TIM environment, and do not generally integrate eligible at-risk non-mission civilians as participants.</p>
M9	CBRND exercises fully integrate civilians not supporting the mission.	<p>G: CBRND exercise criteria establish and requires the integration of at-risk non-mission civilians as participants.</p> <p>Y: CBRND exercise criteria provides for limited integration of at-risk non-mission civilians as participants.</p> <p>R: CBRND exercises and exercise criteria do not generally integrate eligible at-risk non-mission civilians as participants.</p>
M10	DoD-level exercise evaluation criteria exist, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment. Service-specific exercises and evaluations are developed based upon the DoD and joint plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation requirements exist and include CBRN/TIM operations as components. Operations within a toxic CBRN/TIM environment are addressed in Service exercises and evaluations.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not address CBRN/TIM operations.</p>

¹ DOTLPP exists for military forces. However, civilian personnel and operations are not adequately addressed.

² Standards are inadequate. Eligible civilians not supporting the mission and military operations are not defined and adequately addressed.

³ Training of non-mission support civilians to operate in CBRN/TIM hazards are not addressed in standards.

⁴ Noncombatant Evacuation Operations plans for selected areas include the provisioning of non-mission support civilians with minimal protective equipment; generally drawn from mission stocks or obtained through COTS. However, existing standards detailing eligibility, type of equipment, training, and other CBRN/TIM survival areas are inadequate or nonexistent.

⁵ Standards and procedures addressing protection equipment for the range of body types, ages, and physical capabilities inherent within a potential protection population are inadequate or nonexistent. COTS protective equipment is being addressed as part of the Guardian Program and may provide some protective resources for protected populations.

⁶ Standards for medical prophylaxis are developed for the force. They are inadequate or fail to address other potential protected populations.

⁷ Military-provided protective equipment does not adequately address the range of body types, ages, and physical capabilities inherent within a civilian populace. COTS protective equipment is being addressed as part of the Guardian Program and may provide some protective resources for protected populations.

⁸ Training is nonexistent or haphazard at best. Doctrine, policy, standards, procedures, and TTPs do not adequately address training of civilian personnel.

⁹ Base, facilities, and units are required to conduct CBRND exercises. However, these exercises do not fully involve all personnel and activities. Nor do they address sustained operations within a contaminated environment. Nonmilitary personnel, although potentially at risk, are not integrated as participants.

¹⁰ Non-mission support civilians are not generally integrated into CBRND exercises.

¹¹ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations and the integration of civilian personnel.

10.4.3 Functional Solution Analysis

10.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with standards, criteria, and procedures for training, equipping, and protecting eligible civilians not supporting the mission/military operations from threat CBRN/TIM agents. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include defining and integrating eligible civilians not supporting the mission/military operations into CBRND standards, criteria, doctrine, policy, and procedures for training, equipping, and protection. Analysis and RD&E to determine standards for equipping eligible civilians not supporting the mission/military operations for survival in a CBRN/TIM environment and includes supporting training, exercising, and evaluation criteria and programs are specified in the DOTLPF Assessment Summary. Standards, criteria, doctrine, policy, and procedures for CBRND protection of eligible civilians not supporting the mission/military operations do not address the application of presymptomatic prophylaxis and do not adequately address protection for the range of body types, ages, and physical capabilities inherent within a civilian population. Nor is the potential for CBRND for sustained CBRN/TIM environments.

- 1. Deficiency:** Eligible civilians not supporting the mission and military operations are not defined and adequately addressed.

Non-Materiel Solutions: *Doctrine:* Define eligible civilians not support the mission/military operations for CBRND and address in doctrine, policy, procedures, and TTPs. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians not supporting the mission/military operations.
- 2. Deficiency:** Training of non-mission support civilians to operate in CBRN/TIM hazards is not addressed in standards.

Non-Materiel Solutions: *Doctrine:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians not supporting the mission/military operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians not supporting the mission/military operations.
- 3. Deficiency:** Existing standards detailing eligibility, type of equipment, training, and other CBRN/TIM survival areas are inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and

conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians not supporting the mission/military operations.

4. **Deficiency:** Standards and procedures addressing protection equipment for the range of body types, ages, and physical capabilities inherent within a potential protection population are inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians not supporting the mission/military operations.

5. **Deficiency:** Standards are inadequate or fail to address other potential protected populations.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population.

6. **Deficiency:** Military-provided protective equipment does not adequately address the range of body types, ages, and physical capabilities inherent within a civilian populace.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate.

7. **Deficiency:** Doctrine, policy, standards, procedures, and TTPs do not adequately address training of civilian personnel.

Non-Materiel Solutions: *Doctrine:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians not supporting the mission/military operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians not supporting the mission/military operations.

8. **Deficiency:** CBRND exercises do not fully involve all personnel and activities.

Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel and activities in CBRND exercises. *Organization:* All affected entities are aware of and participate in comprehensive exercises. *Training:* All personnel (military and nonmilitary) are trained in appropriate CBRND protective measures. *Leadership:* Recognition of the value

of comprehensive exercises to enhance readiness, survival, and promote interaction between activities.

- 9. Deficiency:** CBRND exercises do not address sustained operations within a contaminated environment.

Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures. *Organization:* Ensure resources, taskings, and staff are in place or available to support civilians during sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate capabilities and activities for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, raining providing skills to manage operations in these circumstances, and willingness to implement necessary changes and activities to prepare for sustained CBRND operations.

- 10. Deficiency:** Nonmilitary personnel, although potentially at risk, are not integrated as participants in CBRND exercises.

Non-Materiel Solutions: *Doctrine:* Address CBRND of nonmilitary personnel in doctrine, policy, and procedures; and include CBRND preparatory activities such as training and exercises. *Organization:* Identify organization services required to support eligible civilians not supporting the mission/military operations. *Training:* Establish CBRND training, exercise, and evaluation standards, criteria, and programs for eligible civilians not supporting the mission/military operations. *Leadership:* Implement and manage CBRND training, equipping, protection, and exercising of eligible civilians not supporting the mission/military operations.

- 11. Deficiency:** DoD-level exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.

Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for development of Service-specific exercises and evaluations based upon joint exercise plans. *Leadership:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.

- 12. Deficiency:** There is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations and the integration of civilian personnel.

Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment, integrating eligible civilians not supporting the mission/military operations, into doctrine, policy, and procedures and require specific exercising and evaluations for these operations. *Training:* Train, exercise, and evaluate for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, raining providing skills to manage operations in these circumstances, and willingness to implement necessary changes and activities to prepare for sustained CBRND operations.

- 13. Deficiency:** Civilian personnel and operations are not adequately addressed in DOTLPF.

Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organization services and

activities necessary to support survivability of civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations not supporting the mission/military operations; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel not supporting the mission/military operations.

10.4.3.2 IMA Assessment Summary

N/A

10.5 Task SNSHLD 5: Establish standards, criteria, and procedures for training, equipping, and protecting MWAs from threat CBRN/TIM agents

10.5.1 Functional Area Analysis

10.5.1.1 Definition

To reduce the impact of CBRN/TIM releases or collateral ROTA on U.S. and allied-, friendly-, or nonaligned-nation MWAs. Standards and procedures address common and interoperable requirements and criteria for training (formal and unit level) of handlers and MWAs, particularly military working dogs (MWDs), to survive within a CBRN/TIM environment. The standards establish and define MWAs and specify the minimal level of protection required for MWDs and military working equines (MWEs). The standards for MWE further identify the circumstances in which protection is afforded against CBRN/TIM agents. The standards address the equipping of MWA-using units, handlers, and MWAs with MWA protective systems (individual and collective) for sustained survival within a CBRN/TIM environment. These include protective measures (materiel and nonmateriel) supporting operational requirements and affording MWA protection against expected threats. Standards and procedures outline protective equipment, medical/veterinary measures, and other programs supporting survivability, and specify the conduct and evaluation of assessment exercises that are focused upon CBRND operations to ensure readiness.

10.5.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (SN 3.4.4, SN 4.3.4, SN 5.1.1, SN 6.1, SN 7.5, SN 9, SN 9.1.3, SN 9.2.1).

10.5.1.2.1 Supported Task: N/A

10.5.1.2.2 Lateral Task: SNSHA 3

10.5.1.2.3 Supporting Task: N/A

10.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Some interoperability. (C2.2.6)

4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)

Civil

1. Correct interdepartmental/interagency relationship. (C3.1.1.3)

10.5.2 Functional Needs Analysis

10.5.2.1 Capability and Deficiency Assessment Summary

Table 10.5-1 discusses the absence of standards, criteria, and procedures for training, equipping, and protecting MWAs from threat CBRN/TIM agents. CJCS/joint staff promulgates and establishes comprehensive program of CBRN/TIM defense for MWAs including prophylaxis, training, equipment, processes, exercising and evaluation, and DOTLPF.

Current Capability and Deficiency

No capability. Deficiencies include the lack of CBRND protection of MWAs, particularly MWD. The overall current capability is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 10.5-1. SNSHLD 5: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capability¹	R ²	R ²	R ³	R ³	R ²	R ⁴	R ⁵	R ⁶	R ⁷	R ⁸	R ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	R	R	R	R	R	R	R	R	R	R	R	Y
Far-Term Overall Capability	R	R	R	R	R	R	R	R	R	R	R	Y

	FAA Measure	Scale
M1	Standards establish and define MWAs.	G: Standards define and specify CBRND requirements for all MWAs. Y: Standards define and specify CBRND requirements for predominant MWAs. R: CBRND standards are nonexistent or inadequately address MWAs.
M2	Standards address training MWA handlers and MWAs to survive CBRN/TIM hazards.	G: CBRND training standards detail requirements enabling survival of all MWAs. Y: CBRND training standards specify requirements enabling survival of predominant MWAs. R: CBRND training standards are nonexistent or inadequately address MWAs.
M3	Standards and procedures address equipping MWAs for survival within a CBRN/TIM environment.	G: CBRND standards address equipping all MWAs for survival. Y: CBRND standards and procedures specify equipment promoting survival of predominant MWAs. R: CBRND equipment standards and procedures are nonexistent or inadequately address survival of MWAs.
M4	Standards and procedures specifically address MWD protection and survival within a CBRN/TIM environment.	G: CBRND standards and procedures specify requirements and provide detailed guidance enabling survival of MWDs. Y: CBRND standards and procedures provide general guidance and requirements for survival of MWDs. R: CBRND standards and procedures do not address or are inadequate for survival of MWDs.
M5	Standards established for medical prophylaxis for MWAs that might encounter a CBRN/TIM environment.	G: CBRND medical prophylaxis standards for MWAs provide a minimum protection equivalent to protection afforded handlers. Y: CBRND medical prophylaxis standards for MWAs are limited and/or do not provide the equivalent level of protection as handlers. R: CBRND medical prophylaxis standards for MWAs are nonexistent or are inadequate.
M6	Protective equipment is available for MWAs.	G: CBRND protective equipment is available, allocated, and provides protection equivalent to handlers. Y: CBRND protective equipment for MWAs is allocated and limited to selected circumstances of protection (e.g., collective protection [COLPRO] for kenneling or IPE when away from COLPRO). R: CBRND protective equipment for MWAs is nonexistent or is inadequate.
M7	All MWA handlers and MWAs are trained to operate in CBRN/TIM hazards.	G: All MWAs and handlers are trained to promote survival in a toxic CBRN/TIM environment. Y: Predominant species MWAs and handlers are trained to promote survival in a toxic CBRN/TIM environment. R: MWA training for CBRND is nonexistent or inadequate.

M8	All base/facility/units conduct annual CBRND exercises.	<p>G: Annual CBRND exercises address sustained operations within a toxic CBRN/TIM environment and involve all personnel (military and civilian), MWAs, and activities as integral participants.</p> <p>Y: Annual CBRND exercises provide for limited MWA participation and address sustained operations within a toxic CBRN/TIM environment.</p> <p>R: Annual CBRND exercises are not conducted or do not address sustained operations within a CBRN/TIM environment, and do not realistically integrate MWAs.</p>
M9	CBRND exercises fully integrate MWA handlers and MWAs.	<p>G: CBRND exercises fully and realistically integrate MWAs and handlers.</p> <p>Y: CBRND exercises provide for limited integration of MWAs and handlers.</p> <p>R: CBRND exercises do not integrate or inadequately involve MWA handlers and MWAs.</p>
M10	DoD-level policy exists for CBRN/TIM protection of MWAs.	<p>G: DoD-level policies, procedures, and requirements for CBRND establish baseline minimums for MWA protection promoting survivability and continued resource application when and as appropriate.</p> <p>Y: DoD-level policies, procedures, and requirements for MWA CRND provide adequate guidance for protection of predominant MWAs.</p> <p>R: DoD-level policies, procedures, and requirements for CBRND of MWAs are nonexistent or inadequate.</p>
M11	DoD-level training standards exist for CBRN/TIM protection for MWAs.	<p>G: DoD-level CBRND training standards detail requirements enabling survival of all MWAs.</p> <p>Y: DoD-level CBRND training standards specify requirements enabling survival of predominant MWAs.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address MWAs.</p>
M12	DoD-level exercise evaluation criteria exist, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment. Service-specific exercises and evaluations are developed based upon the DoD and joint plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation requirements exist and include CBRN/TIM operations as components. Operations within a toxic CBRN/TIM environment are addressed in Service exercises and evaluations.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not address CBRN/TIM operations.</p>

¹ There is not effective DOTLPF in place to conduct this task.

² CBRN/TIM defense standards do not adequately address, or are nonexistent, for MWAs.

³ CBRN/TIM defense standards and procedures do not adequately address, or are nonexistent, for MWAs.

⁴ Protective equipment does not exist for MWAs.

⁵ MWAs are not equipped and trained to operate in, or survive, CBRN/TIM hazards.

⁶ Base, facilities, and units are required to conduct CBRND exercises. However, these exercises do not fully involve all personnel and activities. Nor do they address sustained operations within a contaminated environment. MWAs (particularly MWDs), although potentially at risk, are not integrated as participants.

⁷ MWAs are not equipped and trained to operate in, or survive, CBRN/TIM hazards.

⁸ DoD-level policies do not adequately address, or are nonexistent, for CBRN/TIM protection of MWAs.

⁹ DoD-level training standards do not adequately address, or are nonexistent, for CBRN/TIM protection of MWAs.

¹⁰ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercises and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercises/evaluations focusing upon sustained operations and the integration of MWAs.

10.5.3 Functional Solution Analysis

10.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with standards, criteria, and procedures for training, equipping, and protecting MWAs from threat CBRN/TIM agents. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions focus upon the establishment and operation of a CBRND programmatic area for MWAs with emphasis upon MWDs. CBRND standards, criteria, doctrine, policy, procedures, and TTPs fail to address the protection and survival of these assets. CBRND protective assets (including presymptomatic prophylaxis, individual protection, and collective protection) are not available or programmed. CBRND training, exercising, and evaluation do not include the protection of MWAs. The inability to ensure survivability of MWAs, particularly MWD, until relocated outside of the hazard area, to collective protection, or the hazard is resolved—not to continue operations within the hazard—is the core deficiency.

- 1. Deficiency:** CBRN/TIM defense standards and procedures do not adequately address, or are nonexistent, for MWAs, particularly MWDs.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, standards, and procedures CBRND protection of MWAs, particularly MWDs.
- 2. Deficiency:** Protective equipment does not exist for MWAs.
Non-Materiel Solutions: *Doctrine:* Develop plan for acquisition of CBRND protective equipment for MWDs.
- 3. Deficiency:** MWAs are not equipped and trained to operate in, or survive, CBRN/TIM hazards.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Institutional and unit training of handlers and MWAs for CBRND measures and activities is required. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).
- 4. Deficiency:** CBRND exercises do not fully involve all personnel and activities.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel, MWAs, and activities in CBRND exercises. *Organization:* Ensure that all affected entities are aware of and participate in comprehensive CBRND exercises. *Training:* Ensure that all personnel (military and nonmilitary) and MWAs are trained in appropriate CBRND protective measures. *Leadership:* Ensure recognition of the value of comprehensive exercises including MWAs to enhance readiness, survival, and promote interaction between activities.

- 5. Deficiency:** CBRND exercises do not address sustained operations within a contaminated environment.
Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures. *Organization:* Ensure resources, taskings, and staff are in place or available to support MWAs during sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate capabilities and protective activities for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, impact upon MWA availability, and training providing skills to manage operations in these circumstances, and willingness to implement necessary changes and activities to prepare for sustained CBRND operations.
- 6. Deficiency:** MWAs (particularly MWDs), although potentially at risk, are not integrated as participants in CBRND exercises addressing sustained operations within a contaminated environment.
Non-Materiel Solutions: *Doctrine:* Address CBRND of MWAs, with emphasis on MWDs, in doctrine, policy, and procedures and include CBRND preparatory activities such as training and exercises. *Organization:* Identify organization services required to support MWAs, with emphasis on MWDs, during sustained operations within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation standards, criteria, and programs for MWAs, with emphasis on MWDs. *Leadership:* Implement and manage CBRND training, equipping, protection, and exercising of MWAs, with emphasis on MWDs.
- 7. Deficiency:** DoD-level policies do not adequately address, or are nonexistent, for CBRN/TIM protection of MWAs.
Non-Materiel Solutions: *Doctrine:* Establish in DoD-level doctrine, policies, and guidance CBRND protective measures and activities for MWAs. *Leadership:* Awareness of criticality of MWAs for mission support and the conduct of operations and the need for MWD CBRND protective equipment, measures, and activities.
- 8. Deficiency:** DoD-level exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.
Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for development of Service-specific exercises and evaluations based upon joint exercise plans and include MWA CBRND measures and activities. *Leadership:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.
- 9. Deficiency:** There is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations and the integration of MWAs.
Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment, integrating MWAs, into doctrine, policy, and procedures and require specific exercising and evaluations for these operations. *Training:* Train, exercise, and evaluate for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, impact upon MWA availability, and training providing skills to manage operations in these circumstances and

willingness to implement necessary changes and activities to prepare for sustained CBRND operations.

10. Deficiency: There is not effective DOTLPF in place to conduct this task.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs and operations for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and MWA operations and conduct CBRND training, exercises, and evaluations.

Leadership: Implement and manage CBRND training, equipping, and protection of MWAs.

Facilities: Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

10.5.3.2 IMA Assessment Summary

N/A

10.6 Task SNSHLD 6: Establish standards, criteria, and procedures for training, equipping, and protecting all classes of supplies from contamination by threat CBRN/TIM agents

10.6.1 Functional Area Analysis

10.6.1.1 Definition

To reduce the impact of CBRN/TIM releases or collateral ROTA on U.S. and allied-, friendly-, or nonaligned-nation military equipment and supplies. Specifies common and interoperable standards addressing protection activities and resources for all classes of supplies. These include preparing forces to protect and apply equipment and supplies within threat CBRN/TIM environments and the provision of clear and understandable procedures. Resource protection includes the application of tailored protection to distinct equipment. The standards and procedures address

- training (formal and unit level) of personnel to apply CBRN/TIM protection to equipment and supplies to prevent contamination,
- equipping of units and identified equipment for operations within a CBRN/TIM environment, and
- specifying the conduct and evaluation of assessment exercises focused upon CBRND operations readiness.

10.6.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (SN 1.1.6, SN 1.2.3, SN 3.3.6, SN 3.4.4, SN 4.3.3, SN 5.2.3, SN 6.1, SN 7.5, SN 9, SN 9.1.2, SN 9.2.1, SN 9.2.2).

10.6.1.2.1 Supported Task: N/A

10.6.1.2.2 Lateral Task: SNSHA 3

10.6.1.2.3 Supporting Task: N/A

10.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)

2. Marginal to strong forces assigned. (C2.2.1)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.6.2 Functional Needs Analysis

10.6.2.1 Capability and Deficiency Assessment Summary

Table 10.6-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff promulgates and establishes the program of CBRN/TIM defense measures for equipment and supplies including coverings, training, coatings, materials, processes, exercising and evaluation, and DOTLPF.

Current Capability and Deficiency

Protection policies, standards, and criteria exist for CBRND protection of equipment and supplies but are generally limited to the housing of materiel in structures, two protective coatings designed for combat vehicles, the application of layers of plastic wrap for cargo in transit, and limited specific-purpose packagings. Deficiencies include inadequate or nonexistent interoperable standards, criteria, and procedures for the protection of all classes of supply. Overall current capability is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.6-1. SNSHLD 6: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current Overall Capability¹	R ²	R ³	R ³	R ³	R ⁴	R ⁵	R ⁶	R ⁷	R ³	Y ⁸	R ⁹	R ¹⁰	Y ¹¹
Near/Mid-Term Overall Capability	R	R	R	R	R	R	R	R	R	Y	R	R	Y
Far-Term Overall Capability	R	R	R	R	R	R	R	R	R	Y	R	R	Y

	FAA Measure	Scale
M1	Standards and procedures in place for protection of equipment and supplies from CBRN/TIM contamination.	<p>G: Established and applied standards and procedures provide clear and detailed guidance and requirements addressing the protection of equipment and supplies against contamination during sustained operations within a persistent CBRN/TIM environment.</p> <p>Y: Standards and procedures are adequate and address the protection of critical equipment and supplies against contamination during sustained operations within a CBRN/TIM environment.</p> <p>R: Standards and procedures are inadequate or nonexistent for the protection of equipment and supplies against CBRN/TIM contamination.</p>
M2	Common and interoperable standards exist for handling exposed and contaminated equipment and supplies.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the marking and handling of exposed and/or contaminated equipment and supplies and details required protective measures for tasked personnel and units.</p> <p>Y: General joint standards establish common guidelines for the marking and handling of exposed and/or contaminated equipment and supplies and identifies protective measures for tasked personnel and units.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the marking and handling of exposed and/or contaminated equipment and supplies, and to identify protective measures for tasked personnel and units.</p>
M3	Common and interoperable standards exist for safe application involved in protection of equipment and supplies.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the safe use of exposed and/or contaminated equipment and supplies and details required protective measures for applying personnel and units.</p> <p>Y: General joint standards establish common guidelines for the safe use of exposed and/or contaminated equipment and supplies and identifies protective measures for applying personnel and units.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the safe use of exposed and/or contaminated equipment and supplies, and to identify protective measures for applying personnel and units.</p>
M4	Common and interoperable standards exist for transporting exposed and contaminated equipment and supplies.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the safe transport of exposed and/or contaminated equipment and supplies and details required protective measures for transporting personnel, transport resources, and units.</p> <p>Y: General joint standards establish common guidelines for the safe transport of exposed and/or contaminated equipment and supplies and identifies protective measures for transporting personnel, transport resources, and units.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the safe transport of exposed and/or contaminated equipment and supplies, and to identify protective measures for transporting personnel, transport resources, and units.</p>

M5	Standards address training units and personnel to protect equipment and supplies from CBRN/TIM hazards.	<p>G: Training standards address the protection of all equipment and supplies, including assets not stored within facilities and tents, against contamination during sustained operations within a persistent CBRN/TIM environment.</p> <p>Y: Training standards address the protection of critical equipment and supplies, including assets not stored within facilities and tents, against contamination during sustained operations within a CBRN/TIM environment.</p> <p>R: Training standards are nonexistent or limited and/or inadequate for the protection of equipment and supplies, including assets not stored within facilities and tents, against CBRN/TIM contamination.</p>
M6	Standards and procedures address equipping distinct assets with tailored protection for a CBRN/TIM environment.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the identification and evaluation of at-risk assets (e.g., palletized cargo, aircraft support equipment, etc.) for mandatory equipment with tailored protection (e.g., asset-specific coverings, etc.) and the provision of procedures for their application against CBRN/TIM contamination.</p> <p>Y: Common guidelines are established for the provision of tailored protection of critical assets against CBRN/TIM contamination.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the provision of tailored CBRN/TIM protection of distinct assets.</p>
M7	Standards and procedures established for CBRN/TIM protective packing, containerizing, packaging, covering, and coating for equipment and supplies that might encounter contamination within a CBRN/TIM environment.	<p>G: Standards and procedures address the application of CBRN protective barrier movement and storage materials (e.g., packaging, coverings, coatings, etc.) to all equipment and supplies, including assets not generally stored within facilities and tents, against potential contamination during sustained operations within a persistent CBRN/TIM environment.</p> <p>Y: Standards and procedures address the use of CBRN protective barrier movement and storage materials to critical equipment and supplies, including assets not stored within facilities and tents, against potential contamination during sustained operations within a CBRN/TIM environment.</p> <p>R: Standards and procedures are nonexistent or limited and/or inadequate for the protection of equipment and supplies, including assets not stored within facilities and tents, against CBRN/TIM contamination.</p>
M8	Protective packing, containers, packaging, covering, and coatings available for all equipment and supplies.	<p>G: CBRN protective barrier movement and storage materials (e.g., packaging, coverings, coatings, etc.) are stockpiled and readily available for the protection of all equipment and supplies potentially subject to exposure/contamination throughout sustained operations within a CBRN/TIM environment.</p> <p>Y: CBRN protective barrier movement and storage materials (e.g., packaging, coverings, coatings, etc.) are available for the protection of critical assets throughout sustained operations within a CBRN/TIM environment.</p> <p>R: CBRN protective barrier movement and storage materials (e.g., packaging, coverings, coatings, etc.) are inadequate or nonexistent to protect equipment and supplies against contamination within a CBRN/TIM environment.</p>
M9	All force personnel are trained to operate in CBRN/TIM hazards using contaminated and uncontaminated assets.	<p>G: Overarching single set of training standards specify common and interoperable requirements for the safe handling and application of contaminated and uncontaminated equipment/supplies during sustained operations within a CBRN/TIM environment.</p> <p>Y: General joint training standards establish common guidelines for the safe use of uncontaminated and/or contaminated equipment and supplies within a CBRN/TIM environment and identifies protective measures for applying personnel and units.</p> <p>R: Common and interoperable training standards are inadequate or nonexistent for the safe use of uncontaminated and/or contaminated equipment and supplies within a CBRN/TIM environment.</p>

M10	All base/facility/units conduct annual CBRND exercises.	<p>G: Annual CBRND exercises fully integrate all personnel and activities and address sustained operations within a CBRN/TIM environment and includes the protection and, when appropriate, application of contaminated or exposed material involving all classes of equipment and material.</p> <p>Y: Annual CBRND exercises fully involve military and direct mission civilian support personnel/functions and address sustained operations within a toxic CBRN/TIM environment, to include the protection and application of exposed/contaminated critical equipment and material.</p> <p>R: Annual CBRND exercises are not conducted or do not address sustained operations within a CBRN/TIM environment, and do not generally integrate the protection and application of exposed/contaminated equipment and material.</p>
M11	DoD-level policies exist for CBRN/TIM protection of equipment and supplies.	<p>G: DoD-level policies, procedures, and requirements for CBRND establish baseline minimums for the protection of equipment and supplies, including assets which may not be sheltered, against exposure/contamination during sustained operations within a toxic CBRN/TIM environment.</p> <p>Y: DoD-level policies, procedures, and requirements for protection of equipment and supplies provide adequate guidance for the critical assets against exposure/contamination during sustained operations within a toxic CBRN/TIM environment.</p> <p>R: DoD-level policies, procedures, and requirements for CBRND of equipment and supplies are nonexistent or inadequate.</p>
M12	DoD-level training standards exist for CBRN/TIM protection of equipment and supplies.	<p>G: DoD-level CBRND training standards detail requirements and measures for protection of all equipment and supplies against CBRN/TIM exposure/contamination.</p> <p>Y: DoD-level CBRND training standards specify requirements and measures for protection of critical equipment and supplies against CBRN/TIM exposure/contamination.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the protection of equipment and supplies against CBRN/TIM exposure/contamination.</p>
M13	DoD-level exercise evaluation criteria, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment and incorporates the protection and, when appropriate, application of contaminated or exposed material involving all classes of equipment and material. Service-specific exercises and evaluations are developed based upon the DoD and joint plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation requirements exist and include CBRN/TIM operations as components. Exercise criteria includes exposed and/or contaminated equipment and/or supplies. Operations within a toxic CBRN/TIM environment are addressed in Service exercises and evaluations.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not address CBRN/TIM operations, to include exposed/contaminated equipment and supplies.</p>

¹ There is not effective DOTLPF in place to conduct task.

² Standards and procedures are inadequate for protection of equipment and supplies from CBRN/TIM contamination. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two. CBRN/TIM protective packagings are limited or not identified. Standards and procedures applying commonly available materials for CBRN/TIM protection are limited or nonexistent.

³ Common and interoperable standards are inadequate or nonexistent for handling exposed and contaminated equipment and supplies other than decontamination.

⁴ Equipment and supplies protection is generally seen as placed under coverings (e.g., buildings, tents, tarps, etc.). However, standards do not address open stored material. Units and personnel training is limited, generally a short briefing on covering, and not adequate to preclude unnecessary loss of assets.

⁵ Tailored protection (e.g., customized coverings for palletized cargo or certain types of equipment) are not addressed in standards and procedures.

⁶ Equipment and supplies protection is generally seen as placed under coverings (e.g., buildings, tents, tarps, etc.). However, standards do not address open stored material. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two. CBRN/TIM protective packagings are limited or not identified. Standards and procedures applying commonly available materials for CBRN/TIM protection are limited or nonexistent.

⁷ CBRN/TIM protective packing, containers, packaging, coverings, and coatings are generally not identified, not in sufficient quantities when identified, and not readily available. However, CBRN/TIM protective packing, containers, and packaging generally do not exist. Coatings are limited to two, and one covering exists.

⁸ Base, facilities, and units are required to conduct CBRND exercises. However, these exercises do not fully involve all personnel and activities. Nor do they address sustained operations within a contaminated environment. The protection of all classes of equipment and material are not generally exercised to include post-contamination activities such as decontamination, food safety, etc.

⁹ DoD-level policies do not adequately address, or are nonexistent, for CBRN/TIM protection of all classes of equipment and supplies.

¹⁰ DoD-level training standards do not adequately address, or are nonexistent, for CBRN/TIM protection of equipment and supplies beyond expedient covering and decontamination.

¹¹ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations and protection of equipment and supplies.

10.6.3 Functional Solution Analysis

10.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for CBRND protection of all classes of supply. The deficiencies can be addressed with non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include research, development, test, evaluation and acquisition (RDTE&A) to address protection of equipment and supplies from CBRN/TIM contamination. Establish in doctrine, policy, procedures, and TTPs the solutions, standards, criteria, and information identified by RDTE&A efforts for joint application, planning, training, and integration into CBRND exercises and evaluations.

- 1. Deficiency:** Standards and procedures are inadequate for protection of equipment and supplies from CBRN/TIM contamination.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, standards, and procedures CBRND protection of all classes of supplies, to include the use of CBRND protective packagings, coverings, and coatings.
- 2. Deficiency:** Common and interoperable standards are inadequate or nonexistent for handling exposed and contaminated equipment and supplies other than decontamination.
Non-Materiel Solutions: *Doctrine:* Promulgate, establish, and enforce the application of overarching joint standards for handling exposed and contaminated equipment and supplies through other than decontamination (i.e., continued use to support operations in selected circumstances, segregation and marking, etc.). *Training:* Include CBRND protection of materiel task performance within a CBRN/TIM environment as an essential requirement element of formal and unit training. *Leadership:* Leadership awareness of measures to protect all classes of supplies from CBRN/TIM contamination and joint standards for handling exposed and contaminated equipment and supplies.
- 3. Deficiency:** Standards do not address open stored material.
Non-Materiel Solutions: *Doctrine:* Promulgate and establish doctrine, policy, standards, and procedures addressing the protection of materiel stored in the open.
- 4. Deficiency:** Units and personnel training is limited, generally a short briefing on covering, and not adequate to preclude unnecessary loss of assets.
Non-Materiel Solutions: *Training:* Train, exercise, and evaluate the force against the standards (see Footnotes 1, 2, and 5 above) for protection of materiel, identification of contaminated materiel, and the handling of CBRN/TIM-contaminated resources. *Leadership:* Enforce compliance with established standards (see “Doctrine”) for CBRN/TIM protective measures and activities for all classes of materiel.
- 5. Deficiency:** Tailored protection (e.g., customized coverings for palletized cargo or certain types of equipment) are not addressed in standards and procedures.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, procedures, and standards addressing the application of tailored CBRND protective coverings for specific resources and applications. *Training:* Train, exercise, and evaluate the force for application of tailored CBRND protective coverings. *Leadership:* Implement and manage the provision of tailored protective coverings for selected materiel, training of force, and the appropriate application of the CBRND protective coverings.

6. **Deficiency:** CBRN/TIM protective coverings are limited in coverage and quantities.
Non-Materiel Solutions: *Doctrine:* Develop RDTE&A plan for protection of equipment and supplies against CBRN/TIM contamination.
7. **Deficiency:** CBRN/TIM protective packing, containers, packaging, coverings, and coatings are generally not identified, not in sufficient quantities when identified, and not readily available.
Non-Materiel Solutions: *Doctrine:* Integrate protective measures, assets, and activities for CBRND of all classes of supplies into doctrine, policy, and procedures. *Leadership:* Implement, manage, and enforce the application of CBRND protective measures, assets, and activities for all classes of supplies. Also, awareness of need for materiel protection.
8. **Deficiency:** CBRND exercises do not fully involve all personnel and activities.
Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel, all classes of supplies, and activities in CBRND exercises. *Organization:* All affected entities are aware of and participate in comprehensive CBRND exercises. *Training:* All personnel (military and nonmilitary) are trained in protection of materiel under their responsibility and appropriate CBRND protective measures and materiel. *Leadership:* Recognition of the value of comprehensive exercises to enhance readiness, survival, and promote interaction between activities.
9. **Deficiency:** CBRND exercises do not address sustained operations within a contaminated environment.
Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment into doctrine, policy, and procedures, to include the protection of materiel from contamination and the application of contaminated material to support operations. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support protection of material during sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate capabilities and protective activities for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, training providing skills to manage operations in these circumstances, and willingness to implement necessary changes and activities to prepare for sustained CBRND operations.
10. **Deficiency:** The protection of all classes of equipment and material are not generally exercised to include post-contamination activities such as decontamination, food safety, etc.
Non-Materiel Solutions: *Doctrine:* Address CBRND protection of equipment material in doctrine, policy, and procedures; and include CBRND preparatory activities such as training

and exercises. *Organization:* Identify organizational resources required to provide CBRND protection of equipment and supplies. *Training:* Establish CBRND training, exercise, and evaluation standards, criteria, and programs for protection of equipment and supplies. *Leadership:* Implement and manage CBRND training, equipping, protective measures, and exercising.

- 11. Deficiency:** DoD-level policies do not adequately address, or are nonexistent, for CBRN/TIM protection of all classes of equipment and supplies.
Non-Materiel Solutions: *Doctrine:* Review and enhance DoD-level doctrine, policies, and guidance on CBRND protective measures to prevent contamination, and the operational application of contaminated assets of, all classes of supplies. *Leadership:* Develop recognition and awareness of need to preclude contamination where possible and discourse on operational application of contaminated material, especially for operations in austere environments at extremes of LOC or operations otherwise logistically constrained.
- 12. Deficiency:** DoD-level exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.
Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for development of Service-specific exercises and evaluations based upon joint exercise plans. *Leadership:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.
- 13. Deficiency:** There is a need for distinct CBRN/TIM-specific exercise/evaluations focusing upon sustained operations and protection of equipment and supplies.
Non-Materiel Solutions: *Doctrine:* Incorporate sustained operations within a CBRN/TIM environment, protection of equipment and supplies, into doctrine, policy and procedures and require specific exercising and evaluation for these operations. *Training:* Train, exercise, and evaluate for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality for potential sustained operations within a CBRN/TIM environment, impact upon availability of equipment and supplies, and training providing skills to manage operations in these circumstances, and willingness to implement necessary changes and activities to prepare for sustained CBRND operations.
- 14. Deficiency:** There is not effective DOTLPF in place to conduct task.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing protection of material and supplies from CBRN/TIM contamination and the operational application of contaminated resources. *Organization:* Identify organization services and activities necessary to provide CBRND protection of equipment and supplies. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for protection of all classes of supply; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, protective measures, and exercising.

10.6.3.2 IMA Assessment Summary

N/A

10.7 Task SNSHLD 7: Establish standards, criteria, and procedures for hazardous or contaminated materials and samples marking, packing, storage, handling, and transportation

10.7.1 Functional Area Analysis

10.7.1.1 Definition

To reduce the potential for secondary contamination/release of hazardous or contaminated materials and samples to U.S., allied, friendly, or nonaligned military forces and civilians, MWAs, and equipment, supplies, and facilities. Policy and standards address requirements and criteria for training (formal and unit level) of personnel to package, mark, handle, transport, and store hazardous or contaminated materials and samples. Addresses common and interoperable standards and procedures specifying protection activities and resources for hazardous or contaminated materials and samples. The standards and procedures address

- equipping and preparing forces to apply containment packing and packaging/containers;
- applying required CBRN/TIM protective equipment and measures for handling, transporting, and storing;
- specifying the conduct and evaluation of assessment exercises to ensure readiness; and
- transporting CBRN/TIM-exposed or -contaminated material across U.S., host nation, third-country, or international airspace, territory, or waters.

10.7.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 1.1.6, SN 1.2.3, SN 3.3.6, SN 3.4.4, SN 4.3.3, SN 5.2.3, SN 6.1, SN 7.5, SN 9, SN 9.1.2, SN 9.2.1, SN 9.2.2).

10.7.1.2.1 Supported Task: N/A

10.7.1.2.2 Lateral Task: SNSHA 3

10.7.1.2.3 Supporting Task: N/A

10.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)

2. Marginal to strong forces assigned. (C2.2.1)
3. Some interoperability. (C2.2.6)
4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)
6. Sufficient deployed supplies. (C2.8.2)
7. Slow pipeline responsiveness. (C2.8.3.1)
8. Limited prepositioned materiel. (C2.8.4)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support (C3.1.2.3)

10.7.2 Functional Needs Analysis

10.7.2.1 Capability and Deficiency Assessment Summary

Table 10.7-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff promulgates, establishes, and implements standards, criteria, and joint training for the safe management of hazardous or contaminated materials. Includes marking, packing, storing, handling, transporting, and other related activities.

Current Capability and Deficiency

International standards and procedures exist for hazardous or contaminated material and samples. These often form the basis for internal national codes. Primary duty personnel in selected specialties (e.g., epidemiology, hazardous materials, laboratory, and others) are generally trained in international and U.S. national standards and procedures as outlined in DoD and Service directives and guidelines. Deficiencies include training of augmentation/additional duty personnel, preparatory activities, and availability of packing/containers/packaging. Overall current assessment is “green.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 10.7-1. SNSHLD 7: Capability and Deficiency Assessment

Capability: CJCS— Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19
Current Overall Capability¹	G ²	G ²	G ³	R ²	Y ⁴	G ⁴	G ⁴	Y ⁵	Y ⁶	G ⁷	G ⁵	G ⁵	G ⁵	G ⁸	G ⁹	Y ⁸	Y ¹⁰	G ¹¹	Y ¹²
Near/Mid-Term Overall Capability	G	G	G	R	Y	G	G	Y	Y	G	G	G	G	G	G	Y	Y	G	Y
Far-Term Overall Capability	G	G	G	R	Y	G	G	Y	Y	G	G	G	G	G	G	Y	Y	G	Y

	FAA Measure	Scale
M1	International standards and procedures exist for packaging and containment of hazardous or contaminated material and samples.	<p>G: Internationally accepted standards and procedures exist for the packaging and containment of hazardous or infectious materials crossing international borders and are applicable to CBRN-exposed/contaminated material.</p> <p>Y: Internationally accepted standards and procedures exist for the packaging and containment of selected CBRN-exposed/contaminated material and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for packaging and containment for international movement of CBRN-exposed/contaminated material.</p>
M2	International standards and procedures exist for marking and identification of hazardous or contaminated material and samples.	<p>G: Internationally accepted standards and procedures exist for the marking and identification of hazardous or infectious materials crossing international borders and are applicable to CBRN-exposed/contaminated material.</p> <p>Y: Internationally accepted standards and procedures exist for the marking and identification of selected CBRN-exposed/contaminated material and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for marking and identification for the international movement of CBRN-exposed/contaminated material.</p>
M3	International standards and procedures exist for storage of hazardous or contaminated material and samples.	<p>G: Internationally accepted standards and procedures exist for the storage of hazardous or infectious materials during crossing of international borders and are applicable to CBRN-exposed/contaminated material. These standards and procedures frequently form the basis of internal national codes which are applicable for storage within a nation.</p> <p>Y: Internationally accepted standards and procedures exist for the storage of selected CBRN-exposed/contaminated material and are restricted to specifically identified international border movements. These standards and procedures may form the basis of internal national codes applicable to storage within a nation.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for storage during the international movement of CBRN-exposed/contaminated material and are not generally applied to internal national codes applicable for storage within a nation.</p>

M4	International standards and procedures exist for transport of hazardous or contaminated material and samples including across international boundaries.	<p>G: Internationally accepted standards and procedures exist for the transport of hazardous or infectious materials crossing international borders and are applicable to CBRN-exposed/contaminated material.</p> <p>Y: Internationally accepted standards and procedures exist for the transport of selected CBRN-exposed/contaminated material and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for the international movement of CBRN-exposed/contaminated material across international boundaries.</p>
M5	DoD-level training standards exist for packaging and containment of hazardous or contaminated material and samples.	<p>G: DoD-level CBRND training standards detail requirements and measures for the packaging and containment of CBRN/TIM hazardous or contaminated material and samples.</p> <p>Y: DoD-level CBRND training standards provide general requirements and measures for the packaging and containment of CBRN/TIM hazardous or contaminated material/samples.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the packaging and containment of CBRN/TIM hazardous or contaminated material and samples.</p>
M6	DoD-level training standards exist for marking and identification of hazardous and contaminated material and samples.	<p>G: DoD-level CBRND training standards detail requirements for the marking and identification of CBRN/TIM hazardous or contaminated material and samples.</p> <p>Y: DoD-level CBRND training standards general requirements exist for the marking and identification of CBRN/TIM hazardous or contaminated material/samples.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the marking and identification of CBRN/TIM hazardous or contaminated material and samples.</p>
M7	DoD-level training standards exist for storage of hazardous and contaminated material and samples.	<p>G: DoD-level CBRND training standards detail requirements for the safe storage of CBRN/TIM hazardous or contaminated material and samples.</p> <p>Y: DoD-level CBRND training standards general requirements exist for the safe storage of CBRN/TIM hazardous or contaminated material/samples.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe storage of CBRN/TIM hazardous or contaminated material and samples.</p>
M8	DoD-level training standards exist for transport of hazardous or contaminated material and samples.	<p>G: DoD-level CBRND training standards detail requirements for the safe transport of CBRN/TIM hazardous or contaminated material and samples.</p> <p>Y: DoD-level CBRND training standards general requirements exist for the safe transport of CBRN/TIM hazardous or contaminated material/samples.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe transport of CBRN/TIM hazardous or contaminated material and samples.</p>
M9	DoD-level exercise evaluation criteria exist, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment and incorporates the preparation and movement of CBRN/TIM hazardous or contaminated material and samples. Service-specific exercises and evaluations are developed based upon the DoD and joint exercise plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation general requirements exist and include CBRN operations as components. Service-specific exercises and evaluations do not fully and sequentially address the entire process involving the preparation, storage, handling, and movement of CBRN/TIM hazardous or contaminated material and samples.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not address CBRN/TIM operations.</p>

M10	Standards and procedures in place for packaging and containment of hazardous or contaminated material and samples.	<p>G: DoD/joint standards and procedures detail requirements for the packaging and containment of hazardous or contaminated material and samples. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide general guidance for the packaging and containment of hazardous or contaminated material and samples. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Standards and procedures are inadequate or nonexistent for the packaging and containment of hazardous or contaminated material and samples.</p>
M11	Common and interoperable standards for handling hazardous or contaminated material and samples exist.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe handling of hazardous or contaminated material and samples. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe handling of hazardous or contaminated material and samples. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe handling of hazardous or contaminated material and samples.</p>
M12	Common and interoperable standards for safe storage of hazardous or contaminated material and samples exist.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe storage of hazardous or contaminated material and samples. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe storage of hazardous or contaminated material and samples. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe storage of hazardous or contaminated material and samples.</p>
M13	Common and interoperable standards for transporting hazardous or contaminated material and samples exist.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe transport of hazardous or contaminated material and samples. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe transport of hazardous or contaminated material and samples. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe transport of hazardous or contaminated material and samples.</p>
M14	Standards address training units and personnel to pack, containerize/ package, mark, handle, and transport hazardous or contaminated material or samples.	<p>G: Training standards address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material/samples.</p> <p>Y: Training standards generally address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material/samples.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material and samples.</p>

M15	Standards and procedures address equipping units and personnel packing, storing, handling, or transporting hazardous or contaminated material or samples with CBRN/TIM protective equipment.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the protection of personnel and activities performing the preparation, storage, handling, and transport of hazardous or contaminated material/samples.</p> <p>Y: Common guidelines are established for the provision of protection of personnel and activities performing logistical functions associated with hazardous or contaminated material/samples.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the provision of protection of personnel and activities associated with functions involving the preparation, storage, handling, and transport of hazardous or contaminated material/samples.</p>
M16	All applicable personnel trained to pack, containerize/package, store, transport, mark, and identify hazardous or contaminated material and samples.	<p>G: Training standards address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material/samples by all applicable personnel (primary and augmentation).</p> <p>Y: Training standards address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material/samples by personnel with these as routine responsibilities.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective barrier materials and assets, identification and marking, and the safe handling and transport of hazardous or contaminated material and samples by personnel subject to perform these tasks.</p>
M17	All applicable personnel equipped with protective equipment to pack, containerize/package, handle, and transport hazardous and contaminated material and samples.	<p>G: All personnel subject to perform tasks associated with the preparation, storage, handling, and/or transport of hazardous and contaminated material and samples are appropriately equipped.</p> <p>Y: Designated personnel with routine responsibilities to perform preparation, storage, handling, and/or transport of hazardous and contaminated material and samples are appropriately equipped.</p> <p>R: Protective equipment assets are inadequate or nonexistent for the provision of protection of personnel possessing routine functions involving the preparation, storage, handling, and transport of hazardous or contaminated material/samples.</p>
M18	Protective packing, containers, and packaging available for hazardous or contaminated material and samples.	<p>G: CBRN protective barrier movement and storage materials (e.g., packaging, containers, etc.) are readily available for the movement of hazardous or contaminated material and samples.</p> <p>Y: CBRN protective barrier movement and storage materials (e.g., packaging, containers, etc.) are available for the movement of selected material and samples.</p> <p>R: CBRN protective barrier movement and storage material is nonexistent or not available to support the movement of hazardous or contaminated material and samples.</p>
M19	All base/facility/unit conduct annual CBRND exercises.	<p>G: Annual CBRND exercises fully integrate all personnel and activities and address sustained operations within a CBRN/TIM environment and includes the preparation, storage, handling, and transport of hazardous or contaminated material and samples by all applicable personnel.</p> <p>Y: Annual CBRND exercises fully involve military and direct mission civilian support personnel/functions and address operations within a toxic CBRN/TIM environment, to include aspects of the preparation, storage, handling, and transport of hazardous or contaminated material and samples by personnel possessing routine, nonemergency functions involving these activities.</p> <p>R: Annual CBRND exercises are not conducted or do not address operations within a CBRN/TIM environment and do not generally integrate the preparation, storage, handling, or transport of hazardous or contaminated material and samples.</p>

¹ Effective DOTLPP is in place for the conduct of this task by primary duty personnel whose duties include the performance of the task. DOTLPP is inadequate for augmentation or additional duty personnel tasked to accomplish these functions. Nor is general knowledge DOTLPP for recognition of a potential hazard using international markings provided to the general force.

² Current international standards address only fully contained (packaged) hazardous materials and samples. There is a lack of standards for shipping contaminated items that cannot be completely encapsulated to contain the associated hazards. No international standards have been established providing acceptable threshold levels of contamination. Without established maximum contamination allowances, diplomatic clearances for overflight and landings may be denied for the air transport of contaminated and formerly contaminated aircraft and cargo. Without overflight and landing clearances, the air shipment of contaminated or formerly contaminated cargo will be significantly impeded. Internationally accepted standards exist for the packaging, handling, movement, and marking of hazardous or infectious materials crossing international borders. These are promulgated under the auspices of the United Nations. Air transported material is governed by the International Civil Aviation Organization Technical Instructions (ICAO TI) on the Safe Transport of Dangerous Goods by air augmenting Annex 18 to the Convention on International Civil Aviation. Maritime transported materials are governed by the International Maritime Dangerous Goods (IMDG) Code mandated by Chapter 7 of the International Convention for the Safety of Life at Sea (SOLAS). Note: Not all chapters of the IMDG are mandatory. Infectious material is governed under the World Health Organization (WHO) promulgated International Health Regulations of 1969 (as amended). Codes and standards are also promulgated by the International Atomic Energy Agency (IAEA). The primary two documents are the Code of Conduct on the Safety and Security of Radioactive Sources and the International Atomic Energy Regulations for the Safe Transport of Radioactive Materials. All the international standards provide instructions on the handling and marking of hazardous and infectious material. However, additional requirements may be imposed by individual countries upon material identified, destined, transshipped, within or pass through/over their borders.

³ International standards address the movement of material across international boundaries. Storage requirements generally address storage within transport means. Storage requirements are generally within the purview of the host country and its standards. Many countries, however, do use the international standards and recommendations as a basis for their internal codes.

⁴ Training standards exist for primary duty personnel performing cargo movement activities. However, primary packaging and containment of contaminated material and samples is the responsibility of the initiating activity (e.g., Technical Escort Unit [TEU], medical facility, CBRN/TIM survey and sampling, field lab, etc.). The correct marking and identification is dependent upon notification and initial marking/identification actions by the preparing activity. These personnel may, or may not, be trained in required packaging, containment, marking, and identification of collected material and samples.

⁵ Training standards exist for primary duty personnel performing cargo movement activities. However, primary packaging and containment of contaminated material and samples is the responsibility of the initiating activity (e.g., TEU, medical facility, CBRN/TIM survey and sampling, field lab, etc.). The correct marking and identification is dependent upon notification and initial marking/identification actions by the preparing activity. These personnel may or may not be trained in required packaging, containment, marking, and identification of collected material and samples. There are no established procedures or training standards to address the interior contamination of airlift aircraft in the event of agent release. Interior decontamination capabilities are inadequate. Therefore, training standards to address this deficient area are also inadequate.

⁶ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations that include the packing, marking, and movement of hazardous/infections material and samples.

⁷ Standards and procedures existing under Department of Transportation, Occupational Safety and Health Administration (OSHA), and Centers for Disease Control (CDC) regulations and requirements. DoD standards and procedures incorporate these requirements. However, the standards and procedures are generally known and applied by primary duty personnel. Implementation by Services is guided by Service directives and guidelines developed from DoD requirements. Service directives and guidelines are unique to the Service, although based upon a common foundation.

⁸ Standards and procedures detailed by Department of Transportation, OSHA, and CDC regulations and requirements. DoD standards and procedures incorporate these requirements. However, only primary duty personnel performing these functions are trained, knowledgeable, and able to apply the standards. Training by Services is guided by Service directives and guidelines developed from DoD and Service requirements. Primary duty personnel whose field does not include these tasks in their specialty description may not be trained to perform these functions. Training to recognize a potential hazard through identification of international markings is not provided to the general force. Training of augmentation and additional duty personnel to accomplish these tasks is generally minimal and inadequate.

⁹ Standards and procedures detailed by Department of Transportation, OSHA, and CDC regulations and requirements. DoD standards and procedures incorporate these requirements. However, the standards and procedures are generally known and applied by primary duty personnel. Equipping is dependent upon known requirements.

¹⁰ Personnel in a field possessing a task for this function in their specialty description may not be trained and equipped to accomplish the task.

¹¹ Protective packing, containers, and packaging for hazardous or contaminated material and samples is generally available to those whose primary function includes the preparation and storage of this material.

¹² Base, facilities, and units are required to conduct CBRND exercises. However, these exercises do not generally include activities necessitating the packing, marking, storage, and movement of hazardous or contaminated material and samples.

10.7.3 Functional Solution Analysis

10.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for hazardous or contaminated material and samples marking, packing, storage, handling, and transportation. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include addressing in doctrine, policy, and procedures the training of personnel performing augmentation or direct support functions (e.g., preparation, storing, moving, handling, transporting, etc.) of hazardous, contaminated, or infectious material and incorporating standards into institutional and unit training, exercises, and evaluations for all personnel and activities performing these tasks and functions (regardless of whether primary responsibility or support). The inclusion in doctrine, policy, procedures, and TTPs recognition training and knowledge of all force personnel of international markings identifying hazardous, contaminated, or infectious material provides early identification of hazards and appropriate actions.

- 1. Deficiency:** Non–primary duty personnel may, or may not, be trained in required packaging, containment, marking, and identification of collected material and samples.
Non-Materiel Solutions: *Training:* Personnel performing augmentation or direct support functions (e.g., storing, moving, handling, transporting, etc.) of hazardous, contaminated, or infectious material require training commensurate with their responsibilities. *Leadership:* Ensure all personnel identified in “Training” are trained and knowledgeable.
- 2. Deficiency:** The correct marking and identification is dependent upon notification and initial marking/identification actions by the preparing activity.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine, policies, and procedures for marking and identification actions by preparing activities. *Training:* Personnel performing preparation, storage, movement, handling, transport, etc., of hazardous, contaminated, or infectious material are fully trained and evaluated for correct marking and identification of these materials. *Leadership:* Ensure compliance with standards, procedures, and requirements for the preparation, storage, movement, handling, transport, and other associated actions for hazardous, contaminated, or infectious material, including marking and identification.
- 3. Deficiency:** DoD-level training standards do not exist for non–primary duty personnel performing hazardous/contaminated cargo movement and transport activities.
Non-Materiel Solutions: *Doctrine:* Adjust existing doctrine, policies, and procedures to require all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material are trained to standards. *Training:* Incorporate standards into institutional and unit training, exercises, and evaluations for all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with

hazardous, contaminated, or infectious material. *Leadership*: Enforcement of standards and management of training to ensure readiness of all personnel and activities to safely perform their tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material.

4. **Deficiency**: DoD-exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.

Non-Materiel Solutions: *Doctrine*: Reinforce existing doctrine and policy for development of Service-specific exercises and evaluations based upon joint exercise plans and include the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material. *Leadership*: Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.

5. **Deficiency**: There is a need for distinct CBRN/TIM-specific exercise/evaluations that include the packing, containerization/packaging, marking, handling, and transporting of hazardous or contaminated material or samples

Non-Materiel Solutions: *Doctrine*: Incorporate the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material into exercises and evaluations criteria and requirements. *Training*: Train, exercise, and evaluate the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material. *Leadership*: Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material.

6. **Deficiency**: Common and interoperable standards for safe packaging, containment, handling, and storage of hazardous or contaminated material and samples are generally known and applied by primary duty personnel only.

Non-Materiel Solutions: *Training*: Ensure all personnel, regardless of whether primary responsibility or support, performing preparation, storage, movement, handling, transport, etc., of hazardous, contaminated, or infectious material, are fully trained and evaluated for application of common and interoperable standards for the safe packaging, containment, handling, storage, and transport of hazardous or contaminated material and samples including marking and identification of these materials. *Leadership*: Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel identified in “Training” are trained and comply with requirements.

7. **Deficiency**: Personnel in a field possessing a task to pack, containerize/package, handle, and transport hazardous and contaminated material and samples in their specialty description may not be trained and equipped to accomplish the task.

Non-Materiel Solutions: *Training*: Train, exercise, and evaluate all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material, are trained to standards.

Leadership: Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel are properly equipped, adequately trained, and fully comply with requirements.

- 8. Deficiency:** Base/facility annual CBRND exercises do not generally include activities necessitating the packing, marking, storage, and movement of hazardous or contaminated material and samples.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious materials into CBRND exercises and evaluations criteria and requirements. *Organization:* Ensure resources, taskings, and staff are in place or available to support the safe preparation, storage, movement, handling, transport, and other organization assigned tasks associated with hazardous, contaminated, or infectious materials. *Training:* Train, exercise, and evaluate capabilities and activities for the safe preparation, storage, movement, handling, transport, and other organization assigned tasks associated with hazardous, contaminated, or infectious materials. *Leadership:* Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel are properly equipped, adequately trained, fully comply with requirements, and are prepared and ready to perform the tasks and activities.

- 9. Deficiency:** DOTLPF is inadequate for augmentation or additional duty personnel tasked to accomplish these functions.

Non-Materiel Solutions: *Doctrine:* Adjust existing doctrine, policies, and procedures to require all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material are trained to standards. *Organization:* Ensure resources, taskings, and staff are in place or available to support the safe preparation, storage, movement, handling, transport, and other organization assigned tasks associated with hazardous, contaminated, or infectious materials. *Training:* Incorporate standards into institutional and unit training, exercises, and evaluations for all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material. *Leadership:* Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel are properly equipped, adequately trained, fully comply with requirements, and are prepared and ready to perform the tasks and activities.

- 10. Deficiency:** General knowledge DOTLPF for recognition of a potential hazard using international markings is not provided to the general force.

Non-Materiel Solutions: *Training:* Establish recognition training of all force personnel of international markings identifying hazardous, contaminated, or infectious material. *Leadership:* Ensure all subordinate personnel are trained, knowledgeable, and are able to

correctly interpret international markings identifying hazardous, contaminated, or infectious material.

- 11. Deficiency:** Absence of international standards for maximum allowable levels of contamination for transportation of contaminated cargo through sovereign airspace could result in the denial of overflight and landing clearance to contaminated aircraft and cargo.
- Non-Materiel Solutions:** *Doctrine:* Revise current doctrine to emphasize the risk to intertheater movement of aircraft and cargo posed by exposure to chemical and biological warfare agents. Stress the importance of contamination avoidance to the preservation of intertheater airlift capabilities. *Training:* Incorporate advanced CBRN contamination avoidance and control measures into joint and Service air mobility education and training courses. *Leadership:* Ensure that key decision makers and personnel in positions of leadership are aware of the ramification of aircraft and equipment contamination and protective measures to mitigate the risk to air mobility operations.

10.7.3.2 IMA Summary

N/A

10.8 Task SNSHLD 8: Establish standards, criteria, and procedures for safe handling and safely transporting CBRN/TIM-exposed or -contaminated casualties and MWAs

10.8.1 Functional Area Analysis

10.8.1.1 Definition

To ensure the efficient and consistent application of standards for safe handling and transport of exposed or contaminated casualties following a CBRN/TIM release. This task includes

- standards and procedures for the provision of protective equipment to casualties (including casualties unable to wear IPE);
- prevention of secondary contamination of attending personnel, support equipment, and transport assets;
- common procedures for handling and transporting CBRN/TIM-exposed or -contaminated personnel and MWAs; and
- transport of exposed or contaminated casualties and MWAs across U.S., host nation, third-country, or international airspace, territory, or waters.

10.8.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 1.1.5, SN 1.2.3, SN 2.2.1, SN 4.3.3, SN 4.3.4, SN 8.1.6, SN 9, SN 9.2.2).

10.8.1.2.1 Supported Task: N/A

10.8.1.2.2 Lateral Task: SNSHA 3

10.8.1.2.3 Supporting Task: N/A

10.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Some interoperability. (C2.2.6)
2. Partial joint staff integration. (C2.3.1.1)
3. Partial multinational integration. (C2.3.1.2)
4. Sufficient deployed supplies. (C2.8.2)

5. Sufficient continental United States (CONUS) resupply. (C2.8.3)
6. Slow pipeline responsiveness. (C2.8.3.1)
7. Limited prepositioned materiel. (C2.8.4)

Civil

1. Correct interdepartmental/interagency relationships (C3.1.1.3)
2. Limited foreign government support (C3.1.2.3)

10.8.2 Functional Needs Analysis

10.8.2.1 Capability and Deficiency Assessment Summary

Table 10.8-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff institutes and provides joint Service oversight of DOTMLPF program for the safe handling and transport of exposed or contaminated casualties and MWAs providing for the enhanced survivability of exposed and contaminated casualties as well as MWAs.

Current Capability and Deficiency

International standards specify international requirements for the movement of contaminated (infectious) individuals/animals across international borders. However, U.S. national standards addressing the transport of CBRN/TIM-exposed and -contaminated casualties within the United States do not exist. Training guidelines for selected groups do exist for the handling of exposed and contaminated casualties and are generally performed at the unit level. Existing guidance for the protection of exposed and contaminated casualties specifies the application of either CPS or standard IPE for CBRND protection. Deficiencies include the lack of CBRND standards, criteria, doctrine, policy, procedures, TTPs for the protection of casualties unable to wear standard IPE and CPS is not available or applicable (such as movement from COLPRO-equipped medical facility for evacuation). Standards, criteria, and procedures do not adequately address the handling and transport of CBRN/TIM-exposed or -contaminated MWA casualties. The overall current capability is assessed as “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.8-1. SNSHLD 8: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
Current Overall Capability¹	Y ²	R ³	R ⁴	R ⁵	Y ⁶	Y ⁷	R ⁸	R ⁹	Y ¹⁰	R ⁹	Y ¹¹	R ¹²	Y ¹⁰	G ¹³	R ¹²	R ¹⁴
Near/Mid-Term Overall Capability	Y	R	R	R	Y	Y	R	R	Y	R	Y	R	Y	G	R	R
Far-Term Overall Capability	Y	R	R	R	Y	Y	R	R	Y	R	Y	R	Y	G	R	R

	FA A Measure	Scale
M1	International standards exist for transport of exposed or contaminated casualties (human and MWAs).	<p>G: Internationally accepted standards and procedures exist for the transport of exposed or contaminated casualties across international borders and are applicable to CBRN/TIM casualties.</p> <p>Y: Internationally accepted standards and procedures exist for the transport of selected CBRN-exposed/contaminated casualties and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for the international movement of CBRN-exposed/contaminated material across international borders.</p>
M2	National standards and procedures exist for transport of exposed and contaminated casualties and MWAs, including across state boundaries.	<p>G: Mandated national standards and procedures exist for the transport of exposed or contaminated casualties across state borders, are applicable to CBRN/TIM casualties, and are applied without variance and additional restrictive requirements across all states.</p> <p>Y: National standards and procedures exist for the transport of exposed or contaminated casualties across state borders, are applicable to CBRN/TIM casualties, and are applied with minor additional restrictive requirements across all states.</p> <p>R: National standards and procedures applicable to CBRN-exposed or -contaminated casualties are inadequate, nonexistent, are applied with significant additional restrictive requirements by the states, or widely vary between states.</p>
M3	DoD-level training standards exist for handling of exposed or contaminated casualties and MWAs.	<p>G: DoD-level CBRND training standards detail requirements and measures for the safe handling of exposed and contaminated casualties, including MWAs.</p> <p>Y: DoD-level training standards provide general requirements and measures for the safe handling of exposed and contaminated casualties, including MWAs.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe handling of exposed and contaminated casualties, including MWAs.</p>
M4	DoD-level training standards exist for transport of exposed or contaminated casualties and MWAs.	<p>G: DoD-level CBRND training standards detail requirements for the safe transport of CBRN-exposed or -contaminated casualties, including MWAs.</p> <p>Y: DoD-level CBRND training standards provide general requirements for the safe transport of CBRN-exposed or -contaminated casualties, including MWAs.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe transport of CBRN-exposed or -contaminated casualties, including MWAs.</p>

M5	DoD-level exercise evaluation criteria exist, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment and incorporates as a distinct critical area of evaluation the handling and movement of CBRN-exposed or -contaminated casualties, including MWAs. Service-specific exercises and evaluations are developed based upon the DoD and joint exercise plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation general requirements exist and include CBRN operations as components. Service-specific exercises and evaluations do not fully and sequentially address the entire process of handling and movement of CBRN-exposed or -contaminated casualties, including MWAs.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not fully address CBRN operations and the handling/movement of CBRN-exposed or -contaminated casualties.</p>
M6	Standards and procedures in place for protection of exposed or contaminated casualties and MWAs.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the protection of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the protection of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe handling of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE.</p>
M7	Common and interoperable standards exist for handling exposed or contaminated casualties and MWAs.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe handling of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe handling of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe handling of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE.</p>
M8	Common and interoperable standards exist for transporting exposed or contaminated casualties and MWAs.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe transport of exposed or contaminated casualties and MWAs. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe transport of exposed or contaminated casualties and MWAs. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe transport of exposed or contaminated casualties and MWAs.</p>
M9	Standards address training units and personnel to protect, handle, and transport exposed or contaminated casualties and MWAs.	<p>G: Training standards address the application of protective assets and the safe handling and transport of exposed or contaminated casualties/MWAs, including those medically unable to wear IPE.</p> <p>Y: Training standards generally address the application of protective assets and the safe handling and transport of exposed or contaminated casualties/MWAs, including those medically unable to wear IPE.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective assets and the safe handling and transport of exposed or contaminated casualties and MWAs, including those medically unable to wear IPE.</p>

M10	Standards and procedures address training units and personnel to protect themselves, support equipment, and transportation assets against secondary exposure/contamination.	<p>G: Training standards address the application of protective barrier materials, assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from exposed or contaminated casualties and MWAs.</p> <p>Y: Training standards generally address the application of protective barrier materials, assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from exposed or contaminated casualties and MWAs.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective barrier materials, assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from exposed or contaminated casualties and MWAs.</p>
M11	Standards and procedures address equipping units and personnel handling or transporting exposed and contaminated casualties and MWAs with CBRN/TIM protective equipment.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the protection of personnel and activities performing the handling and transport of exposed or contaminated casualties/MWAs.</p> <p>Y: Common guidelines are established for the provision of protection of personnel and activities performing handling and transport functions associated with exposed or contaminated casualties/MWAs.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the provision of protection of personnel and activities associated with functions involving the handling and transport of exposed or contaminated casualties/MWAs.</p>
M12	Standards and procedures address protection of exposed and contaminated casualties and MWAs, including those unable to wear IPE.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the protection of exposed or contaminated casualties/MWAs, including those medically unable to wear standard IPE.</p> <p>Y: Common guidelines are established for the provision of protection of exposed or contaminated casualties/MWAs, including those medically unable to wear standard IPE.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the provision of protection to exposed or contaminated casualties/MWAs, including those medically unable to wear standard IPE.</p>
M13	All applicable personnel are trained to safely handle and transport exposed or contaminated casualties and MWAs.	<p>G: Training standards address the application of protective equipment assets and the safe handling and transport of exposed or contaminated casualties/MWAs by all applicable personnel (primary and augmentation).</p> <p>Y: Training standards address the application of protective equipment assets and the safe handling and transport of exposed or contaminated casualties/MWAs by personnel with these as designated responsibilities.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective equipment assets and the safe handling and transport of exposed or contaminated casualties and MWAs by personnel subject to perform these tasks.</p>
M14	All applicable personnel are equipped with protective equipment to safely handle and transport exposed or contaminated casualties and MWAs.	<p>G: All personnel subject to perform tasks associated with the handling and/or transport of exposed and contaminated casualties and MWAs are appropriately equipped.</p> <p>Y: Designated personnel with designated responsibilities to perform handling and/or transport of exposed and contaminated casualties and MWAs are appropriately equipped.</p> <p>R: Protective equipment assets are inadequate or nonexistent for the provision of protection of personnel possessing routine functions involving the handling and transport of exposed or contaminated casualties/MWAs.</p>
M15	Protective equipment is available for exposed and contaminated casualties and MWAs, including those medically unable to wear IPE.	<p>G: CBRN protective equipment for exposed and contaminated casualties/MWAs, to include those medically unable to wear IPE, are readily available and provide protection for an extended period.</p> <p>Y: CBRN protective equipment assets for exposed contaminated casualties/MWAs, to include those medically unable to wear IPE, are available.</p> <p>R: CBRN protective equipment is nonexistent or not available to support exposed and/or contaminated casualties and/or MWAs, including those medically unable to wear IPE.</p>

M16	All base/facility/units conduct annual CBRND exercises to include distinct CBRN/TIM-specific exercise/evaluations encompassing mass CBRN/TIM casualty transport, medical reception and triage, and treatment.	<p>G: Annual CBRND exercises fully integrate all personnel and activities and address sustained operations within a CBRN/TIM environment and includes the handling and transport of exposed or contaminated casualties and MWAs by all applicable personnel.</p> <p>Y: Annual CBRND exercises fully involve military and direct mission civilian support personnel/functions and address operations within a toxic CBRN/TIM environment, to include aspects of the handling and transport of exposed or contaminated casualties and MWAs by personnel possessing routine non-emergency functions involving these activities.</p> <p>R: Annual CBRND exercises are not conducted or do not address operations within a CBRN/TIM environment and do not generally integrate the handling and transport of exposed or contaminated casualties and MWAs.</p>
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¹ DOTLPF is inadequate for the transport of exposed/contaminated casualties by air. DOTLPF is also nonexistent for the protection and care of casualties unable to wear IPE and MWAs.

² International standards exist for the transport of contaminated individuals across international borders. These are promulgated under the auspices of the World Health Organization (WHO)—promulgated International Health Regulations of 1969 (as amended) specifies international requirements.

³ National standards and procedures addressing the transport of exposed and contaminated casualties within the United States do not exist.

⁴ Training standards are not promulgated at the joint level addressing training standards for the handling of exposed and contaminated casualties and MWAs. Guidelines do exist for the performance of these functions. However, training is generally inadequate and, although limited formal training may be provided for selected groups, usually performed at the unit level. MWAs are not equipped or prepared against CBRN/TIM agents.

⁵ DoD training standards do not exist for the transport of exposed and contaminated casualties. Unit-level training is limited to the movement of casualties to the medical facility and is predominantly reliant upon tactical ground transport. Air transport (tactical rotary wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed wing air transport is not considered an acceptable means of transport. MWAs are not equipped or prepared against CBRN/TIM agents.

⁶ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations that include mass CBRN/TIM casualty transport, medical reception and triage, and treatment.

⁷ Existing guidance specifies the application of either CPS or standard IPE to protect exposed and contaminated casualties against further contamination until decontaminated. However, these standards do not address casualties who cannot be adequately protected by standard IPE (due to injuries or medical requirements) and CPS is not available. MWAs are not equipped or prepared against CBRN/TIM agents.

⁸ Common and interoperable standards are not promulgated by DoD addressing training for handling exposed and contaminated casualties and MWAs. Guidelines do exist for the performance of these functions. However, training is generally inadequate and, although limited formal training may be provided for selected groups by the Services, usually performed at the unit level. MWAs are not equipped or prepared against CBRN/TIM agents.

⁹ Common and interoperable standards do not exist for the transport of exposed and contaminated casualties. Unit-level training is limited to the movement of casualties to the medical facility and is predominantly reliant upon tactical ground transport. Air transport (tactical rotary wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed wing air transport is not considered an acceptable means of transport. Prior decontamination of exposed/contaminated casualties is the only identified means for protecting transportation assets against secondary contamination. The predominant means is decontamination of the asset following secondary exposure/contamination. Existing standards and procedures provide adequate protection of personnel against secondary exposure/contamination. Standards and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. MWAs are not equipped or prepared against CBRN/TIM agents. Protection of support equipment, particularly medical equipment necessary for casualty treatment, is inadequate.

¹⁰ Standards do address general training requirement for the transport of casualties to medical care, although not CBRN/TIM-specific. Similarly, the general standard to protect casualties is an existing requirement, though it too is not CBRN/TIM-specific. Standards do exist for the handling and protection of exposed and contaminated casualties by medical and selected specialized activities. Casualties who cannot be adequately protected by standard IPE (due to injuries or medical requirements) are not addressed. MWAs are not equipped or prepared against CBRN/TIM agents.

¹¹ MWAs are not equipped or prepared against CBRN/TIM agents. Existing standards and procedures provide adequate protection of personnel against secondary exposure/contamination. Standards and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. However, air transport resources are inadequately equipped and prepared to transport exposed and contaminated casualties and MWAs.

¹² MWAs are not equipped or prepared against CBRN/TIM agents. Exposed and contaminated casualties (human and MWA) unable to wear IPE are not adequately addressed in standards and procedures. Protective equipment is not available for these casualties. Casualties able to wear standard IPE are required to apply the equipment outside of CPS. However, medical units are not provided stocks of standard IPE for use by patients. Medical policy is the patient's unit is responsible for providing the equipment to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing equipment.

¹³ Existing standards and procedures provide adequate protection of personnel against secondary exposure/contamination. Standards and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. MWAs are not equipped or prepared against CBRN/TIM agents.

¹⁴ Base, facilities, and units are required to conduct CBRND exercises. There is a need for distinct CBRN/TIM-specific exercise/evaluations that include mass CBRN/TIM casualty transport, medical reception and triage, and treatment.

10.8.3 Functional Solution Analysis

10.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA casualties. The deficiencies can be addressed with non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions includes the development of CBRND protective equipment for MWD and casualties unable to wear standard IPE; addressing in doctrine, policy, and procedures standards and criteria for both institutional and unit-level training on the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA casualties; establishment of doctrine, policy, procedures, and TTPs for the safe transport of CBRN/TIM-exposed or -contaminated human and MWA casualties; and the incorporation of exercise and evaluation standards and criteria into CBRND doctrine, policy, procedures, and TTPs for the safe handling and transport of these casualties.

- 1. Deficiency:** National standards and procedures addressing the transport of exposed and contaminated casualties within the United States do not exist.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, standards, and procedures for the safe transport (air, ground, and sea) of exposed and contaminated casualties. *Training:* Include standards and procedures for the safe transport (air, ground, and sea) of exposed and contaminated casualties as an essential element of formal and unit training.
- 2. Deficiency:** Training standards are not promulgated at the joint level addressing training standards for the handling of exposed and contaminated casualties.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated MWA casualties. *Training:* Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated MWA casualties. *Leadership:* Implement and manage training and equipping of functions and activities handling exposed and contaminated MWA casualties.
- 3. Deficiency:** Training standards are not promulgated at the joint level addressing training standards for the handling of exposed and contaminated casualties and MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated casualties/MWAs. *Training:* Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated casualties and/or MWAs by applicable units and personnel. *Leadership:* Implement and manage training and equipping of functions and activities handling exposed and contaminated casualties/MWAs.
- 4. Deficiency:** Training is generally inadequate and, although limited formal training may be provided for selected groups, is usually performed at the unit level.
Non-Materiel Solutions: *Training:* Establish and implement training, exercise, and evaluation standards for the safe handling of exposed and contaminated casualties/MWAs

5. **Deficiency:** DoD training standards do not exist for the transport of exposed and contaminated casualties.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated casualties, including prevention of secondary exposure/contamination. *Training:* Establish training, exercise, and evaluation standards for the safe handling and protection of exposed and contaminated casualties, including prevention of secondary exposure/contamination. *Leadership:* Establish and implement training, exercise, and evaluation standards for the safe handling of exposed and contaminated casualties, including prevention of secondary exposure/contamination.
6. **Deficiency:** DoD training standards do not exist for the transport of exposed and contaminated casualties.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated MWA casualties, including prevention of secondary exposure/contamination. *Training:* Establish training, exercise, and evaluation standards for the safe handling and protection of exposed and contaminated MWA casualties, including prevention of secondary exposure/contamination. *Leadership:* Establish and implement training, exercise, and evaluation standards for the safe handling of exposed and contaminated MWA casualties, including prevention of secondary exposure/contamination.
7. **Deficiency:** DoD-level exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.
Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for the development of Service-specific exercises and evaluations based upon joint exercise plan and include the safe handling, transport, and management of contaminated casualties/MWAs. *Leadership:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.
8. **Deficiency:** There is a need for installation, facility, and unit-level distinct CBRN/TIM-specific exercise/evaluations that include mass CBRN/TIM casualty transport, medical reception and triage, and treatment.
Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:*

Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions.

- 9. Deficiency:** MWAs are not equipped or prepared against CBRN/TIM agents.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, standards, and procedures for CBRND protection of MWAs and contaminated MWA casualties, including prevention of secondary exposure/contamination. *Organization:* Organizational considerations for the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Training:* Institutional and unit-level training for CBRND protection of MWAs including MWA casualties and encompasses the prevention of secondary exposure/contamination. *Leadership:* Awareness and planning for CBRND protective requirements for MWAs and contaminated MWA casualty survivability. *Facilities:* Supporting infrastructure for MWD CBRND and contaminated MWD casualties (e.g., logistics, veterinary services, etc.).

- 10. Deficiency:** Standards do not address casualties who cannot be adequately protected by standard IPE (due to injuries or medical requirements) and CPS is not available.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of CBRND standards for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. *Organization:* Organizational considerations for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available. *Training:* Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated casualties. *Leadership:* Recognize criticality for the protection of casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

- 11. Deficiency:** Standards do not address MWA casualties who cannot be adequately protected by standard IPE (due to injuries or medical requirements) and CPS is not available.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of CBRND standards for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. *Organization:* Organizational considerations for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available. *Training:* Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated MWA casualties. *Leadership:* Recognize criticality for the protection of MWA casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and

willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

12. Deficiency: Common and interoperable standards are not promulgated by DoD addressing training for handling exposed and contaminated casualties.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated casualties. *Training:* Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated casualties. *Leadership:* Implement and manage training and equipping of functions and activities handling exposed and contaminated casualties.

13. Deficiency: Common and interoperable standards are not promulgated by DoD addressing training for handling exposed and contaminated MWA casualties.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated MWA casualties. *Training:* Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated MWA casualties. *Leadership:* Implement and manage training and equipping of functions and activities handling exposed and contaminated MWA casualties.

14. Deficiency: Training is generally inadequate and, although limited formal training may be provided for selected groups by the Services, usually performed at the unit level for the handling of exposed and contaminated casualties.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

15. Deficiency: Training is generally inadequate and, although limited formal training may be provided for selected groups by the Services, usually performed at the unit level for the handling of exposed and contaminated MWA casualties.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these functions including

nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 16. Deficiency:** Protection of support equipment, particularly medical equipment necessary for casualty treatment, is inadequate.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures protective measures against secondary contamination or exposure from CBRN/TIM-contaminated casualties of support equipment including medical/veterinary equipment. *Organization:* Identify organizational services, resources, taskings, and activities to provide protection of equipment and personnel from secondary exposure/contamination to CBRN/TIM agents and to provide for the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions, including nonmedical activities and functions and the prevention of secondary exposure/contamination to support equipment and personnel. *Leadership:* Implement and manage training, equipping, protective measures, and exercising the prevention of secondary exposure of resources while performing handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties. *Facilities:* Supporting infrastructure for the safe handling, transport, provision of protective measures, medical reception and triage, and treatment of contaminated casualties, including the prevention of secondary exposure/contamination to support equipment and personnel.

- 17. Deficiency:** Protection of support equipment, particularly medical equipment necessary for casualty treatment, is inadequate.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures protective measures against secondary contamination or exposure from CBRN/TIM-contaminated MWA casualties of support equipment including medical/veterinary equipment. *Organization:* Identify organizational services, resources, taskings, and activities to provide protection of equipment and personnel from secondary exposure/contamination to CBRN/TIM agents and to provide for the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWAs by all activities and functions conducting these functions, including nonmedical activities and functions and the prevention of secondary exposure/contamination to support equipment and personnel. *Leadership:* Implement and manage training, equipping, protective measures, and exercising the prevention of secondary exposure of resources while performing handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties. *Facilities:* Supporting infrastructure for the safe handling, transport, provision of

protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs, including the prevention of secondary exposure/contamination to support equipment and personnel.

18. Deficiency: Air transport resources are inadequately equipped and prepared to transport exposed and contaminated casualties.

Non-Materiel Solutions: *Doctrine:* Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Organization:* Organizational resources, taskings, and trained personnel are in place or available to support the safe air transport of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training:* Institutional and unit-level training for application of standards for the safe transport by air of exposed and contaminated casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership:* Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air transport of exposed and contaminated casualties. *Facilities:* Supporting infrastructure for the safe air transport of contaminated casualties, including the prevention of secondary exposure/contamination to airframe and aircrew.

19. Deficiency: Air transport resources are inadequately equipped and prepared to transport exposed and contaminated MWA casualties.

Non-Materiel Solutions: *Doctrine:* Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Organization:* Organizational resources, taskings, and trained personnel are in place or available to support the safe air transport of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training:* Institutional and unit-level training for application of standards for the safe transport by air of exposed and contaminated MWA casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated MWA casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership:* Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air transport of exposed and contaminated MWA casualties. *Facilities:* Supporting infrastructure for the safe air transport of contaminated MWA casualties, including the prevention of secondary exposure/contamination to airframe and aircrew.

20. Deficiency: DOTLPF is inadequate for the transport of exposed/contaminated casualties by air.

Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures addressing the safe transport of exposed and contaminated casualties by air. *Organization:* Organizational

structures, resources, taskings, and trained staff to enable and support the safe transport of exposed and contaminated casualties by air. *Training*: Institutional and unit-level training for the safe transport by air, of exposed and contaminated casualties. Exercises and evaluations to assess capabilities and prepare for the conduct of safe transport of exposed and contaminated casualties. *Leadership*: Recognize criticality of air transport of exposed and contaminated casualties for survivability and treatment. *Facilities*: Supporting infrastructure for the safe air transport of contaminated casualties.

21. Deficiency: DOTLPF is inadequate for the transport of exposed/contaminated MWA casualties by air.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing the safe transport of exposed and contaminated MWA casualties by air. *Organization*: Develop organizational structures, resources, taskings, and trained staff to enable and support the safe transport of exposed and contaminated MWA casualties by air. *Training*: Establish institutional and unit-level training for the safe transport by air of exposed and contaminated MWA casualties, including exercising and evaluations to assess capabilities and prepare for the conduct of safe transport of exposed and contaminated MWA casualties. *Leadership*: Recognize criticality of air transport of exposed and contaminated MWA casualties for survivability and treatment. *Facilities*: Develop supporting infrastructure for the safe air transport of contaminated MWA casualties.

22. Deficiency: DOTLPF is nonexistent for the protection and care of casualties unable to wear IPE.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures the application of CBRND standards for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. *Organization*: Ensure organizational considerations for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available. *Training*: Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated casualties who cannot be adequately protected by standard IPE. *Leadership*: Recognize criticality for the protection of casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities. *Facilities*: Develop supporting infrastructure (e.g., consumables, transport COLPRO, power production, etc.) to enable survival of exposed and contaminated casualties who cannot be adequately protected by standard IPE.

23. Deficiency: DOTLPF is nonexistent for the protection and care of MWA casualties.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures the application of CBRND standards for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. *Organization*: Organizational considerations for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained

personnel are in place or available. *Training*: Establish training, exercise, and evaluation standards/criteria involving exposed MWA casualties who cannot be adequately protected by standard IPE. *Leadership*: Recognize criticality for the protection of MWA casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities. *Facilities*: Supporting infrastructure (e.g., consumables, transport COLPRO, power production, etc.) to enable survival of exposed and contaminated MWA casualties who cannot be adequately protected by standard IPE.

10.8.3.2 IMA Assessment Summary

N/A

10.9 Task SNSHLD 9: Establish standards, criteria, and procedures for safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains

10.9.1 Functional Area Analysis

10.9.1.1 Definition

To ensure the efficient, consistent, and safe handling and transport of exposed or contaminated human and MWA remains, including standards of mortuary care and common procedures for transporting remains across U.S., host nation, third-country, or international airspace, territory, or waters.

10.9.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 1.1.5, SN 1.2.3, SN 4.2.2, SN 4.3.3, SN 4.3.4, SN 8.1.6, SN 9, SN 9.2.2).

10.9.1.2.1 Supported Task: N/A

10.9.1.2.2 Lateral Task: SNSHA 3

10.9.1.2.3 Supporting Task: N/A

10.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Some interoperability. (C2.2.6)
2. Partial joint staff integration. (C2.3.1.1)
3. Partial multinational integration. (C2.3.1.2)
4. Sufficient deployed supplies. (C2.8.2)
5. Sufficient CONUS resupply. (C2.8.3)
6. Slow pipeline responsiveness. (C2.8.3.1)
7. Limited prepositioned materiel. (C2.8.4)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support (C3.2.1.3)

10.9.2 Functional Needs Analysis

10.9.2.1 Capability and Deficiency Assessment Summary

This section addresses the only capability that exists to perform the task to the designated standard. CJCS/joint staff institutes and provides joint Service oversight of comprehensive DOTMLPF program for the safe handling and transport of exposed or contaminated human and MWA remains addressing the chain of action and movement from theater to final interment.

Current Capability and Deficiency

CBRN/TIM-contaminated remains are handled as hazardous or infectious materials when crossing international borders and are under auspices of international treaties and standards. Nations conforming to United Nations treaties, regulations, and codes with impact upon international transport of remains are identified. However, these treaties and standards do not specifically address exposed and contaminated human and MWA remains resulting from a CBRN/TIM agent. U.S. national standards also exist for the movement of remains but do not extend to exposed and contaminated remains. CDC guidelines for movement of highly infectious remains exist and are applied to specific cases for epidemiological investigation only. Training standards also exist for transport of remains and mortuary activities. However, the transport standards and procedures do not adequately address CBRN/TIM-exposed or -contaminated remains. The overall current capability is assessed as “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No changes are projected for this task.

Projected Far-Term Capability and Deficiency

No changes are projected for this task.

Table 10.9-1. SNSHLD 9: Capability and Deficiency Assessment

Capability: CJCS— Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21
Current Overall Capability¹	G ²	R ³	G ⁴	Y ⁵	R ⁶	Y ⁷	Y ⁸	R ⁹	Y ¹⁰	R ⁹	G ¹¹	R ¹²	Y ¹¹	Y ¹²	G ¹³	R ¹⁴	G ¹⁵	R ¹²	G ¹³	R ¹⁶	Y ¹⁷
Near/Mid-Term Overall Capability	G	R	G	Y	R	Y	Y	R	Y	R	G	R	Y	Y	G	R	G	R	G	R	Y
Far-Term Overall Capability	G	R	G	Y	R	Y	Y	R	Y	R	G	R	Y	Y	G	R	G	R	G	R	Y

	FAA Measure	Scale
M1	International standards exist for transport of exposed or contaminated human and MWA remains.	<p>G: Internationally accepted standards and procedures exist for the transport of exposed or contaminated human and MWA remains across international borders and are applicable to CBRN/TIM casualties.</p> <p>Y: Internationally accepted standards and procedures exist for the transport of selected CBRN-exposed/contaminated human and MWA remains and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for the international movement of CBRN-exposed/contaminated human and MWA remains across international borders.</p>
M2	International standards exist for mortuary care of exposed or contaminated human and MWA remains.	<p>G: Internationally accepted standards and procedures exist for the mortuary care, storage, and preparation of exposed or contaminated human and MWA remains and are applicable to CBRN/TIM casualties that will cross international borders.</p> <p>Y: Internationally accepted standards and procedures exist for the mortuary care, storage, and preparation of CBRN-exposed/contaminated human and MWA remains and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for the mortuary care, storage, and preparation of CBRN-exposed/contaminated human and MWA remains for crossing international borders.</p>
M3	International standards for IPE exist for exposed or contaminated remains.	<p>G: Internationally accepted standards and procedures exist for protective barrier materials and IPE for application to exposed or contaminated human and MWA remains crossing international borders and are applicable to CBRN/TIM casualties.</p> <p>Y: Internationally accepted standards and procedures exist for protective barrier materials and IPE for application to CBRN/TIM-exposed or -contaminated human and MWA and are restricted to specifically identified international border movements.</p> <p>R: Internationally accepted standards are nonexistent or inadequate for protective barrier materials and IPE for application to exposed or contaminated human and MWA remains that cross international borders.</p>

M4	National standards and procedures exist for transport of exposed or contaminated human and MWA remains, including across state boundaries.	<p>G: Mandated national standards and procedures exist for the transport of exposed or contaminated human and MWA remains across state borders, are applicable to CBRN/TIM casualties, and are applied without variance and additional restrictive requirements across all states.</p> <p>Y: National standards and procedures exist for the transport of exposed or contaminated human and MWA remains across state borders, are applicable to CBRN/TIM casualties, and are applied with minor additional restrictive requirements across all states.</p> <p>R: National standards and procedures applicable to CBRN-exposed or -contaminated human and MWA remains are inadequate, nonexistent, are applied with significant additional restrictive requirements by the states, or widely vary between states.</p>
M5	Nations are identified that conform with international policies regarding the handling and transport of exposed or contaminated human and MWA remains.	<p>G: Nations recognizing and conforming to internationally accepted standards and procedures for the handling and international transport of exposed and contaminated human and MWA remains are identified and published in DoD/joint procedures and TTPs.</p> <p>Y: Nations recognizing and generally conforming to internationally accepted standards and procedures for the handling and international transport of exposed and contaminated human and MWA remains are identified and published in DoD/joint procedures and TTPs.</p> <p>R: Identification and publishing within DoD/joint procedures and TTPs of nations recognizing and conforming to internationally accepted standards and procedures are nonexistent or inadequate for the handling and international transport of exposed and contaminated human and MWA remains.</p>
M6	DoD-level training standards exist for handling of exposed or contaminated human and MWA remains.	<p>G: DoD-level CBRND training standards detail requirements and measures for the safe handling of exposed and contaminated human and MWA remains.</p> <p>Y: DoD-level training standards provide general requirements and measures for the safe handling of exposed and contaminated human and MWA remains.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe handling of exposed and contaminated human and MWA remains.</p>
M7	DoD-level training standards exist for transport of exposed or contaminated human and MWA remains.	<p>G: DoD-level CBRND training standards detail requirements for the safe transport of CBRN-exposed or -contaminated human and MWA remains.</p> <p>Y: DoD-level CBRND training standards provide general requirements for the safe transport of CBRN-exposed or -contaminated human and MWA remains.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address the safe transport of CBRN-exposed or -contaminated human and MWA remains.</p>
M8	DoD-level standards exist for protective equipment for exposed or contaminated remains (human and MWAs).	<p>G: DoD-level standards detail requirements for protective barriers and equipment for CBRN-exposed or -contaminated human and MWA remains.</p> <p>Y: DoD-level standards provide general requirements for protective barriers and equipment for CBRN-exposed or -contaminated human and MWA remains.</p> <p>R: DoD-level CBRND training standards are nonexistent or inadequately address protective barriers and equipment for CBRN-exposed or -contaminated human and MWA remains.</p>

M9	DoD-level exercise evaluation criteria exist, including timing, type, content, and scoring.	<p>G: Distinct DoD and joint exercise plans and evaluation requirements exist for sustained operations within a toxic CBRN/TIM environment and incorporates as a distinct critical area of evaluation the handling and movement of CBRN-exposed or -contaminated human and MWA remains. Service-specific exercises and evaluations are developed based upon the DoD and joint exercise plans and evaluation requirements.</p> <p>Y: DoD and joint exercise plans and evaluation general requirements exist and include CBRN operations as components. Service-specific exercises and evaluations do not fully and sequentially address the entire process of handling and movement of CBRN-exposed or -contaminated human and MWA remains.</p> <p>R: DoD, joint, and Service-specific exercise plans and evaluation requirements are inadequate, do not exist, or do not fully address CBRN operations and the handling/movement of CBRN-exposed or -contaminated human and MWA remains.</p>
M10	Standards and procedures are in place for containment of exposed and contaminated human and MWA remains to preclude secondary exposure and/or contamination.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the proper containment of CBRN-exposed or -contaminated human and MWA remains to preclude secondary exposure and/or contamination to processing, handling, transporting, and interment personnel, support equipment, and/or transport assets.</p> <p>Y: Common guidelines are established for the containment of CBRN-exposed or -contaminated human and MWA remains to preclude secondary exposure and/or contamination to processing, handling, transporting, and interment personnel, support equipment, and/or transport assets.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the containment of CBRN-exposed or -contaminated human and MWA remains to preclude secondary exposure and/or contamination to processing, handling, transporting, and interment personnel, support equipment, and/or transport assets.</p>
M11	Common and interoperable standards exist for handling exposed or contaminated human and MWA remains.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe handling of exposed or contaminated human and MWA remains. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe handling of exposed or contaminated human and MWA remains. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe handling of exposed or contaminated human and MWA remains.</p>
M12	Common and interoperable standards exist for transporting exposed or contaminated human and MWA remains.	<p>G: DoD/joint standards and procedures detail common and interoperable requirements for the safe transport of exposed or contaminated human and MWA remains. Service-specific standards and procedures incorporate the DoD/joint standards.</p> <p>Y: DoD/joint standards and procedures provide common general guidance for the safe transport of exposed or contaminated human and MWA remains. Service-specific standards and procedures may vary, but not in critical aspects, from the DoD/joint standards and procedures.</p> <p>R: Common standards and procedures are inadequate or nonexistent for the safe transport of exposed or contaminated human and MWA remains.</p>

M13	Standards address training mortuary, transport, and supporting units and personnel to contain, handle, and transport exposed and contaminated human and MWA remains.	<p>G: Training standards address the application of protective containment, barrier, and protective assets and the safe processing, handling, transport, and interment of exposed or contaminated human and MWA remains.</p> <p>Y: Training standards generally address the application of protective containment, barrier, and protective assets and the safe processing, handling, transport, and interment of exposed or contaminated human and MWA remains.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective containment, barrier, and protective assets and the safe processing, handling, transport, and interment of exposed or contaminated human and MWA remains.</p>
M14	Standards and procedures address training mortuary, transport, and supporting units and personnel to protect themselves, support equipment, and transportation assets against secondary exposure/contamination.	<p>G: Training standards address the application of protective barrier materials, personal and containment assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from CBRN/TIM-exposed or -contaminated human and MWA remains.</p> <p>Y: Training standards generally address the application of protective barrier materials, personal and containment assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from CBRN/TIM-exposed or -contaminated human and MWA remains.</p> <p>R: Training standards are nonexistent or inadequately address the application of protective barrier materials, personal and containment assets, procedures, and detection equipment to protect personnel, equipment, and transport assets against secondary exposure/contamination from CBRN/TIM-exposed or -contaminated human and MWA remains.</p>
M15	Standards and procedures address equipping units and personnel handling or transporting exposed and contaminated human and MWA remains with CBRN/TIM protective equipment.	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the protection of personnel and activities performing the processing, handling, transport, and interment of CBRN/TIM-exposed or -contaminated human and MWA remains.</p> <p>Y: Common guidelines are established for the provision of protection of personnel and activities performing the processing, handling, transport, and interment of CBRN/TIM-exposed or -contaminated human and MWA remains.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the provision of protection of personnel and activities associated with functions involving the the processing, handling, transport, and interment of CBRN/TIM-exposed or -contaminated human and MWA remains.</p>
M16	Standards and procedures address containment of exposed and contaminated human and MWA remains	<p>G: Overarching single set of standards specify common and interoperable requirements and measures for the proper containment of CBRN-exposed or -contaminated human and MWA remains.</p> <p>Y: Common guidelines are established for the containment of CBRN-exposed or -contaminated human and MWA remains.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the containment of CBRN-exposed or -contaminated human and MWA remains.</p>
M17	Common procedures exist for marking the location of exposed and contaminated remains and include language, symbols, color, and shape.	<p>G: Overarching single set of standards and procedures specify common and interoperable requirements for the marking the site location and maps for CBRN/TIM-exposed or -contaminated human and MWA remains to include language, symbols, color, and shape.</p> <p>Y: Common guidelines are established for the marking the site location and maps for CBRN/TIM-exposed or -contaminated human and MWA remains to include language, symbols, color, and shape.</p> <p>R: Common and interoperable standards are inadequate or nonexistent for the marking the site location and maps for CBRN/TIM-exposed or -contaminated human and MWA remains to include language, symbols, color, and shape.</p>

M18	All applicable personnel are trained to safely handle and transport exposed or contaminated casualties and MWAs.	<p>G: Training standards address the application of protective equipment assets and the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains by all applicable personnel (primary and augmentation).</p> <p>Y: Training standards address the application of protective equipment assets and the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains by personnel with these as designated responsibilities</p> <p>R: Training standards are nonexistent or inadequately address the application of protective equipment assets and the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains by personnel subject to perform these tasks.</p>
M19	All applicable personnel are equipped with protective equipment to safely handle and transport exposed and contaminated human and MWA remains.	<p>G: All personnel subject to perform tasks associated with the handling and/or transport of CBRN/TIM-exposed and -contaminated human and MWA remains are appropriately equipped.</p> <p>Y: Designated personnel with designated responsibilities to perform handling and/or transport of CBRN/TIM-exposed and -contaminated human and MWA remains are appropriately equipped.</p> <p>R: Protective equipment assets are inadequate or nonexistent for the provision of protection of personnel possessing routine functions involving the handling and transport of CBRN/TIM-exposed and -contaminated human and MWA remains.</p>
M20	Protective containment systems are available for exposed and contaminated human and MWA remains.	<p>G: CBRN protective equipment and materials for exposed and contaminated human and MWA remains are readily available and provide containment protection for an extended period.</p> <p>Y: CBRN protective equipment assets for exposed contaminated human and MWA remains are available.</p> <p>R: CBRN protective equipment is nonexistent or not available to support exposed and/or contaminated human and/or MWA remains.</p>
M21	Base/facility/units conduct annual CBRND exercises.	<p>G: Annual CBRND exercises fully integrate all personnel and activities and address sustained operations within a CBRN/TIM environment and includes the handling and transport of exposed or contaminated human and MWA remains by all applicable personnel.</p> <p>Y: Annual CBRND exercises fully involve military and direct mission civilian support personnel/functions and address operations within a toxic CBRN/TIM environment, to include aspects of the handling and transport of exposed or contaminated human and MWA remains by personnel possessing routine non-emergency functions involving these activities.</p> <p>R: Annual CBRND exercises are not conducted or do not address operations within a CBRN/TIM environment and do not generally integrate the handling and transport of exposed or contaminated human and MWA remains.</p>

¹ DOTLPF is inadequate to accomplish this task.

² Contaminated remains are handled as hazardous or infectious materials when crossing international borders and are under the treaty auspices of the United Nations. The primary applicable codes are under the World Health Organization (WHO) and promulgated under the International Health Regulations of 1969 (as amended). Transport requirements are also governed by the international Civil Aviation Organization Technical Instructions (ICAO TI) on the Safe Transport of Dangerous Goods by Air; International Maritime Dangerous Goods (IDMG) Code, and the International Atomic Energy Agency (IAEA) Internal Atomic Energy Regulations for the Safe Transport of Radioactive Materials. However, these standards do not specifically address exposed or contaminated human and MWA remains as the result of a CBRN/TIM agent.

³ International standards for mortuary activities for exposed and contaminated human and MWA remains as a result of a CBRN/TIM agent do not exist. Mortuary activities are generally determined by national standards.

⁴ Internationally accepted standards do exist for the packaging of hazardous or infectious materials crossing international borders. These do not specifically address exposed and contaminated remains from a CBRN/TIM agent. The standards are promulgated under the auspices of the United Nations. The primary applicable codes are under the World

Health Organization (WHO) and promulgated under the International Health Regulations of 1969 (as amended). Transport packaging requirements are also governed by the international Civil Aviation Organization Technical Instructions (ICAO TI) on the Safe Transport of Dangerous Goods by Air; International Maritime Dangerous Goods (IMDG) Code, and the International Atomic Energy Agency (IAEA) Internal Atomic Energy Regulations for the Safe Transport of Radioactive Materials. However, these standards do not specifically address exposed or contaminated human and MWA remains as the result of a CBRN/TIM agent.

⁵ National standards and procedures for the movement of human and MWA remains do exist. The extension of these standards and procedures to exposed and contaminated remains does not currently exist. CDC guidelines for movement of highly infectious remains do exist and are applied for specific cases of epidemiological investigation. It is also noted each state possess unique requirements for the movement and interment of remains.

⁶ International standards specifically addressing exposed or contaminated human and MWA remains as the result of a CBRN/TIM agent do not exist. Nations conforming to existing United Nations treaties, regulations, and codes with impact upon international transport of exposed/contaminated materials and samples are identified.

⁷ Training standards exist for primary duty personnel performing mortuary activities. However, augmentation and additional duty personnel are trained at the unit level and training in inadequate for CBRN/TIM-exposed/contaminated remains.

⁸ Training standards exist for the transport of remains. However, these standards do not adequately address CBRN/TIM-exposed and -contaminated remains.

⁹ CBRN/TIM containment packaging for exposed/contaminated remains is inadequate or nonexistent.

¹⁰ Joint exercise plans include evaluation criteria, timing, type, content, and scoring. However, these are not the foundation for development of Service-specific exercise and evaluations. Additionally, there is a need for distinct CBRN/TIM-specific exercise/evaluations that include mortuary activities for CBRN/TIM exposed/contaminated remains.

¹¹ Standards and procedures exist for the handling of exposed/contaminated remains. However, these are generally only known and applied by primary duty mortuary personnel. Transporting and supporting units/personnel are generally trained to handle and transport unexposed/uncontaminated remains. The extension of existing standards and procedures addressing exposed/contaminated remains is inadequate or nonexistent.

¹² Standards and procedures for the movement of human and MWA remains do exist. The extension of these standards and procedures to exposed and contaminated remains does not currently exist. CDC guidelines for movement of highly infectious remains do exist and are applied for specific cases of epidemiological investigation. It is also noted each state possess unique requirements for the movement and interment of remains.

¹³ Existing standards and procedures provide adequate protection of personnel against secondary exposure/contamination. Standards and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. Mortuary personnel performing decontamination and remains preparation additionally require splash protection against decontaminants and body fluids.

¹⁴ Containment is not adequately address in current standards and procedures. CBRN/TIM containment packaging for exposed/contaminated remains is inadequate or nonexistent. Current procedures provide for decontamination and temporary interment to reduce and eliminate contaminants.

¹⁵ Procedures for marking interment areas exist. However, containment markings standards do not exist.

¹⁶ Protective containment systems are inadequate or nonexistent.

¹⁷ Base, facilities, and units are required to conduct CBRND exercises. There is a need for distinct CBRN/TIM-specific exercise/evaluations that include mortuary activities.

10.9.3 Functional Solution Analysis

10.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for the safe handling and transport of CBRN/TIM-exposed or -contaminated human and MWA remains. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include analysis of current and proposed national and international (U.S. and other nations) standards for their application to CBRN/TIM-exposed and -contaminated human and MWA remains; inclusion of identified standards into doctrine, policy, procedures, and TTPs; RDTE&A of containment and alternative protective systems for CBRN/TIM-contaminated or -exposed remains; and analysis of current and proposed national and international standards for marking and identification of CBRN/TIM-exposed and -contaminated human and MWA remains. Incorporate the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human and MWA casualties into doctrine, policy, procedures, and TTPs and require specific exercising and evaluation for these operations and activities encompassing all activities and functions performing these tasks, including nonmortuary activities and functions. Specify requirements and guidelines for the safe air transport of CBRN/TIM-exposed and -contaminated remains in doctrine, policy, procedures, and TTPs.

- 1. Deficiency:** International standards for mortuary activities for exposed and contaminated remains as a result of a CBRN/TIM agent do not exist.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of identified international standards and requirements for mortuary activities as applied to exposed and contaminated remains resulting from a CBRN/TIM agent. *Training:* Include identified international standards and requirements for mortuary activities as applied to exposed/contaminated remains resulting from a CBRN/TIM agent as an essential element of formal and unit training, as well as exercise and evaluation standards and criteria. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent.
- 2. Deficiency:** International standards for mortuary activities for exposed and contaminated MWA remains as a result of a CBRN/TIM agent do not exist.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of identified international standards and requirements for mortuary activities as applied to exposed and contaminated MWA remains resulting from a CBRN/TIM agent. *Training:* Include identified international standards and requirements for mortuary activities as applied to exposed/contaminated MWA remains resulting from a CBRN/TIM agent as an essential element of formal and unit training, as well as exercise and evaluation standards and criteria. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated MWA remains resulting from a CBRN/TIM agent.

- 3. Deficiency:** The extension of national standards and procedures for the movement of exposed and contaminated remains is inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Coordinate with appropriate national agencies and authorities to establish in doctrine, policy, and procedures national standards and requirements for the movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Training:* Establish and implement training, exercise, and evaluation standards and criteria for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Facilities:* Develop supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.
- 4. Deficiency:** The extension of national standards and procedures for the movement of MWA exposed and contaminated remains is inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Coordinate with appropriate national agencies and authorities to establish in doctrine, policy, and procedures national standards and requirements for the movement of exposed/contaminated MWA remains resulting from a CBRN/TIM agent. *Training:* Establish and implement training, exercise, and evaluation standards and criteria for the safe movement of exposed/contaminated MWA remains resulting from a CBRN/TIM agent. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated MWA remains resulting from a CBRN/TIM agent. *Facilities:* Develop supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated MWA remains resulting from a CBRN/TIM agent.
- 5. Deficiency:** Augmentation and additional duty personnel training is inadequate for CBRN/TIM exposed/contaminated remains.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions.
- 6. Deficiency:** Augmentation and additional duty personnel training is inadequate for CBRN/TIM-exposed/contaminated MWA remains.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions.

7. **Deficiency:** CBRN/TIM containment packaging for exposed/contaminated remains is inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains in doctrine, policy, and procedures. *Organization:* Identify organizational resource and support requirements for the application of CBRN/TIM containment packaging/systems for exposed/contaminated remains. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems for exposed/contaminated remains.

8. **Deficiency:** DoD-level exercise evaluation criteria are not the foundation for development of Service-specific exercise and evaluations.

Non-Materiel Solutions: *Doctrine:* Reinforce existing doctrine and policy for the development of Service-specific exercises and evaluations based upon joint exercise plan and include the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties that encompasses all functions and activities performing these tasks including nonmortuary activities and functions. *Training:* Ensure joint exercise plans are used in the development of Service-specific exercises and evaluations.

9. **Deficiency:** There is a need for distinct CBRN/TIM-specific exercise/evaluations that include mortuary activities for CBRN/TIM exposed/contaminated remains.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated human/MWA casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, preparation, transport, protective measures,

mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties by all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties by all activities and functions conducting these tasks, including nonmortuary activities and functions. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties by all activities and functions conducting these tasks, including nonmortuary activities and functions.

10. Deficiency: Standards and procedures for the handling of exposed/contaminated remains are generally only known and applied by primary duty mortuary personnel.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions.

11. Deficiency: Standards and procedures for the handling of exposed/contaminated MWA remains are generally only known and applied by primary duty mortuary personnel.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions.

12. Deficiency: Transporting and supporting units/personnel are generally only trained to handle and transport unexposed/uncontaminated remains.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties by all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated casualties by all functions and activities conducting these tasks including nonmortuary activities and functions. *Facilities:* Supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.

13. Deficiency: Transporting and supporting units/personnel are generally only trained to handle and transport unexposed/uncontaminated MWA remains.

Non-Materiel Solutions: *Doctrine:* Incorporate institutional and unit-level training standards and criteria addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties into doctrine, policy and procedures and require specific exercising and evaluation for these operations and activities that encompasses all activities and functions conducting these tasks, including nonmortuary activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all activities and functions conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions and encompassing the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated MWA casualties by all functions and activities conducting these tasks including nonmortuary activities and functions. *Facilities:* Supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated MWA remains resulting from a CBRN/TIM agent.

14. Deficiency: Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains.

15. Deficiency: Concerns about contaminating valuable airlift assets currently limit their availability to move exposed/contaminated remains. NOTE: This concern is compounded by the lack of effective aircraft interior decontamination systems and near-real-time low-level chemical and biological hazard detection systems.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to preclude secondary exposure/contamination of airframes and aircrew. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to preclude secondary exposure/contamination of airframe and aircrew.

16. Deficiency: Containment is not adequately addressed in current standards and procedures.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternatives designed for exposed/contaminated remains in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems for exposed/contaminated remains.

17. Deficiency: Protective containment systems are inadequate or nonexistent.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternatives designed for exposed/contaminated remains in doctrine, policy, and procedures. *Organization:* *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems for exposed/contaminated remains.

18. Deficiency: Containment marking standards do not exist.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of identified international and national standards and marking requirements exposed and contaminated remains resulting from a CBRN/TIM agent. *Training:* Include identified international and national standards and marking requirements as applied to exposed/contaminated remains resulting from a CBRN/TIM agent as an essential element of formal and unit training, as well as exercise and evaluation standards and criteria. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the marking of exposed/contaminated remains resulting from a CBRN/TIM agent.

19. Deficiency: There is a need for distinct CBRN/TIM-specific base, facility, and unit-level exercise/evaluations that include mortuary activities.

Non-Materiel Solutions: *Doctrine:* Incorporate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties into exercises and evaluations and encompass all functions and activities conducting these tasks, including nonmortuary activities and functions. *Training:* Train, exercise, and evaluate the handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties into exercises and evaluations and encompass all functions and activities conducting these tasks, including nonmortuary activities and functions. *Leadership:* Implement and manage training, equipping, protective measures, and exercising the prevention of secondary exposure of resources while performing handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated human/MWA casualties.

20. Deficiency: DOTLPF is inadequate to accomplish this task.

Non-Materiel Solutions: *Doctrine:* Doctrine, policy, and procedures addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated remains. *Organization:* Organization structures, resources, taskings, and trained staff availability to enable and support the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated remains. *Training:* Institutional and unit-level training for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated remains. *Leadership:* Recognize importance of the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM-exposed/contaminated remains and ensure personnel are properly equipped, adequately trained, fully comply with requirements, and are prepared and ready to perform the necessary tasks and activities. *Facilities:* Supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.

10.9.3.2 IMA Assessment Summary

N/A

10.10 Task SNSHLD 10: Determine CBRN/TIM protection requirements and means supporting CBRND national and strategic guidance, intent, plans, and taskings

10.10.1 Functional Area Analysis

10.10.1.1 Definition

To establish current and projected CBRN/TIM protection capabilities and requirements to protect the force against threat CBRN/TIM agents and hazards. Ensures the successful and decisive accomplishment of operations within threat environments. The assessment includes the review of national and strategic guidance, intent, plans, and taskings to identify CBRN/TIM protection requirements. It also includes determining the appropriate supporting quantity and mix of CBRN/TIM protection equipment. The assessment and identification of CBRN/TIM protection requirements and means also entails

- reviewing current and projected threats, operations, and programs to determine protection capability requirements,
- assessing current and programmed protection capabilities to meet those requirements,
- identifying capability requirements that are unsatisfied (entirely or partially), and
- outlining nonmateriel and materiel solutions for subsequent action.

10.10.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (SN 1.1.5, SN 1.1.6, SN 2.4.1.2, SN 3.4.4, SN 4.3.3, SN 5.2, SN 5.2.3, SN 6.1, SN 7.5, SN 9, SN 9.2, AN 9.2.1, SN 9.2.2).

10.10.1.2.1 Supported Task: N/A

10.10.1.2.2 Lateral Tasks: SNSHA 5, SNSHLD 11

10.10.1.2.3 Supporting Tasks: STSHLD 1, STSHLD 5, STSHLD 6

10.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partial multinational integration. (C2.3.1.2)
2. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationship. (C3.1.1.3)

10.10.2 Functional Needs Analysis

10.10.2.1 Capability and Deficiency Assessment Summary

Table 10.10-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff manages process to assess and determine CBRND requirements essential to the positive accomplishment of national and strategic goals, plans, and taskings.

Current Capability and Deficiency

Procedures exist to determine and assess capability requirements for both materiel and non-materiel in support of CBRND national and strategic guidance, intent, plans, and taskings. The process reviews and analyses both current and programmed capabilities against current and projected requirements. Strategic forces are adequately trained, equipped (or possess accessible resources), and prepared to support national and strategic operations. Deficiencies include the lack of available systems in sufficient quantities to support envisioned and published national military concurrent operations and existing CBRND COLPRO systems are not generally designed for expeditionary operations. The overall current assessment is “green.”

Projected Near/Mid-Term Capability and Deficiency

No projected changes to this task.

Projected Far-Term Capability and Deficiency

No projected changes to this task.

Table 10.10-1. SNSHLD 10: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	R ²	G ³	G ⁴	G ⁵	G ⁶	G ⁷	G ⁸	G ⁹
Near/Mid-Term Overall Capability	R	G	G	G	G	G	G	G
Far-Term Overall Capability	R	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Required CBRND systems, by needed type, are available to support national and strategic operations.	<p>G: CBRND systems are available in plan identified required quantities and types to support multiple concurrent national and strategic military operations with threat.</p> <p>Y: CBRND systems are available in sufficient required quantities and types to support multiple concurrent national and strategic military operations with threat. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not available in sufficient quantities and types to support concurrent national and strategic military operations with threat.</p>
M2	Strategic forces are equipped to support national and strategic operations.	<p>G: Strategic forces are adequately equipped or possess ready access to CBRND resources to support national and strategic operations with threat.</p> <p>Y: Strategic forces are equipped or possess access to CBRND resources upon notification to support national and strategic operations with threat.</p> <p>R: Strategic forces are inadequately equipped or possess inadequate access to CBRND resources to support national and strategic operations with threat.</p>
M3	Strategic forces are trained and prepared to support national and strategic operations.	<p>G: Strategic forces are trained and exercised routinely for the attainment and assessment of the skills, knowledge, and abilities to support national and strategic operations with threat.</p> <p>Y: Selected strategic forces are trained and exercised routinely for the attainment and assessment of the skills, knowledge, and abilities to support national and strategic operations with threat. Remaining strategic forces are trained and exercised upon notification to prepare for national and strategic operations with threat.</p> <p>R: Training and exercising of strategic forces for national and strategic operations with threat is inadequate or nonexistent.</p>
M4	Protection capability requirements are determined.	<p>G: Overarching single process exists for the determination and assessment of capability requirements for both materiel and non-materiel CBRND.</p> <p>Y: Each Service operates a single process for the determination and assessment of capability requirements for both materiel and non-materiel CBRND.</p> <p>R: The process for determination and assessment of capability requirements for materiel and/or non-materiel CBRND is in adequate or nonexistent.</p>
M5	Existing (and projected, if appropriate) protection capabilities are determined.	<p>G: Overarching single process exists for the determination and assessment of current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>Y: Each Service operates a single process for the determination and assessment of current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>R: The process for determination and assessment of current and projected capabilities for materiel and/or non-materiel CBRND is in adequate or nonexistent.</p>

M6	Assessment specifies CBRND capability requirements not satisfied.	<p>G: Overarching single process exists for the determination and assessment of required capabilities not satisfied by current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>Y: Each Service operates a single process for the determination and assessment of required capabilities not satisfied by current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>R: The process for determination and assessment of required capabilities not satisfied by current and projected capabilities for materiel and/or non-materiel CBRND is in adequate or nonexistent.</p>
M7	Assessment identifies and ranks non-materiel solutions to meet unsatisfied capability requirements.	<p>G: Overarching single process exists for the identification and ranking of solutions to required capabilities not satisfied by current and projected capabilities for non-materiel CBRND.</p> <p>Y: Each Service operates a single process for the identification and ranking of solutions to required capabilities not satisfied by current and projected capabilities for non-materiel CBRND.</p> <p>R: The process for identification and ranking of required capabilities not satisfied by current and projected capabilities for non-materiel CBRND is in adequate or nonexistent.</p>
M8	Assessment identifies and ranks materiel solutions to meet unsatisfied capability requirements.	<p>G: Overarching single process exists for the identification and ranking of solutions to required capabilities not satisfied by current and projected capabilities for materiel CBRND.</p> <p>Y: Each Service operates a single process for the identification and ranking of solutions to required capabilities not satisfied by current and projected capabilities for materiel CBRND.</p> <p>R: The process for identification and ranking of required capabilities not satisfied by current and projected capabilities for materiel CBRND is in adequate or nonexistent.</p>

¹ There is effective DOTLPF in place to conduct this task.

² Available CBRND systems are not available in sufficient quantities to support the envisioned and published national military concurrent operations. CBRND systems required to support operations are identified by specific plans. However, the requirements of these plans are not centrally correlated with other plans. Comparison is essential to relate plan identified CBRND requirements against existing and programmed quantities and types. Comparison must consider support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

³ Strategic forces are adequately equipped or accessible resources to support national and strategic operations. However, expeditionary operations remain a concern.

⁴ Strategic forces are trained and prepared to support national and strategic operations.

⁵ The JCIDS process, identified in CJCSI 3170.01D and CJCSM 3170.01A, provides the means for determining and assessing capability requirements (materiel and non-materiel). The process reviews and analyzes both current and programmed capabilities against current and projected operational requirements. Operational requirements are drawn from national strategies, JOCs, JFCs, JICs, integrated architectures, the *Universal Joint Task List (UJTL)*, the anticipated range of broad capabilities that an adversary might employ, and other sources as input. The FAA of the Joint Capabilities Integration and Development System (JCIDS) process performs this determination.

⁶ The JCIDS process, identified in CJCSI 3170.01D and CJCSM 3170.01A, provides the means for determining and assessing capability requirements (materiel and non-materiel). The process reviews and analyzes both current and programmed capabilities against current and projected operational requirements. Both the JCIDS FAA and FNA review existing and projected protection capabilities.

⁷ The FNA assesses the ability of current and programmed joint capabilities to accomplish the tasks that the FAA identified under the full range of operating conditions and to the designated standards. Using the tasks identified in the FAA as primary input, the FNA produces as output a list of capability gaps or shortcomings that require solutions and indicates the time frame in which those solutions are needed. The FNA may also identify redundancies in capabilities that reflect inefficiencies. The FNA includes supportability as an inherent part of defining capability needs.

⁸ On the basis of the FNA-documented capability needs, potential solutions are identified in the JCIDS FSA, including (in order of priority) integrated DOTLPF changes leveraging existing materiel capabilities, product improvements to existing materiel or facilities, adoption of interagency or foreign materiel solutions, and finally, initiation of new materiel programs. Identified capability needs or redundancies (excess to the need) establish the basis for developing materiel approaches and/or DOTLPF approaches.

⁹ The FSA ranks potential solutions. The priorities (in order) are (1) integrated DOTLPF changes that leverage existing materiel capabilities, (2) product improvements to existing materiel or facilities, (3) adoption of interagency or foreign materiel solutions, and (4) initiation of new materiel programs.

10.10.3 Functional Solution Analysis

10.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for the determination of CBRN/TIM protection requirements and means supporting national and strategic guidance, intent, plans, and taskings. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include analysis to identify required quantities and types of CBRND systems to support concurrent operations; the application of JCIDS and, as required, RDTE&A activities for CBRND resources to support expeditionary operations. Additionally, institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRND support requirements for two or more concurrent operations possessing CBRND threat and comparison to existing and programmed quantities and types of CBRND systems and resources.

- 1. Deficiency:** Available CBRND systems are not available in sufficient quantities to support the envisioned and published national military concurrent operations.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. Perform analysis to identify required quantities and types of CBRND systems. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.
- 2. Deficiency:** The requirements of plans that identify CBRND systems required to support operations are not centrally correlated with other plans.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.
- 3. Deficiency:** Existing COLPRO systems are not generally designed for a highly mobile force with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures standards for expeditionary forces possessing reduced logistical footprint during the first 30–90 days of operations following commencement of hostilities. Perform JCIDS and, as required, develop RDTE&A activities for CBRND resources supporting expeditionary operations. *Organization:* Develop organizational structures, resources, staffing, and

capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities.

Training: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 4. Deficiency:** Expeditionary forces are not necessarily equipped to support national and strategic operations

Non-Materiel Solutions: *Doctrine:* Complete JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. Conduct JCIDS and, as required, develop RDTE&A activities for CBRND resources supporting expeditionary operations. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities.

Training: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

10.10.3.2 IMA Assessment Summary

N/A

10.11 Task SNSHLD 11: Manage the provisioning of the force with CBRN/TIM protection systems, equipment and supplies addressing identified threats

10.11.1 Functional Area Analysis

10.11.1.1 Definition

To address the development and acquisition of systems of protection against current and projected CBRN/TIM threats. Includes the planning, coordination, programming, and oversight of research, development, and acquisition activities to protect the force. Also includes modification of existing systems and the development of new systems of protection to meet force requirements.

Note: Ties to SNSHLD 10 for identification of CBRN/TIM protection capability requirements.

10.11.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (SN 1.1.5, SN 1.1.6, SN 2.4.1.2, SN 3.4.4, SN 4.3.3, SN 5.2, SN 5.2.3, SN 6.1, SN 7.5, SN 9, SN 9.2, AN 9.2.1, SN 9.2.2).

10.11.1.2.1 Supported Task: N/A

10.11.1.2.2 Lateral Tasks: SNSHA 5, SNSHLD 10

10.11.1.2.3 Supporting Task: N/A

10.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Some interoperability. (C2.2.6)
2. Partial joint staff integration. (C2.3.1.1)
3. Partial multinational integration. (C2.3.1.2)
4. Slow pipeline responsiveness. (C2.8.3.1)
5. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.11.2 Functional Needs Analysis

10.11.2.1 Capability and Deficiency Assessment Summary

Table 10.11-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff supervises process to manage CBRN/TIM protective requirements essential to protect the force against identified threats and enable positive accomplishment of national and strategic goals, plans, and taskings.

Current Capability and Deficiency

Procedures exist to manage the provisioning of the force with CBRND protection systems, equipment, and supplies addressing the identified threats. The process reviews and analyses both current and programmed capabilities against current and projected requirements and to prioritize development, acquisition, and allocation actions. Deficiencies include the lack of available stockpiled CBRND systems in sufficient quantities to support envisioned and published national military concurrent operations, and the potential impact of critical components and protective systems manufactured outside the United States. The overall current assessment is “green.”

Projected Near/Mid-Term Capability and Deficiency

No projected changes to this task.

Projected Far-Term Capability and Deficiency

No projected changes to this task.

Table 10.11-1. SNSHLD 11: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current Overall Capability¹	G ²	G ³	Y ⁴	Y ⁴	R ⁵	R ⁶	Y ⁷				
Near/Mid-Term Overall Capability	G	G	G	G	G	G	Y	Y	R	R	Y
Far-Term Overall Capability	G	G	G	G	G	G	Y	Y	R	R	Y

	FAA Measure	Scale
M1	Documented assessment identifies unsatisfied required CBRN/TIM protection capabilities addressing threat.	<p>G: Overarching single process exists for the determination and assessment of required capabilities not satisfied by current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>Y: Each Service operates a single process for the determination and assessment of required capabilities not satisfied by current and projected capabilities for both materiel and non-materiel CBRND.</p> <p>R: The process for determination and assessment of required capabilities not satisfied by current and projected capabilities for materiel and/or non-materiel CBRND is in adequate or nonexistent.</p>
M2	Required CBRN/TIM protection capabilities are evaluated to determine whether capabilities can be satisfied through non-materiel measures and activities.	<p>G: Overarching single process exists for the identification and ranking of non-materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities.</p> <p>Y: Each Service operates a single process for the identification and ranking of non-materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities.</p> <p>R: The process for identification and ranking of non-materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities is inadequate or nonexistent.</p>
M3	Required CBRN/TIM protection materiel capabilities are evaluated to determine whether capabilities can be satisfied by modification of current assets.	<p>G: Overarching single process exists for the identification and ranking of potential materiel modification of current materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions.</p> <p>Y: Each Service operates a single process for the identification and ranking of potential materiel modification of current materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities and or by non-materiel solutions.</p> <p>R: The process for identification and ranking of potential materiel modification of current materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions is inadequate or nonexistent.</p>
M4	Required CBRN/TIM protection materiel capabilities not satisfied by previous standard (M3) are evaluated to determine whether capabilities can be satisfied by modification of current assets of friendly governments.	<p>G: Overarching single process exists for the identification and ranking of potential materiel modification of current friendly government materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current assets.</p> <p>Y: Each Service operates a single process for the identification and ranking of potential materiel modification of current friendly government materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current assets.</p> <p>R: The process for the identification and ranking of potential materiel modification of current friendly government materiel solutions to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current assets is inadequate or nonexistent.</p>

M5	Required CBRN/TIM protection materiel capabilities not satisfied by previous two standards (M3 and M4) are evaluated to determine whether capabilities can be satisfied using current technology and materiel.	<p>G: Overarching single process exists for the identification and ranking of potential applications of current technology and materiel to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current U.S. and friendly government assets.</p> <p>Y: Each Service operates a single process for the identification and ranking of potential applications of current technology and materiel to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current U.S. and friendly government assets.</p> <p>R: The process for the identification and ranking of potential applications of current technology and materiel to required capabilities not satisfied by current and projected CBRND capabilities or by non-materiel solutions and not solved by modification of current U.S. and friendly government assets is inadequate or nonexistent.</p>
M6	Required CBRN/TIM protection materiel capabilities not satisfied by previous three standards (M3–M5) are evaluated to determine whether capabilities can be reasonably satisfied by current or ongoing research for development of new technologies or materials.	<p>G: Overarching single process exists to evaluate and identify materiel capabilities which can be reasonably satisfied by current or ongoing research and development (R&D) of new technologies/materials to enable required capabilities that are not satisfied by current and projected CBRND capabilities, cannot be satisfied by non-materiel solutions, cannot be solved by modification of current U.S. and friendly government assets, and cannot be achieved using current technologies and materiel.</p> <p>Y: Each Service operates a single process to evaluate and identify materiel capabilities which can be reasonably satisfied by current or ongoing R&D of new technologies/materials to enable required capabilities that are not satisfied by current and projected CBRND capabilities, cannot be satisfied by non-materiel solutions, cannot be solved by modification of current U.S. and friendly government assets, and cannot be achieved using current technologies and materiel.</p> <p>R: The process to evaluate and identify materiel capabilities which can be reasonably satisfied by current or ongoing R&D of new technologies/materials to enable required capabilities that are not satisfied by current and projected CBRND capabilities, cannot be satisfied by non-materiel solutions, cannot be solved by modification of current U.S. and friendly government assets, and cannot be achieved using current technologies and materiel is inadequate or nonexistent.</p>
M7	CBRN/TIM protection capability requirements can be satisfied within the next five years.	<p>G: All identified CBRND protection requirements are satisfied within five years.</p> <p>Y: Critical CBRND protection requirements are generally satisfied within five years, when possible under current technologies and materiel.</p> <p>R: CBRND protection requirements are not satisfied within five years.</p>
M8	CBRN/TIM protection capability requirements are funded for resolution within the next five years.	<p>G: All identified CBRND protection requirements are funded for resolution within five years.</p> <p>Y: Critical CBRND protection requirements are generally funded for resolution within five years, when possible under current technologies and materiel.</p> <p>R: CBRND protection requirements are not funded for resolution within five years.</p>
M9	All critical protection assets, materials, or components are manufactured within the United States, and U.S. manufacturing is able to meet demand.	<p>G: All CBRND assets, components, and consumables are manufactured and assembled within the United States. Industry is able to meet routine replenishment requirements and to quickly surge to maintain support of operational and replenishment requirements.</p> <p>Y: All critical CBRND assets, components, and consumables are manufactured within the United States. Industry is able to meet routine replenishment requirements and to surge for operational and replenishment support.</p> <p>R: Critical CBRND assets, components, and/or consumables are not manufactured within the United States, and U.S. industry does not offer equivalent substitution.</p>

M10	CBRND requirements are fully stockpiled enabling sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.	<p>G: CBRND systems are stockpiled in plan identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are stockpiled or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not stockpiled and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M11	Replenishment effectively maintains minimum CBRND asset stock levels.	<p>G: Industry maintains capacity to support routine and operational minimum CBRND asset stock levels without any period of shortage.</p> <p>Y: Industry maintains capacity to meet routine minimum CBRND asset stock level replenishment requirements and can surge production capacity over a period of time.</p> <p>R: Routine and/or operational replenishment of minimum CBRND asset stock levels is inadequate or nonexistent.</p>

¹ Adequate DOTLPP exists to identify capability gaps and solutions. DOTLPP is not adequate for determination of the actual CBRND requirements for concurrent operations as defined in current national and strategic policy. Implementation of existing DOTLPP for stockpiling and replenishment is inadequate. Implementation is impacted by budgetary, logistical, and programmatic constraints as well as conflicting operational needs.

² The JCIDS process outlined in CJCSI 3170.01D and CJCSM 3170.01A detail the process for determining unsatisfied capabilities and identification of the means for resolution. The process reviews and analyzes both current and programmed capabilities against current and projected operational requirements. Both the JCIDS FAA and FNA review existing and projected protection capabilities. Using the tasks identified in the FAA as primary input, the FNA produces as output a list of capability gaps or shortcomings that require solutions and indicates the time frame in which those solutions are needed. The FNA may also identify redundancies in capabilities that reflect inefficiencies. The FNA includes supportability as an inherent part of defining capability needs.

³ The FSA is an operationally based assessment of potential DOTLPP approaches to solving (or mitigating) one or more of the capability gaps (needs) identified in the FNA. The needs identified in the FNA are inputs to the FSA. The FSA's outputs are potential solutions to needs, including in order of priority: integrated DOTLPP changes, product improvements to existing materiel or facilities alone, adoption of interagency or foreign materiel solutions that have limited non-materiel DOTLPP consequences, and finally, new materiel starts that have limited non-materiel DOTLPP consequences.

⁴ All CBRND protection capability requirements cannot be funded and resolved within the next five years. Constraints include funding availability, other critical operational requirements, and technological maturity. Prioritization of solutions to requirements for acquisition and development are determined and projected, as appropriate, to resolve or mitigate gaps and deficiencies. Funding and allocation authority for CBRND protection requirements are included in the POM process and compete with other requirements. The prioritization of solutions, anticipated costs, maturity of technology, criticality of the gap, method of resolution, production availability and capabilities, necessary research and development, testing and evaluation, supporting DOTLPP, and other factors influence the timeline for resolution and the associated budget projections. A gap may be quickly and easily resolved within five years of identification while others may require longer periods before the solution is fielded.

⁵ Critical components for protective systems are manufactured outside the US. For example, carbon beads used for construction of JSLIST IPE is manufactured overseas. The process is proprietary and manufacturing within CONUS is not available. Production of JSLIST and similar products are also constrained by the availability and manufacturing capacities of components originating outside the United States. The trend towards globalization of trade emphasizing the development of specialties is increasing. Manufacturing capabilities, particularly textile, are moving off-shore. This has an impact upon the ability of the United States to rapidly respond to circumstances by increasing existing manufacturing capabilities. It also places the United States potentially at production risk should a supplying nation disagree with U.S. actions and policies, placing a block on exports to the United States for critical materials and components.

⁶ Available CBRND systems are not stockpiled in sufficient quantities to support the envisioned and published national military concurrent operations. Systems are reallocated, when necessary, from stocks dispersed to installations and units for support of units deploying or operating within an area of operations. CBRND systems required to support operations are identified by specific plans. However, the requirements of these plans are not centrally correlated with other plans. Comparison is essential to relate plan identified CBRND requirements against existing and programmed quantities and types. Comparison must consider support requirements of two or more concurrent operations with

CBRN/TIM threat. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

⁷ Available CBRND systems are not stockpiled in sufficient quantities to support the envisioned and published national military concurrent operations. Timing for replenishment of systems is dependent upon manufacturing capabilities, system age, and funding availability. Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities.

10.11.3 Functional Solution Analysis

10.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for the provisioning of the force with CBRND protection systems, equipment, and supplies addressing the identified threats. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include analysis to identify prioritization of capability requirements to address threats, identification of critical components and systems manufactured outside the United States with identification of alternative sources or methods of supply; determined of required quantities and types of CBRND systems, including consumables, to support concurrent operations; the application of JCIDS and, as required, RDTE&A activities for CBRND resources to support expeditionary operations. Additionally, the task includes instituting in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRND support requirements for two or more concurrent operations possessing CBRND threat and comparison to existing and programmed quantities and types of CBRND systems and resources.

- 1. Deficiency:** All CBRND protection capability requirements cannot be satisfied within the next five years.

Non-Materiel Solutions: *Doctrine:* Increase CBRND funding to meet anticipated needs. Prioritize solutions to requirements for development and/or acquisition. Conduct analysis to identify prioritization of capability requirements to address threat. *Organization:* Implement development of plans and taskings consistent with available and projected CBRND capabilities.
- 2. Deficiency:** Critical components for protective systems are manufactured outside the United States.

Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the identification of critical CBRND components and systems, to include the identification of alternatives (e.g., other sources of supply, stockpiling, manufacturing incentives, etc.). Conduct analysis to identify critical components and systems manufactured outside the United States and identification of alternative sources of supply. *Leadership:* Awareness of vulnerabilities associated with procurement of non-U.S. manufactured critical CBRND components and planning for vulnerability mitigation.
- 3. Deficiency:** Available CBRND systems are not stockpiled in sufficient quantities to support the envisioned and published national military concurrent operations.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. Stockpile as necessary to support determined requirements. Conduct analysis of required CBRND system types and quantities, including consumables. *Leadership:* Implement development of plans and taskings consistent with stockpile support capabilities.

- 4. Deficiency:** The requirements of plans that identify CBRND systems required to support operations are not centrally correlated with other plans.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. Conduct analysis to identify required quantities and types of CBRND systems. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.
- 5. Deficiency:** Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete JCIS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. Conduct JCIDS and, as required, develop RDTE&A activities for CBRND resources supporting expeditionary operations. *Organization:* Organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 6. Deficiency:** DOTLPF is not adequate for determination of the actual CBRND requirements for concurrent operations as defined in current national and strategic policy.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. Conduct analysis to identify required quantities and types of CBRND systems. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.

7. Deficiency: Implementation of existing DOTLPF for stockpiling and replenishment is inadequate.

Non-Materiel Solutions: *Doctrine:* Enforce existing DOTLPF for stockpiling and replenishment.

10.11.3.2 IMA Assessment Summary

N/A

10.12 Task SNSHLD 12: Allocate protection resources for CBRND

10.12.1 Functional Area Analysis

10.12.1.1 Definition

To ensure adequate, efficient, and timely availability of CBRN/TIM protection resources to the force. Also supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities. Effective allocation of CBRND resources includes the identification, stockpiling, prepositioning, movement, distribution, and management of these resources to optimize protection of the force. Allocation of resources includes the development, positioning, and movement of generic unit CBRND kits. These kits contain common CBRND assets (consumable and nonconsumable) for a standard size unit or set of units. The kits are basic building blocks tailorable to specific requirements. The kits provide ready CBRND resources for a rapidly deployed force and are prepositioned to reduce planning and preparation, unit deployment logistics, time-phased force and deployment list (TPFDL), and movement requirements.

10.12.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (SN 1.1.5, SN 1.1.6, SN 2.4.1.2, SN 3.4.4, SN 4.3.3, SN 5.2, SN 5.2.3, SN 6.1, SN 7.5, SN 9, SN 9.2, AN 9.2.1, SN 9.2.2).

10.12.1.2.1 Supported Task: N/A

10.12.1.2.2 Lateral Task: SNSHA 5

10.12.1.2.3 Supporting Tasks: STSHLD 2, STSHLD 3, STSHLD 4, STSHLD 8, STSHLD 11

10.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Limited military commitments from other nations. (C2.1.1.7)
2. Some interoperability. (C2.2.6)
3. Partially completed mission preparation. (C2.1.3)
4. Partial joint staff integration. (C2.3.1.1)
5. Partial multinational integration. (C2.3.1.2)

6. Sufficient deployed supplies. (C2.8.2)
7. Sufficient CONUS resupply. (C2.8.3)
8. Slow pipeline responsiveness. (C2.8.3.1)
9. Limited prepositioned materiel. (C2.8.4)
10. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

10.12.2 Functional Needs Analysis

10.12.2.1 Capability and Deficiency Assessment Summary

Table 10.12-1 discusses the only capability that exists to perform the task to the designated standard. CJCS/joint staff identifies CBRND resource requirements and availability, prepares resource taskings to support requirements, and allocates resources to support national and strategic planning.

Current Capability and Deficiency

Logistics procedures exist to allocate protection resources for CBRND of the force. Deficiencies include the lack of prepositioned and stockpiled CBRND systems in sufficient quantities to support envisioned and published national military concurrent operations and the potential impact of critical components and protective systems manufactured outside the United States. Overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 10.12-1. SNSHLD 12: Capability and Deficiency Assessment

Capability: CJCS—Joint Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current Overall Capability¹	R ²	R ²	Y ³	Y ³	R ⁴	Y ⁵	R ⁶	Y ^{2,3}	Y ⁵	Y ⁷	R ⁸	R ⁹	R ³
Near/Mid-Term Overall Capability	R	R	Y	Y	R	Y	R	Y	Y	Y	R	R	R
Far-Term Overall Capability	R	R	Y	Y	R	Y	R	Y	Y	Y	R	R	R

	FAA Measure	Scale
M1	Prepositioned CBRND requirements enable sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.	<p>G: CBRND systems are prepositioned in plan identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are prepositioned or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not prepositioned and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M2	CBRND requirements are stockpiled enabling sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.	<p>G: CBRND systems are stockpiled in plan identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are stockpiled or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not stockpiled and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M3	Replenishment effectively maintains minimum CBRND asset prepositioned stock levels.	<p>G: Industry maintains capacity to support routine and operational minimum prepositioned CBRND asset stock levels without any period of shortage.</p> <p>Y: Industry maintains capacity to meet routine minimum prepositioned CBRND asset stock level replenishment requirements and can surge production capacity over a period of time.</p> <p>R: Routine and/or operational replenishment of minimum prepositioned CBRND asset stock levels is inadequate or nonexistent.</p>
M4	Replenishment effectively maintains minimum stockpile CBRND asset stock levels.	<p>G: Industry maintains capacity to support stockpile routine and operational minimum CBRND asset stock levels without any period of shortage.</p> <p>Y: Industry maintains capacity to meet routine minimum stockpile CBRND asset stock level replenishment requirements and can surge production capacity over a period of time.</p> <p>R: Routine and/or operational replenishment of minimum stockpile CBRND asset stock levels is inadequate or nonexistent.</p>

M5	All strategic forces are equipped for sustained CBRN/TIM environment operations.	<p>G: Strategic forces are adequately equipped or possess ready access to CBRND resources to support national and strategic operations within a CBRN/TIM environment.</p> <p>Y: Strategic forces are equipped or possess access to CBRND resources upon notification to support national and strategic operations with threat and conduct sustained operations within a CBRN/TIM environment.</p> <p>R: Strategic forces are inadequately equipped or possess inadequate access to CBRND resources to support national and strategic operations within a CBRN/TIM environment.</p>
M6	Required COLPRO systems are available.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M7	All critical facilities and activities are equipped with COLPRO.	<p>G: All identified critical facilities and activities are equipped with operational COLPRO.</p> <p>Y: All identified critical facilities and activities possess or are programmed to be equipped with COLPRO.</p> <p>R: All critical facilities and activities are not equipped and/or are not programmed to be equipped with COLPRO.</p>
M8	Required CBRND consumables are available.	<p>G: CBRND systems are stockpiled and prepositioned in plan identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are stockpiled and prepositioned or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not stockpiled and/or prepositioned and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M9	Required transportable COLPRO available and operational.	<p>G: Operational transportable COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: Operational transportable COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: Operational transportable COLPRO is inadequate or nonexistent to support operations.</p>
M10	Required mobile COLPRO available and operational.	<p>G: Operational mobile COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: Operational mobile COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: Operational mobile COLPRO is inadequate or nonexistent to support operations.</p>
M11	Required unit CBRND resources are available and ready.	<p>G: Generic unit CBRND kits are defined, prepositioned, stockpiled, and available in plan identified required quantities to support a basic range of sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: Generic unit CBRND kits are defined, prepositioned, stockpiled, or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities of available generic unit CBRND kits.</p> <p>R: Generic unit CBRND kits are not defined, prepositioned, stockpiled, and/or available in sufficient quantities to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>

M12	Required non-mission support civilian CBRND equipment is stockpiled and prepositioned.	<p>G: Non-mission support civilian CBRND is adequately stockpiled and prepositioned to support national and strategic operations with a CBRN/TIM threat.</p> <p>Y: Non-mission support civilian CBRND is generally stockpiled and deployed to support national and strategic operations with threat.</p> <p>R: Stockpiles and/or prepositioned CBRND equipment for non-mission support civilians are inadequate or nonexistent and unable to support national and strategic operations with a CBRN/TIM threat.</p>
M13	Required prepositioned CBRND assets are at designated locations.	<p>G: Prepositioned CBRND assets are identified and available in plan identified required types and quantities to support a basic range of sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: Prepositioned CBRND assets are available in adequate types and quantities to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities of available generic unit CBRND kits.</p> <p>R: Prepositioned CBRND assets are inadequate or nonexistent to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>

¹ General logistics DOTLPF exists addressing the allocation, prepositioning, and stockpiling of materiel. The application and implementation of this DOTLPF is inadequate. Further, the general logistics DOTLPF requires review and adjustment to support the force during and following transformation.

² Available CBRND systems are not prepositioned in sufficient quantities to support the envisioned and published national military concurrent operations. CBRND systems, when available, are moved from stockpiles to support operations. Additional systems are reallocated, when necessary, from stocks dispersed to installations and units for support of units deploying or operating within an area of operations. Both reallocations necessitate TPFD allocation and support. CBRND systems required to support operations are identified by specific plans. However, the requirements of these plans are not centrally correlated with other plans. Comparison is essential to relate plan identified CBRND requirements against existing and programmed quantities and types. Comparison must consider support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30-90 days). Prepositioning is accomplished using prelocated material within friendly nations and onboard ships. However, prepositioning must consider the potential for operations without seaports and where access is restricted by noninvolved nations.

³ Available CBRND systems are not prepositioned in sufficient quantities to support the envisioned and published national military concurrent operations. Timing for replenishment of systems is dependent upon manufacturing capabilities, system age, and funding availability. Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This concern is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities.

⁴ Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Strategic force equipage is based upon current doctrine, policy, and associated planning documents.

⁵ Mature theater CPS is available. These include Joint Transportable Collective Protection System (JTCOPS), Chemically Protected Deployable Medical System (CP-DEPMEDS), Tent, Expandable, Modular, Personnel (TEMPER) systems, and Service-designed systems. Current CPS is inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing a reduced logistical footprint.

⁶ Not all critical facilities and activities are equipped with COLPRO.

⁷ Mobile COLPRO exists in selected tactical combat and support vehicles. The quantities and types of these vehicles are limited and are dedicated to specific missions. Current mobile COLPRO is inadequate to support operations by highly mobile forces.

⁸ Generic unit CBRND kits are not defined in current doctrine. Limited CBRND asset assemblies do exist and are prepositioned at selected sites. However, these assemblies are generally unit specific.

⁹ Non-mission support civilian CBRND equipment is not stockpiled and prepositioned.

10.12.3 Functional Solution Analysis

10.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies associated with policies, standards, and criteria for the provisioning of the force with CBRND protection systems, equipment, and supplies addressing the identified threats. The deficiencies can be addressed by non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section. Non-materiel solutions include analysis to identify critical components and systems manufactured outside the United States with identification of alternative sources or methods of supply; determination of required quantities and types of CBRND systems, including consumables, to support concurrent operations; identification of common CBRND assets (including consumables) and quantities for standard size units; identification of critical facilities and activities; analysis and RD&E to establish standards for equipping potential populations; application of JCIDS and, as required, RDTE&A activities (as appropriate) to obtain, stockpile, and preposition CBRND materiel and to support expeditionary operations. Additionally, institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRND support requirements for two or more concurrent operations possessing CBRND threat and comparison to existing and programmed quantities and types of CBRND systems and resources; sustained operations within a CBRN/TIM environment; and define and incorporate generic CBRND kits. Conduct review and adjustment of general logistics DOTLPF to support the force during and following transformation.

- 1. Deficiency:** Available CBRND systems are not stockpiled in sufficient quantities to support the envisioned and published national military concurrent operations.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. Stockpile as necessary to support determined requirements. Conduct analysis of required CBRND system types and quantities, including consumables. *Leadership:* Implement development of plans and taskings consistent with stockpile support capabilities.
- 2. Deficiency:** The requirements of national and strategic plans are not centrally correlated with other plans.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. Conduct analysis to identify required quantities and types of CBRND systems. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.

- 3. Deficiency:** Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, in austere environment, and the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete JCIS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. Conduct JCIDS and, as required, develop RDTE&A activities for CBRND resources supporting expeditionary operations. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 4. Deficiency:** Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and wiliness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 5. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.

Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policies. *Remaining Non-Materiel Needs:* Conduct analysis to identify critical facilities and activities.
- 6. Deficiency:** CBRND asset assemblies or kits are generally unit-specific.

Non-Materiel Solutions: *Doctrine:* Incorporate generic and unit-specific CBRND kits into doctrine, policy, and procedures. Unit-specific CBRND kits should tailor generic kits. Conduct analysis to identify common CBRND assets (including consumables) and quantities for standard size units. *Facilities:* Supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of generic CBRND unit kits.
- 7. Deficiency:** Generic unit CBRND kits are not defined in current doctrine.

Non-Materiel Solutions: *Doctrine:* Incorporate generic and unit-specific CBRND kits into doctrine, policy, and procedures. Unit-specific CBRND kits should tailor generic kits.

Facilities: Supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of generic CBRND unit kits. *Remaining Non-Materiel Needs:* Conduct analysis to identify common CBRND assets (including consumables) and quantities for standard size units.

- 8. Deficiency:** Non-mission support civilian CBRND equipment is not stockpiled and prepositioned.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the provisioning of civilians addressing the variation within a potential population. Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify eligible civilian CBRND support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment and prepositioning of CBRND assets for civilians. Conduct analysis and RD&E to establish standards for equipping potential population. Conduct JCIDS and develop RDTE&A, as appropriate, to obtain, stockpile, and preposition CBRND for potential population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations, as appropriate. *Leadership:* Implement planning and management of CBRND training, equipping, stockpiling, prepositioning, and protection of eligible civilians. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.

- 9. Deficiency:** The application and implementation of this DOTLPF is inadequate.

Non-Materiel Solutions: *Doctrine:* General logistics DOTLPF requires review, adjustment, and aggressive implementation to support the force during and following transformation.

10.12.3.2 IMA Assessment Summary

N/A

CHAPTER 11. STRATEGIC THEATER SHIELD

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11.0 Strategic Theater Shield

11.0.1 Introduction

Strategic level of war is divided into two sublevels: Strategic National and Strategic Theater (ST). This chapter focuses upon the ST level of war at the national (combatant command) level of task development and implementation. At this level, combatant command (COCOM) authorities—often in cooperation with other nations—implement and establish national or multinational (alliance or coalition) security objectives and guidance and develop and apply national resources to accomplish these objectives. Decisions and activities at the ST level implement national and multinational military objectives, specify the sequencing of activities and actions, develop supporting global plans and means to attain these objectives, delineate limits and assess risks for the application of military power, and provide military forces and other capabilities as outlined in strategic plans.¹

This chapter, detailing the Strategic Theater area, restates relevant information from the chemical, biological, radiological, and nuclear defense (CBRND) Functional Area Analysis (FAA), including a description of each of the 11 ST Shield (SHLD) tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis, and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. Solutions for STSHLD are non-materiel and are reflected in one or more of the six areas of DOTLPP: doctrine, organization, training, leadership, personnel, and facilities. Annotations under Materiel are non-materiel in nature, but do not align in one of the six non-materiel aspects of DOTLPP. These annotations include research, analysis, and other actions to address and establish solutions for the deficiencies.

Most of the ST tasks involve doctrine, policies, and procedures providing parameters for planning, decisioning, and actions or activities to accomplish the tasks. These range from the positioning and sustainment of CBRND materiel and resources, through protection of forces throughout the deployment cycle and the integration of coalition CBRND resources, to mass medical and contaminated/exposed casualty and remains operations.

Tasks associated with forces include constituent elements of the transforming force such as civilians, military working animals (MWAs), coalition/alliance forces, and third-party nationals. Increasing reliance upon nonmilitary personnel (such as government employees and contractors) as operational enablers dictated their inclusion as force members.

11.0.2 FNA Summary

Table 11.0-1 summarizes the overall current and projected capability to perform the STSHLD tasks identified in the CBRND FAA. The overall capability to conduct STSHLD tasks in the

¹ Appendix A to Enclosure B, para. 3a, CJCMS 3500.04C, *Universal Joint Task List*, July 2002, CJCS.

current time frame is assessed as “yellow.” There are key deficiencies in COCOM ability to protect populations other than military members as well as support concurrent CBRND operations, especially those associated with sustained and expeditionary operations within a chemical, biological, radiological, and nuclear (CBRN)/toxic industrial material (TIM) environment. It is projected that the overall status will remain “yellow” in the near/mid term, with limited improvements in specific measures within specific tasks.

Table 11.0-1. Strategic Theater Shield Summary FNA Findings

CBRN Strategic Theater Shield Task Number	CBRN Strategic Theater Shield Task Title	Capability		
		Current	Near/Mid	Far
STSHLD 1	Determine CBRN/TIM protection requirements and means supporting CBRND national and Strategic Theater guidance, intent, plans, and taskings	●	●	●
STSHLD 2	Provide for the allocation, sustainment, and positioning of CBRN/TIM protection supplies, equipment, and systems	●	●	●
STSHLD 3	Coordinate medical prophylaxis to reduce impact of CBRN/TIM	●	●	●
STSHLD 4	Establish standards, criteria, and procedures for training, equipping, and protecting eligible civilians not supporting the mission from threat CBRN/TIM agents	●	●	●
STSHLD 5	Establish appropriate CBRN/TIM protective measures and resources for deploying/redeploying joint forces at assembly, staging, embarkation, debarkation, and en route locations	●	●	●
STSHLD 6	Establish Protective Posture Protocols to ensure protection level is consistent with the threat and minimizes risk while limiting the impact on mission execution	●	●	●
STSHLD 7	Integrate coalition/non-U.S. and joint force CBRN/TIM protective measures and assets	●	●	●

STSHLD 8	Ensure adequate protective measures and resources are available to coalition partners and other designated non-U.S. forces	●	●	●
STSHLD 9	Provide COLPRO for critical activities/functions, rest and relief	●	●	●
STSHLD 10	Employ protective measures to minimize the effects of adversary use of CBRN weapons and TIM exposure	●	●	●
STSHLD 11	Ensure adequate CBRN/TIM protective equipment and supplies to support medical operations	●	●	●
OVERALL		●	●	●

11.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions for the capability gaps identified in the FNA section. The summaries also address the non-materiel solutions annotated under Materiel as discussed earlier. STSHLD addresses non-materiel actions and activities. Therefore, materiel solutions are not applicable to this level of war.

11.0.3.1 DOTLPF

The non-materiel DOTLPF solutions identified in this chapter are associated primarily with the level of protection afforded by CBRND systems and measures and the readiness of force populations for CBRND activities and actions. Non-materiel solutions are identified. These solutions include such actions as the establishment of doctrine addressing the needs of the force, its constituent populations, and mass medical operations involving non-U.S. military personnel, applicable training programs, infrastructures and organizational structures supporting CBRND operations within sustained CBRN/TIM environments for the transformed force, leadership CBRND awareness and decisioning enablers, and criteria for civilian personnel performing mission related activities within a CBRN/TIM environment. Also identified are analyses, assessments, evaluations, and programs to assist the clarification and resolution of identified deficiencies.

11.0.3.2 IMA

All solutions identified for the Strategic Theater level of war within Shield are non-materiel approaches. Materiel solutions are not applicable to this Shield level of war.

11.1 Task STSHLD 1: Determine CBRN/TIM protection requirements and means supporting CBRND national and Strategic Theater guidance, intent, plans, and taskings

11.1.1 Functional Area Analysis

11.1.1.1 Definition

To establish current and projected CBRN/TIM protection capabilities and requirements to protect against threat CBRN/TIM agents and hazards. Ensures the successful and decisive accomplishment of operations within threat environments. Includes the assessment of national and theater guidance, intent, plans, and taskings against current and future threats and operations. The assessment identifies CBRN/TIM protection needs and determines the appropriate supporting quantity and mix of CBRN/TIM protection resources. The determination of protective resources balances operational requirements with optimal CBRN/TIM protection. The determination seeks to minimize hazards, physical encumbrances, performance limitations, and adverse impacts on mission capabilities. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate weapons of mass destruction (WMD) vulnerabilities.

11.1.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 2.2.1, ST 2.4, ST 2.4.1.1, ST 2.4.1.2, ST 4.2.6, ST 5, ST 5.1, ST 5.1.1, ST 5.1.2, ST 5.1.3, ST 5.2, ST 5.2.1, ST 5.3.1.1, ST 5.3.1.4, ST 5.4.1, ST 6, ST 6.2, ST 7.1.1, ST 9, ST 9.3, ST 9.4).

11.1.1.2.1 Supported Task: SNSHLD 10

11.1.1.2.2 Lateral Task: STSHA 3

11.1.1.2.3 Supporting Task: N/A

11.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Partial interoperability. (C2.2.6)
3. Partial joint staff integration. (C2.3.1.1)

4. Partial multinational integration. (C2.3.1.2)
5. Limited deployed supplies. (C2.8.2)
6. Sufficient continental United States (CONUS) resupply. (C2.8.3)
7. Slow pipeline responsiveness. (C2.8.3.1)
8. Limited prepositioned materiel.(C2.8.4)
9. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support. (C3.1.2.3)
3. TIMs present in the civilian sector. (C3.3.7.5)

11.1.2 Functional Needs Analysis

11.1.2.1 Capability and Deficiency Assessment Summary

Table 11.1-1 discusses the only capability that exists to perform the task to the designated standard.

Current Capability and Deficiency

Procedures exist to assess national and Strategic Theater guidance, intent, plans, taskings, and threats are assessed by the COCOM staff to determine operational requirements and to identify CBRND protection needs supporting future and ongoing operations. The process includes the training, acquisition, allocation, and equipping of forces. Strategic Theater forces are adequately trained, equipped (or resources are accessible), and prepared to conduct Strategic Theater operations. Adequate DOTLPF exists to assess requirements, identify and allocate resources, and to equip the force. Deficiencies include the availability, in sufficient quantities and types, of CBRND systems to support envisioned and published Strategic Theater concurrently. Further, existing CBRND collective protection (COLPRO) systems are not generally designed for a highly mobile expeditionary force, in an austere environment, with a reduced logistical footprint, and during the initial period of operations until the theater matures, usually the first 30–90 days following commencement of hostilities. The overall current capability is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.1-1. STSHLD 1 Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	R ³	Y ⁴	G ⁵	Y ⁶
Near/Mid-Term Overall Capability	Y	R	Y	G	Y
Far-Term Overall Capability	Y	R	Y	G	Y

	FAA Measure	Scale
M1	Guidance, intent, plans, and taskings are assessed for required CBRN/TIM protection requirements.	<p>G: National and strategic guidance, intent, plans, and taskings are assessed to determine supporting CBRND systems capabilities and means and encompass quantities and types necessary to support multiple concurrent Strategic Theater military operations with threat.</p> <p>Y: National and strategic guidance, intent, plans, and taskings are assessed to determine supporting CBRND systems capabilities and means encompassing quantities and types necessary to support Strategic Theater military operations with threat.</p> <p>R: The assessment of national and strategic guidance, intent, plans, and/or taskings is inadequate or nonexistent to determine supporting CBRND systems capabilities and/or means encompassing quantities and/or types necessary to support Strategic Theater military operations with threat.</p>
M2	Required protective systems are available.	<p>G: CBRND systems are available in plan-identified required quantities and types to support multiple concurrent Strategic Theater military operations with threat.</p> <p>Y: CBRND systems are available in sufficient quantities and types to support concurrent Strategic Theater operations with threat. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not available in sufficient quantities and types to support concurrent theater operations with threat.</p>
M3	Forces are equipped to conduct theater operations.	<p>G: Strategic Theater forces are adequately equipped and possess ready access to CBRND resources to support Strategic Theater operations with threat.</p> <p>Y: Strategic Theater forces are equipped and possess access to CBRND resources upon notification to support Strategic Theater operations with threat.</p> <p>R: Strategic Theater forces are inadequately equipped or possess inadequate access to CBRND resources to support Strategic Theater operations with threat.</p>
M4	Forces are trained and prepared to conduct theater operations.	<p>G: Strategic Theater forces are trained and exercised routinely for the attainment and assessment of the skills, knowledge, and abilities to support Strategic Theater operations with threat.</p> <p>Y: Selected Strategic Theater forces are trained and exercised routinely for the attainment and assessment of the skills, knowledge, and abilities to support theater operations with threat. Remaining strategic forces are trained and exercised upon notification to prepare for Strategic Theater operations with threat.</p> <p>R: Training and exercising of strategic forces for Strategic Theater operations with threat is inadequate or nonexistent.</p>
M5	Protection capability requirements are determined.	<p>G: Plans, guidance, threats, and taskings are assessed to determine CBRND capability requirements for support of multiple concurrent Strategic Theater operations with threat.</p> <p>Y: Plans, guidance, threats, and taskings are assessed to determine CBRND capability requirements for support of Strategic Theater operations with threat.</p> <p>R: The process for determination and assessment of CBRND protection capability requirements is inadequate or nonexistent.</p>

¹ Adequate DOTMLPF exists to assess requirements, identify and allocate resources, and equipping the force. DOTMLPF is not adequate for determination of the actual CBRND requirements for concurrent operations as defined in current national and Strategic Theater policy. DOTMLPF is also inadequate for this task to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations during the first 30–60 days.

² Plans, guidance, threats, and taskings are assessed by the COCOM staff to determine operational requirements, including CBRND. However, dual taskings can occur on specific resources necessitating changes in taskings for concurrent operations. Limitations upon resource availability may necessitate adjustments to the planned mix and quantities. These adjustments may impact optimal CBRND protection with implications for operational planning and support.

³ Available CBRND systems are not available in sufficient quantities to support concurrent military operations. CBRND systems required to support operations are identified by specific plans. However, the requirements of these plans are not always correlated with other plans. Comparison is essential to relate plan identified CBRND requirements against existing and programmed quantities and types. Comparison must consider support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

⁴ Strategic Theater forces are adequately equipped or resources are accessible to support Strategic Theater operations. However, expeditionary and concurrent operations remain a concern.

⁵ Strategic Theater forces are trained and prepared to support Strategic Theater operations.

⁶ Plans, guidance, threats, and taskings are assessed by the COCOM staff to determine operational CBRND capability requirements. However, dual taskings can occur on specific resource capabilities necessitating changes in taskings for concurrent and operations. Identification of capabilities supporting sustained operations within a CBRN/TIM environment and expeditionary operations during the first 30–60 days are a concern.

11.1.3 Functional Solution Analysis

11.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the Ideas for Materiel Approaches (IMA) section.

1. **Deficiency:** Dual taskings can occur on specific resources necessitating changes in taskings for concurrent operations. Limitations upon resource availability may necessitate adjustments to the planned mix and quantities, potentially impacting optimal CBRND protection with implications for operational planning and support.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.

2. **Deficiency:** Available CBRND systems are not available in sufficient quantities to support concurrent military operations.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.

3. **Deficiency:** The CBRN/TIM system requirements identified by specific plans are not centrally correlated with other plans. Comparison is essential to identify CBRN/TIM systems and supporting levels of consumables required for the anticipated duration of operations and to consider support requirements of two or more concurrent operations with CBRN/TIM threat.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including replenishment. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.

4. **Deficiency:** Expeditionary and concurrent operations forces may be insufficiently equipped to conduct theater operations.

Non-Materiel Solutions: *Doctrine:* Complete the Joint Capabilities Integration and Development System (JCIDS) process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support

expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization*: Organization structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

5. **Deficiency**: Expansion of DOTMLPF for determination of actual CBRND requirements for concurrent operations as defined in current national and Strategic Theater policy.
Non-Materiel Solutions: *Doctrine*: Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership*: Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.
6. **Deficiency**: Expansion of DOTMLPF to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations during the first 30–60 days.
Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

11.1.3.2 IMA Assessment Summary

N/A

11.2 Task STSHLD 2: Provide for the allocation, sustainment, and positioning of CBRN/TIM protection supplies, equipment, and systems

11.2.1 Functional Area Analysis

11.2.1.1 Definition

To ensure adequate, efficient, and timely availability of CBRN/TIM protection resources to the force. This task includes the identification, stockpiling, prepositioning, movement, distribution, and management of resources to optimize protection of the force against the effects of CBRN/TIM agents. Encompasses the planning, programming, and oversight of acquisition activities to obtain CBRN/TIM protection equipment, supplies, and systems to meet force requirements against identified threats. Since units are vulnerable during initial period of arrival in theater, CBRN/TIM protective assets must be on the ground early during deployment. The CBRN/TIM threat in the area of responsibility (AOR) will drive timing and quantity of protective assets required. Each Service possesses CBRND assets contributing to the overall CBRN/TIM protection capability. Forward-positioned forces and prepositioning of equipment will help overcome initial vulnerabilities. Protective assets include collective protection shelters (CPSs), stockpile of protection supplies, protection of general equipment and supplies, and medical resources. Nuclear, biological, and chemical (NBC) staff officers coordinate with logisticians and operational planners to ensure CBRN/TIM protective assets are strategically placed near the area where they will likely be needed. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities.

11.2.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (ST 1.1.2, ST 2.4.1.1, ST 6, ST 6.2, St 7.1.1, ST 9, ST 9.3, ST 9.4).

11.2.1.2.1 Supported Task: SNSHLD 12

11.2.1.2.2 Lateral Task: STSHA 3

11.2.1.2.3 Supporting Task: OPSHLD 8

11.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)

2. Partial interoperability. (C2.2.6)
3. Partial joint staff integration. (C2.3.1.1)
4. Partial multinational integration. (C2.3.1.2)
5. Limited deployed supplies. (C2.8.2)
6. Sufficient CONUS resupply. (C2.8.3)
7. Slow pipeline responsiveness. (C2.8.3.1)
8. Limited prepositioned materiel. (C2.8.4)
9. Limited host-nation support. (C2.8.5)
10. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

11.2.2 Functional Needs Analysis

11.2.2.1 Capability and Deficiency Assessment Summary

Table 11.2-1 discusses the only capability that exists to perform the task to the designated standard.

Current Capability and Deficiency

General logistics DOTLPF exists addressing the allocation, sustainment, prepositioning, and stockpiling of materiel. Deficiencies include inadequate quantities and types of COLPRO to support envisioned and published Strategic Theater concurrent operations; CBRND of deploying/redeploying/relocating/en route forces (as well as personnel at CONUS and selected non-high-threat area [HTA] sites outside the Continental United States[OCONUS]); lack of COLPRO in tactical/strategic airframes (particularly airlift) and supporting vessels (e.g., hospital ships, cargo vessels, etc.); availability of stockpiles and prepositioned CBRND stocks; and critical facility COLPRO and COLPRO systems (designs, quantities, and types) supporting highly mobile and expeditionary forces with reduced logistical footprint and the initial period of operations until maturity of the theater, usually the first 30–90 days from commencement of hostilities. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.2-1. STSHLD 2: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current Overall Capability¹	R ²	R ³	R ³	R ⁴	R ⁵	R ⁶	Y ⁷	Y ⁸	R ⁹	R ¹⁰	R ¹¹	R ¹²	Y ¹³
Near/Mid-Term Overall Capability	R	R	R	R	R	R	Y	Y	R	R	R	R	Y
Far-Term Overall Capability	R	R	R	R	R	R	Y	Y	R	R	R	R	Y

	FAA Measure	Scale
M1	Forces are equipped with or possess access to COLPRO within a 24-hour period.	<p>G: Forces are adequately equipped with or have sufficient access to COLPRO to provide all personnel with rest and recuperation (R&R) access more than once every 24 hours</p> <p>Y: Forces are adequately equipped with or have sufficient access to COLPRO to provide all personnel with R&R access once every 24 hours.</p> <p>R: Forces inadequately equipment and/or possess insufficient access to COLPRO provide all personnel with R&R access at least once every 24 hours</p>
M2	Forces are equipped with individual CBRN/TIM protective equipment.	<p>G: Strategic Theater forces are adequately equipped and possess ready access to CBRND resources to support national and Strategic Theater operations within a CBRN/TIM environment.</p> <p>Y: Strategic Theater forces are equipped and possess access to CBRND resources upon notification to support national and Strategic Theater operations with threat and conduct sustained operations within a CBRN/TIM environment.</p> <p>R: Strategic Theater forces are inadequately equipped and/or possess inadequate access to CBRND resources to support national and Strategic Theater operations within a CBRN/TIM environment.</p>
M3	Protection assets are readily available to joint force elements.	<p>G: Strategic Theater forces are adequately equipped and possess ready access to CBRND resources to support national and Strategic Theater operations within a CBRN/TIM environment.</p> <p>Y: Strategic Theater forces are equipped and possess access to CBRND resources upon notification to support national and Strategic Theater operations with threat and conduct sustained operations within a CBRN/TIM environment.</p> <p>R: Strategic Theater forces are inadequately equipped and/or possess inadequate access to CBRND resources to support national and Strategic Theater operations within a CBRN/TIM environment.</p>
M4	Planned initial period of operations is supportable by prepositioned CBRND assets.	<p>G: CBRND systems are prepositioned in plan-identified required quantities and types to support initial periods of operations (30–90 days) against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are prepositioned or available to support initial periods of operations (30–90 days) against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not prepositioned and/or available in sufficient quantities and types to support initial periods of operations (30–90 days) against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>

M5	Planned operations are supportable by current stockpiles of CBRND assets.	<p>G: CBRND systems are stockpiled in plan-identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are stockpiled or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not stockpiled and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M6	Critical facilities and activities are equipped with COLPRO.	<p>G: All identified critical facilities and activities are equipped with operational COLPRO.</p> <p>Y: All identified critical facilities and activities possess or are programmed to be equipped with COLPRO.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M7	Required CBRND consumables are available.	<p>G: CBRND systems are stockpiled and prepositioned in plan-identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: CBRND systems are stockpiled and prepositioned or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems are not stockpiled and/or prepositioned and/or available in sufficient quantities and types to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M8	Required transportable CPSs are available and operational.	<p>G: Operational transportable CPSs are available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: Operational transportable CPSs are available in sufficient types and quantities to support major operations.</p> <p>R: Operational transportable CPSs are inadequate or nonexistent to support operations.</p>
M9	Required mobile CPSs are available and operational.	<p>G: Operational mobile CPSs are available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: Operational mobile CPSs are available in sufficient types and quantities to support major operations.</p> <p>R: Operational mobile CPSs are inadequate or nonexistent to support operations.</p>
M10	Required generic unit CBRND kits are available and ready.	<p>G: Generic unit CBRND kits are defined, prepositioned, stockpiled, and available in plan-identified required quantities to support a basic range of sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations</p> <p>Y: Generic unit CBRND kits are defined, prepositioned, stockpiled, or available to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities of available generic unit CBRND kits.</p> <p>R: Generic unit CBRND kits are not defined, prepositioned, stockpiled, and/or available in sufficient quantities to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>

M11	Required non-mission support civilian CBRND equipment and supplies are stockpiled and prepositioned.	<p>G: Non-mission support civilian CBRND is adequately stockpiled and prepositioned to support national and Strategic Theater operations with a CBRN/TIM threat.</p> <p>Y: Non-mission support civilian CBRND is generally stockpiled and deployed to support national and Strategic Theater operations with threat.</p> <p>R: Stockpiles and/or prepositioned CBRND equipment for non-mission support civilians are inadequate or nonexistent and unable to support national and Strategic Theater operations with a CBRN/TIM threat.</p>
M12	Required prepositioned CBRND assets are at designated locations.	<p>G: Prepositioned CBRND assets are identified and available in plan identified required types and quantities to support a basic range of sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p> <p>Y: Prepositioned CBRND assets are available in adequate types and quantities to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations. Adjustments to plan requirements are made to adjust to limitations in quantities of available generic unit CBRND kits.</p> <p>R: Prepositioned CBRND assets are inadequate or nonexistent to support sustained operations against multiple CBRN/TIM attacks in staggered major conflicts with concurrent smaller-scale contingency operations.</p>
M13	Documented assessment identifies unsatisfied required CBRND requirements addressing threat.	<p>G: National and Strategic Theater guidance, intent, plans, and taskings are assessed to determine and document supporting CBRND systems capabilities and means and encompass quantities and types necessary to support multiple concurrent Strategic Theater military operations with threat.</p> <p>Y: National and strategic guidance, intent, plans, and taskings are assessed to determine and document supporting CBRND systems capabilities and means encompassing quantities and types necessary to support Strategic Theater military operations with threat.</p> <p>R: The assessment of national and strategic guidance, intent, plans, and/or taskings is inadequate or nonexistent to determine and/or document supporting CBRND systems capabilities and/or means encompassing quantities and/or types necessary to support Strategic Theater military operations with threat.</p>

¹ General logistics DOTMLPF exists addressing the allocation, prepositioning, and stockpiling of materiel. The application and implementation of this DOTMLPF is inadequate. Further, the general logistics DOTMLPF requires review and adjustment to support the force during and following transformation.

² Maneuvering forces are inadequately equipped with COLPRO capabilities. Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This statement is particularly true of forward-operating light forces. Fixed-site operations within a mature theater may possess sufficient COLPRO to provide access to personnel within a 24-hour period. Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment. Current concept is contamination avoidance or withdrawal.

³ Forces are equipped or possess access to individual CBRN/TIM protective equipment when stationed in HTAs. Personnel assigned to CONUS and selection OCONUS locations do not possess or have ready access to individual protective equipment. CBRND equipment is often not issued and available to deploying forces until after arrival in the area of operations (AO). Protection while deploying en route to the AO is often not considered. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

⁴ Available CBRND systems are not prepositioned in sufficient quantities and types to support operations. Many CBRND systems (e.g., transportable and mobile CPSs, individual protective equipment [IPE], prophylaxis, etc.) are in limited quantities and not prepositioned until preparations for implementation of operations. Availability of certain systems may be impacted by concurrent operations in other AOs. Expeditionary operations requiring rapid movement of highly mobile forces with limited notice into an austere environment at the extremes of the lines of communication are a concern.

⁵ Available CBRND systems are not nationally stockpiled in sufficient quantities to support the envisioned and published national military concurrent operations. Limited stockpiling at existing fixed sites within HTA does exist but is generally associated with the provisioning of the forces at those sites. Reallocation from stocks dispersed to installations and units for deploying joint force elements is accomplished by the COCOM staff when necessary and possible.

⁶ Not all critical facilities and activities are equipped with COLPRO.

⁷ CBRND systems required to support operations are identified by specific plans. However, the requirements of these plans are not centrally correlated with other plans. Comparison is essential to identify CBRN/TIM systems and supporting levels of consumables required for the anticipated duration of operations. Comparison must also consider support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern. CBRND systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

⁸ Mature theater CPSs are available in limited quantities. These include Joint Transportable Collective Protection System (JTCOPS), Chemically Protected Deployable Medical System (CP-DEPMEDS), Tent, Expandable, Modular, Personnel (TEMPER) systems, and Service-designed systems. Integration of Service-specific systems into joint plans provides additional COLPRO capabilities. These, however, are identified in the Service component plans. They are not generally integrated in COCOM joint plans. Current CPSs are inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprint.

⁹ Quantities and availability of mobile COLPRO are inadequate. Mobile COLPRO exists in selected tactical combat and support vehicles. The quantities and types of these vehicles are limited and are dedicated to specific missions. Current mobile COLPRO is inadequate to support operations by highly mobile forces. Airframe COLPRO is limited to tactical combat airframes. Airlift (both tactical and strategic) are not equipped with COLPRO. Sea-based COLPRO (the CITADEL System) is available in specific classes of naval warfare vessels (e.g., amphibious assault ship [LHA], destroyer, etc.). Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.

¹⁰ Generic unit CBRND kits are not defined in current doctrine. Limited CBRND asset assemblies do exist and are prepositioned at selected sites. However, these assemblies are generally unit-specific.

¹¹ Non-mission support civilian CBRND equipment is not stockpiled and prepositioned.

¹² Available CBRND systems are not prepositioned in sufficient quantities to support the envisioned and published national military concurrent operations. Timing for replenishment of systems is dependent upon manufacturing capabilities, system age, and funding availability. Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This concern is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities.

¹³ Plans, guidance, threats, and taskings are assessed by the COCOM staff to determine operational requirements, including CBRND. However, dual taskings can occur on specific resources necessitating changes in taskings for concurrent operations. Unsatisfied requirements are reviewed for potential adjustments within available resources and/or identification and action for resolution. Limitations upon resource availability may necessitate adjustments to the planned mix and quantities. These adjustments may impact optimal CBRND protection with implications for operational planning and support. Identification of unsatisfied requirements are forwarded to Service and/or joint review and resolution assistance.

11.2.3 Functional Solution Analysis

11.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resource supporting operations. *Leadership:* Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 2. Deficiency:** Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This is particularly true of forward-operating light forces.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policies.
- 3. Deficiency:** Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 4. Deficiency:** Personnel assigned to CONUS and selected OCONUS locations do not possess or have ready access to individual protective equipment.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in U.S. Department of Defense (DoD) installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. *Organization:* Ensure resources, taskings, and staff are in place or available to support and conduct CBRND. *Training:* Train, exercise, and evaluate the force for survivability within a CBRN/TIM environment. *Leadership:* Implement development of plans and taskings consistent with stockpile support capabilities.
- 5. Deficiency:** CBRND equipment is not available to deploying forces after arrival in the AO.
Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection through deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.
- 6. Deficiency:** Protection while deploying en route to the AO is often not considered.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policies. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while en route. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while en route.
- 7. Deficiency:** The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.
Non-Materiel Solutions: *Leadership:* Recognize impact upon mission success and force survivability for reduction of CBRND measures not consistent with threat.
- 8. Deficiency:** Available CBRND systems are not stockpiled and prepositioned in sufficient quantities to support concurrent military operations.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including

replenishment. *Leadership*: Implement development of plans and taskings consistent with stockpile and prepositioning support capabilities. *Facilities*: Develop supporting infrastructure for CBRND stockpile and prepositioning supporting plans and taskings. Stockpile and preposition as necessary to support determined requirements.

9. Deficiency: Not all critical facilities and activities are equipped with COLPRO.

Non-Materiel Solutions: *Doctrine*: Enforce existing doctrine and policies.

10. Deficiency: The CBRN/TIM system requirements identified by specific plans are not centrally correlated with other plans. Comparison is essential to identify CBRN/TIM systems and supporting levels of consumables required for the anticipated duration of operations and to consider support requirements of two or more concurrent operations with CBRN/TIM threat.

Non-Materiel Solutions: *Doctrine*: Institute in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including replenishment. *Leadership*: Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.

11. Deficiency: Service-specific systems are not generally integrated in COCOM joint plans.

Non-Materiel Solutions: *Doctrine*: Emphasis in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, joint and Service-specific, including replenishment. *Leadership*: Implement development of plans and taskings consistent with joint and Service-specific CBRND support capabilities.

12. Deficiency: Expeditionary operations are a particular concern. CBRND systems are not generally designed for a highly mobile force in an austere environment at the extremes of the lines of communication, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine*: Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with a reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary

changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

- 13. Deficiency:** Current mobile COLPRO is inadequate in quantities, types, and availability to support operations by highly mobile forces.

Non-Materiel Solutions: *Doctrine*: Completion of analysis and central correlation/ comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

- 14. Deficiency:** Airlift assets (both intratheater and intertheater) are not equipped with COLPRO.

Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training*: Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership*: Recognize criticality of protecting aircrew and passengers of appropriate intratheater and intertheater airframes from the effects of CBRN/TIM agents. *Facilities*: Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO. NOTE: Non-materiel solutions will not address the absence of COLPRO for air mobility airframes.

- 15. Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.

Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization*: Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at risk. *Training*: Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership*: Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities*: supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.

- 16. Deficiency:** Generic unit CBRND kits are not defined in current doctrine.

Non-Materiel Solutions: *Doctrine*: Incorporate generic and unit-specific CBRND kits into doctrine, policy, and procedures. Unit-specific CBRND kits should tailor generic kits. *Facilities*: Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of generic CBRND unit kits.

17. Deficiency: Non-mission support civilian CBRND equipment is not stockpiled and prepositioned.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the provisioning of civilians addressing the variation within a potential population. Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify eligible civilian CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including replenishment and prepositioning of CBRND assets for civilians. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations, as appropriate. *Leadership:* Implement planning and management of CBRND training, equipping, stockpiling, prepositioning, and protection of eligible civilians. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilians CBRND resources.

18. Deficiency: General logistics DOTLPF address the allocation, prepositioning, and stockpiling of materiel is inadequate.

Non-Materiel Solutions: *Doctrine:* General logistics DOTLPF requires review, adjustment, and aggressive implementation to support the force during and following transformation.

11.2.3.2 IMA Assessment Summary

N/A

11.3 Task STSHLD 3: Coordinate medical prophylaxis to reduce impact of CBRN/TIM

11.3.1 Functional Area Analysis

11.3.1.1 Definition

To coordinate the issuance/administration of medical prophylaxes against the debilitating effects of CBRN/TIM agents to the force, MWAs, and eligible civilians. This task includes emphasis upon medical prophylaxes (including pre- and post-exposure) against the effects of CBRN/TIM agents as a continuing requirement. Currently, personnel and MWAs can be immunized against effects of some biological threat agents prior to exposure. Other pre- and post-exposure prophylactic measures exist for a number of chemical, biological, and radiological agents. Medical prophylaxes do not generally guarantee immunity but prevent or reduce the number and severity of casualties when exposed to particular agents. These preventive measures also decrease the impact upon operations resulting from exposure to CBRN/TIM agents.

11.3.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 2.4.1.1, ST 5.4.1, ST 6, ST 9.4).

11.3.1.2.1 Supported Task: SNSHLD 12

11.3.1.2.2 Lateral Task: STSHA 7

11.3.1.2.3 Supporting Task: N/A

11.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Fair personnel nutrition and health. (C2.2.4.1)
4. Good personnel physical conditioning. (C2.2.4.3)
5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW²)

² The current UJTL condition description applies only to military personnel. The description should be expanded to include essential government service civilians.

6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW³)
7. Negligible personnel experience. (C2.2.4.5)
8. Limited deployed supplies. (C2.8.2)
9. Limited prepositioned materiel. (C2.8.4)

Civil

1. Fair civil health. (C3.3.1.4)
2. High health risk. (C3.3.1.5)

11.3.2 Functional Needs Analysis

11.3.2.1 Capability and Deficiency Assessment Summary

Table 11.3-1 discusses the only capability that exists to perform the task to the designated standard.

Current Capability and Deficiency

The only identified individual capability is the coordination of issuance and administration of medical prophylaxis to the military force against the debilitating effects of CBRN/TIM agents. Doctrine, policy, and procedures exist for the coordination of issuance and administration of medical prophylaxis to the military force against the debilitating effects of CBRN/TIM agents. Deficiencies include the lack of medical prophylaxes for all threat CBRN/TIM agents, predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures and associated potential long-term effects as relates to CBRN/TIM threats, the wide variance in efficacy of existing prophylaxes, lack of prophylaxes for MWDs, the inadequate provision of medical prophylaxes to eligible civilians, and the inadequacy of existing doctrine, policy, and procedures for MWAs and eligible civilians. The overall current capability is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

³ The current UJTL condition description applies only to military personnel. The description should be expanded to include essential contractor service personnel.

Table 11.3-1. STSHLD 3: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	R ²	Y ³	R ⁴	G ⁵	G ⁶	G ⁷	R ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	R	Y	R	G	G	G	R	Y	Y
Far-Term Overall Capability	R	Y	R	G	G	G	R	Y	Y

	FAA Measure	Scale
M1	Forces are protected by medical prophylaxes.	<p>G: Medical CBRND countermeasures exist for all threat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasures exist for selected high-threat CBRN and high-risk TIM agents for U.S. military and eligible civilian members.</p> <p>R: Medical CBRND countermeasures are inadequate or do not exist for high-threat CBRN and high-risk TIM agents.</p>
M2	All theater medical facilities are able to treat contaminated/exposed casualties.	<p>G: All theater medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. All assigned medical practitioners and medical support personnel (including emergency medical services [EMS], medical aides, etc.) are formally trained, and receive recurring training, for the evaluation and care of contaminated/exposed casualties. Medical provider based medical treatment is provided, when needed, throughout the process from reception to post-decontamination.</p> <p>Y: Theater medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. Formal training is available to for the evaluation and treatment of contaminated/exposed casualties. Medical support personnel (including EMS, medical aides, etc.) are trained, on the evaluation, decontamination, and care of contaminated/exposed casualties.</p> <p>R: The ability of theater medical facilities to treat contaminated/exposed casualties is inadequate or nonexistent.</p>
M3	Forces are protected against all identified threat CBRN/TIM capabilities.	<p>G: Strategic Theater forces are equipped, prepared, and possess ready access to CBRND measures and assets against all known CBRN/TIM threat capabilities.</p> <p>Y: Strategic Theater forces are equipped, prepared, and possess ready access to CBRND measures and assets against known CBRN/TIM threat capabilities upon notification to support Strategic Theater operations with threat.</p> <p>R: Strategic Theater forces are inadequately equipped, prepared, and/or possess inadequate access to CBRND resources to support Strategic Theater operations with CBRN/TIM threat.</p>
M4	Force completed deployment medical training and preparation.	<p>G: Strategic Theater forces are medically trained and prepared for operations with threat.</p> <p>Y: Selected Strategic Theater forces are generally medically trained and prepared for operations with threat.</p> <p>R: Strategic Theater forces medical training and preparedness for operations with threat is inadequate or nonexistent.</p>
M5	Force completed predeployment screening.	<p>G: Strategic Theater forces are predeployed screened for operations with threat.</p> <p>Y: Selected Strategic Theater forces generally are predeployment screened for operations with threat.</p> <p>R: Strategic Theater forces predeployment screening for operations with threat is inadequate or nonexistent.</p>
M6	Force completed post-deployment screening.	<p>G: Strategic Theater forces are post-deployed screened for operations with threat.</p> <p>Y: Selected Strategic Theater forces generally are post-deployed screened for operations with threat.</p> <p>R: Strategic Theater forces post-deployment screening from operations with threat is inadequate or nonexistent.</p>

M7	All MWAs are prepared for operations in CBRN/TIM environment.	<p>G: Strategic Theater MWA forces are fully equipped, trained, and prepared for survival while performing operations involving CBRN/TIM threat.</p> <p>Y: Selected Strategic Theater MWA forces are fully equipped, trained, and prepared for survival while performing operations involving CBRN/TIM threat.</p> <p>R: Strategic Theater MWA forces are inadequately equipped, trained, and/or prepared for survival while performing operations involving CBRN/TIM threat.</p>
M8	Medical prophylaxes are available for issue/administration.	<p>G: Medical prophylaxis is available for issue and administration to all at-risk populations; including military members, eligible civilians, and MWAs.</p> <p>Y: Medical prophylaxis is available for issue and administration to military personnel.</p> <p>R: Availability of medical prophylaxis is inadequate or nonexistent for issue and administration.</p>
M9	Medical prophylaxes are issued/administered.	<p>G: Medical prophylaxis is issued and administered to all at-risk populations; including military members, eligible civilians, and MWAs.</p> <p>Y: Medical prophylaxis is issued and administered to military personnel.</p> <p>R: Medical prophylaxis issuance and/or administration is inadequate or nonexistent.</p>

¹ DOTMLPF is effective for the military force. However, existing DOTMLPF is inadequate, or nonexistent, for MWA and eligible civilians.

² Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWA and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies.

³ Existing medical facilities within an HTA exercise the reception of contaminated/exposed casualties. Training for the treatment of contaminated/exposed casualties is available through the Army Medical Department but is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the COCOM staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners.

⁴ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.

⁵ The COCOM staff tracks units identified to support plans for their readiness to deploy. However, the routine rotation and movement of personnel to and from units, the administration period of some vaccines for acquired immunity, and other taskings impact medical readiness. Completion of deployment medical training and preparation is contingent upon timing of notice to deployment, availability of medical personnel to perform training and preparation, and the availability of sufficient medical prophylaxis to meet preparation requirements. Short-notice operations and reallocated taskings also impact medical predeployment readiness for the threat. Forces have, and may in the future, require medical training and preparation upon arrival in the AOR. The COCOM staff plans generally include provisions for medical preparation of the force including both predeployment and AOR arrival.

⁶ COCOM plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. However, predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat. The routine rotation and movement of personnel to and from units. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. The COCOM staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment.

⁷ COCOM staff planning includes medical review and screening prior to returning units to their originating location or before release. These reviews and screening activities are frequently performed at the returning unit's location. Units are medically held until completion of medical review and screening before release.

⁸ MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

⁹ Medical prophylaxes are developed for the military force. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines require multiple administrations over a period of time for acquired immunity. The COCOM staff plans generally include provisions for medical preparation of the force.

¹⁰ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the COCOM staff during the planning and support for operations. Prophylaxis for MWA is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

11.3.3 Functional Solution Analysis

11.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 2. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.
- 3. Deficiency:** Prophylaxis administration programs widely vary.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 4. Deficiency:** The ability of the COCOM staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel and activities in CBRND exercises. *Organization:* Ensure that all affected entities are aware of and participate in comprehensive exercises. *Training:* All personnel (military and nonmilitary) are trained in appropriate CBRND protective measures. *Leadership:* Recognize importance of Medical Services and balance with criticality for readiness to rapidly and accurately perform CBRND and conduct medical operations associated with CBRN/TIM environments and hazards. Recognition of the value of comprehensive exercises to enhance readiness, survival, and promote interaction between activities.
- 5. Deficiency:** Forces are not protected against all identified threat CBRN/TIM capabilities.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents.

Leadership: Enforce compliance with established standards (see Footnote 17 above) for prophylactic CBRND protection.

6. **Deficiency:** Forces have, and may in the future, require medical training and preparation upon arrival in the AOR.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces.

Training: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

7. **Deficiency:** Predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings. *Leadership:* Enforce compliance with established doctrine, policy, and procedures (see Footnote 10 above) for low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings.

8. **Deficiency:** MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs (particularly MWDs) and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of MWA (particularly MWD) CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of handlers and MWAs (particularly MWDs) for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWA (particularly MWD) CBRND (e.g., logistics, veterinary surveillance, etc.).

9. **Deficiency:** Prophylaxis for MWAs is virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs (particularly MWDs) and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of MWA

(particularly MWD) CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of handlers and MWAs (particularly MWDs) for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA (particularly MWD) survivability. *Facilities:* Develop supporting infrastructure for MWA (particularly MWD) CBRND (e.g., logistics, veterinary surveillance, etc.).

10. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRN/TIM protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of resources and increased dependence of military operations upon civilians. *Personnel:* Requirements eligible civilians supporting the mission meet minimum standards for safe use of CBRND resources.

11. Deficiency: Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

12. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

13. Deficiency: The administration of vaccines frequently requires multiple administrations over a period of time for acquired immunity.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures requirement for CBRN/TIM protective prophylaxis protecting the force through the deployment cycle. *Organization:* Establish organizational incentives to address CBRN/TIM protective prophylaxis providing protection of the force throughout the deployment cycle. *Leadership:* Ensure standards, criteria, and metrics for CBRN/TIM medical prophylaxis R&D are concise

and adequately protect the force throughout the deployment cycle with a minimum of administrations, preferably one.

11.3.3.2 IMA Assessment Summary

N/A

11.4 Task STSHLD 4: Ensure adequate individual protection for eligible civilians

11.4.1 Functional Area Analysis

11.4.1.1 Definition

To ensure that civilians (including evacuees, host-nation personnel, contractors, and other designated nonmilitary personnel) possess individual protection for survival. IPE must provide optimal individual protection from CBRN/TIM by the proper use of masking devices (respiration and ocular) and wear of protective gear and clothing (percutaneous). The equipment must ensure survivability by prohibiting agents from entering the body while allowing individuals to perform their tasks (which is dependent upon the type of activity performed by the individual) while wearing it. While some performance degradation and physical encumbrances are inherent because of the physical properties of the protective gear, the goal is to reduce the physical and mental stresses of its wear without substantially degrading required mission performance. Planners must include medical prophylaxes for eligible civilians. The afforded protection is commensurate with the mission and performed task and may require protection to the same level as military counterparts. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities.

11.4.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 4.2.4, ST 5.4.3, ST 6.2, ST 7, ST 9.4).

11.4.1.2.1 Supported Task: SNSHLD 12

11.4.1.2.2 Lateral Task: STSHA 4

11.4.1.2.3 Supporting Task: OPSHLD 6

11.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Fair personnel nutrition and health. (C2.2.4.1)
4. Good personnel physical conditioning. (C2.2.4.3)

5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
7. Negligible personnel experience. (C2.2.4.5)
8. Partial interoperability. (C2.2.6)
9. Limited prepositioned materiel. (C2.8.4)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)
3. Fair civil health. (C 3.3.1.4)

11.4.2 Functional Needs Analysis

11.4.2.1 Capability and Deficiency Assessment Summary

Current Capability and Deficiency

The only identified individual capabilities are the existing Noncombatant Evacuation Operations (NEO) procedures addressing primarily military dependents at HTA fixed-site locations that provide for the provisioning of minimal protective equipment drawn from mission stocks or obtained commercially off-the-shelf (COTS, and the limited number of eligible civilians provided and equipped with IPE as part of their primary function. Some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force]), and selected others. Deficiencies include the lack of a clear definition of eligible civilians; inadequate doctrine, policy, and procedures addressing CBRND of eligible civilians; the lack of IPE and medical prophylaxes addressing the variations within the population (e.g., babies, young children, disabled, tall, short, thin, obese, pregnant, etc.); and the absence of training, exercising, and evaluation of these personnel. The overall current capability is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.4-1. STSHLD 4: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	R ⁶	R ⁷	Y ⁸	Y ⁹
Near/Mid-Term Overall Capability	R	R	R	R	R	R	Y	Y
Far-Term Overall Capability	R	R	R	R	R	R	Y	Y

FAA Measure	Scale
M1 Policy and plans address CBRN/TIM protection of eligible civilians.	<p>G: Policies define and provide clear and specific guidance for planning and the provision of CBRND protective measures, equipment, and training to eligible civilians.</p> <p>Y: Policies provide general guidance and information for planning and the provision of CBRND protective measures, equipment, and training to eligible civilians.</p> <p>R: Clear definition and guidance for planning and provision of CBRND protective measures, equipment, and training to eligible civilians is inadequate or nonexistent.</p>
M2 Individual protection equipment available for eligible civilians.	<p>G: All eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>Y: All mission support–eligible civilians and at-risk eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>R: The training, equipping, and ready access to CBRND protective measures and equipment is limited to a select group, is nonexistent, or is inadequate to support operations.</p>
M3 All eligible civilians are issued medical prophylactic countermeasures.	<p>G: Medical prophylaxis is issued and administered to all eligible civilians.</p> <p>Y: All mission support–eligible civilians and at-risk eligible civilians are issued and administered medical prophylaxis.</p> <p>R: Issuance and/or administration of prophylaxis is limited to a select group, is nonexistent, or is inadequate to support operations.</p>
M4 All eligible civilians are trained to operate in a CBRN/TIM environment.	<p>G: All eligible civilians are trained to survive and, if appropriate, operate within a CBRN/TIM environment.</p> <p>Y: All mission support–eligible civilians and at-risk eligible civilians are trained to survive and, if appropriate, operate within a CBRN/TIM environment.</p> <p>R: Eligible civilian training to survive and, if appropriate, operate within a CBRN/TIM environment is limited to a select group, nonexistent, or inadequate to support operations.</p>
M5 All members of the civilian workforce requiring military force–level protection are equivalently equipped.	<p>G: All eligible civilians supporting operations are equipped with military force–level protection minimally equivalent to protection afforded military personnel performing the same function.</p> <p>Y: All eligible civilians performing mission critical functions which cannot or are not performed by uniformed personnel are provided military force–level protective equipment and measures.</p> <p>R: Protection of eligible civilians enabling the performance of functions necessary to operations is inadequate or nonexistent.</p>

M6	All members of the civilian workforce requiring military force-level protection are appropriately immunized.	<p>G: All eligible civilians supporting operations are equipped with military force-level protection minimally equivalent to protection afforded military personnel performing the same function.</p> <p>Y: All eligible civilians performing mission critical functions which cannot or are not performed by uniformed personnel are provided military force-level protective equipment and measures.</p> <p>R: Protection of eligible civilians enabling the performance of functions necessary to operations is inadequate or nonexistent.</p>
M7	Evacuee protective equipment covers both genders and range of body types, ages, and disabilities.	<p>G: Evacuee protective equipment is stocked, prepositioned, and readily available to cover the range of body types, genders, ages, and disabilities.</p> <p>Y: Evacuee protective equipment and measures are stocked and readily available for a target population.</p> <p>R: Evacuee protective equipment and measures are inadequate or nonexistent.</p>
M8	Adequate evacuee IPE (e.g., overgarment, gloves, boots, and masks) is available.	<p>G: Evacuee protective equipment is stocked, prepositioned, and readily available to cover the range of body types, genders, ages, and disabilities.</p> <p>Y: Evacuee protective equipment and measures are stocked and readily available for a target population.</p> <p>R: Evacuee protective equipment and measures are inadequate or nonexistent.</p>

¹ DOTMLPF is inadequate or nonexistent for protection of eligible civilians within a CBRN/TIM environment.

² Policies and plans do not adequately address the protection of eligible civilians from CBRN/TIM. The definition of “eligible civilians” is not clear. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

³ Some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, most civilians are not equipped or have access to IPE for survival within a CBRN/TIM environment. This statement is particularly true of contractors. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁴ Prophylaxis of eligible civilians is not addressed. The issuance of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. Some government civilians may be issued medical prophylactic countermeasures as part of their primary function (e.g., hazardous materials, readiness flight [Air Force], and selected others). However, civilians (e.g., general government employees, contractors, dependents, etc.) are not issued prophylaxis. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁵ Eligible civilians are not generally trained to operate in CBRN/TIM hazards. Some government civilians are trained as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, civilians (e.g., general government employees, contractors, dependents, etc.) do not receive training to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁶ Some government civilians are equivalently equipped as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁷ Prophylaxis (CBRN/TIM vaccination) of eligible civilians is not addressed. The administration of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. Selected medical prophylaxis may be administered based upon medical judgment. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁸ NEO plans for selected areas include the provisioning of non-mission support civilians with minimal protective equipment; generally drawn from mission stocks or obtained in advance through COTS. However, protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁹ NEO plans for selected areas include the provisioning of non-mission support civilians with minimal protective equipment; generally drawn from mission stocks or obtained in advance through COTS. Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities, are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.). COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

11.4.3 Functional Solution Analysis

11.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Policies and plans do not adequately address the protection of eligible civilians from CBRN/TIM.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations supporting the mission; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of civilian personnel and operations supporting the mission. *Personnel:* Ensure civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 2. Deficiency:** The definition of “eligible civilians” is not clear.

Non-Materiel Solutions: *Doctrine:* Define eligible civilians supporting the mission/military operations for CBRND and establish their inclusion in the force within doctrine, policy, procedures, and TTPs. *Organization:* Identify organizational services dependent upon civilians for mission/military operations success. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians supporting the mission/military operations. *Personnel:* Ensure that personnel meeting the definition of eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 3. Deficiency:** COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations supporting the mission; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of civilian personnel and operations supporting the mission. *Personnel:* Ensure that civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

- 4. Deficiency:** Most civilians are not equipped or have access to IPE for survival within a CBRN/TIM environment. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the provisioning of civilians addressing the variation within a potential population. Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify eligible civilian CBRND support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including replenishment and prepositioning of CBRND assets for civilians. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations, as appropriate. *Leadership:* Implement planning and management of CBRND training, equipping, stockpiling, prepositioning, and protection of eligible civilians. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.
- 5. Deficiency:** Prophylaxis of eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 6. Deficiency:** The issuance of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.
- 7. Deficiency:** Eligible civilians are not generally trained to operate in CBRN/TIM hazards.

Non-Materiel Solutions: *Doctrine:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians. *Organization:* *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians.
- 8. Deficiency:** Most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians supporting the mission/military operations addressing the variation within the potential protected working population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations.

- 9. Deficiency:** Protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate.

- 10. Deficiency:** Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities, are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.).

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate.

- 11. Deficiency:** DOTMLPF is inadequate or nonexistent for protection of eligible civilians within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

11.4.3.2 IMA Assessment Summary

N/A

11.5 Task STSHLD 5: Establish appropriate CBRN/TIM protective measures and resources for deploying/redeploying joint forces at assembly, staging, and embarkation, debarkation, and en route locations

11.5.1 Functional Area Analysis

11.5.1.1 Definition

To begin protection of forces at CONUS bases and extend it to overseas locations. Includes training bases, depots, staging areas, headquarters, medical facilities, command and control facilities, force projection bases, traffic routes, and transload bases. Forces being deployed, redeployed, or rotated must be protected from CBRN/TIM threats. Cooperative security and CBRN/TIM response arrangements are required with local authorities, en route host nations, and in-theater governments and agencies. CBRND is an integrated part of total force protection. CBRN/TIM situational awareness is vital to the protection of personnel and critical resources. Protective measures (e.g., medical prophylaxes, CBRND hardening of facilities, COLPRO, and covering of supplies) can minimize the effects of CBRN/TIM weapon attacks.

11.5.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 1.1.2, ST 5.2, ST 5.3.3, ST 5.4.1, ST 6, ST 6.2, ST 6.2.1, ST 7.1.1, ST 9.3, ST 9, ST 9.4).

11.5.1.2.1 Supported Task: SNSHLD 10

11.5.1.2.2 Lateral Task: STSHA 6

11.5.1.2.3 Supporting Task: N/A

11.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)

4. Moderate to severe personnel fatigue. (C2.2.4.6)
5. Partial interoperability. (C2.2.6)
6. Limited prepositioned materiel. (C2.8.4)
7. Limited host-nation support. (C2.8.5)
8. Extensive commercial procurement. (C2.8.6)

Civil

1. Limited foreign government support. (C3.1.2.3)

11.5.2 Functional Needs Analysis

11.5.2.1 Capability and Deficiency Assessment Summary

Table 11.5-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures exist for the planning, logistics support, equipping, training, and movement of U.S. forces. Deficiencies include the protection of deploying/redeploying forces at assembly, staging, embarkation, debarkation, and en route locations. Included in the deficiencies are the organic capabilities of CONUS and non-HTA OCONUS for CBRND of moving and resident forces.

Current Capability and Deficiency

Planning for the movement of forces to perform operations involving a CBRN/TIM threat includes the training, equipping, and preparation of the involved forces. Cooperative security and CBRND response arrangements with host and en route nations are established for en route forces when there is a threat and host nation support is appropriate. Planning for force movement generally seeks to use locations substantially operated by U.S. forces in other nations and where cooperative security agreements are in existence. DOTLPF is adequate for the protection of these forces at HTA OCONUS locations. Deficiencies include the lack of adequate CBRND COLPRO at CONUS and most non-HTA OCONUS locations. Radiological sheltering does exist at these locations but does not provide protection from chemical or biological warfare, toxic industrial chemicals (TICs), and toxic industrial biological (TIB) material. Garrison forces at these locations are generally not equipped and have access to CBRND measures and equipment. Deploying forces are often not issued sufficient IPE and medical countermeasures to perform CBRND during deployment and redeployment. Eligible civilians are not adequately addressed for CBRND and protection of MWDs is virtually nonexistent.

Projected Near/Mid-Term Capability and Deficiency

The fielding of improved joint IPE (Joint Service Lightweight Integrated Suit Technology [JSLIST], Joint Service Aircrew Mask [JSAM], Joint Service General Purpose Mask [JSGPM], and Joint Protective Aircrew Ensemble [JPACE]) provides improved protection for the force. The IPE will provide protection against limited TIMs in addition to the known CBRN warfare agents. National Institute for Occupational Safety and Health review for compliance with Occupational Safety and Health Administration standards was requested to support joint and

DoD requirements. The initial operational capability fielding of the Joint Operational Effects Federation and Joint Effects Model in the mid term provides increased capabilities for planning and resource determination. Otherwise, no changes from current capabilities are identified.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

11.5.2.2 Capability Description

COCOM Staff: Planning, prepositioning, and positioning of resources, equipping, and training of forces and the establishment of cooperative arrangements (with local authorities, en route host nations, and in-theater governments and agencies, as appropriate and necessary) for CBRN/TIM protection of deploying forces throughout movement from originating locations (to in-theatre deployment reception destinations).

Table 11.5-1. STSHLD 5: Capability and Deficiency Assessment

COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	R ²	R ³	R ⁴	G ⁵	R ⁶	G ⁷	R ⁸	R ³
Near/Mid-Term Overall Capability	Y	Y	Y	G	Y	G	R	Y
Far-Term Overall Capability	Y	Y	Y	G	Y	G	R	Y

	FAA Measure	Scale
M1	Forces are trained to operate in a CBRN/TIM environment.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWA) are trained and prepared to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are fully trained and prepared to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Training and preparedness of Strategic Theater forces (including military, eligible civilians, and/or MWA) to perform functions and conduct operations within a CBRN/TIM environment is inadequate or nonexistent.</p>
M2	Forces are equipped to operate in a CBRN/TIM environment.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWA) are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Equipping of Strategic Theater forces (including military, eligible civilians, and/or MWA) to perform functions and conduct operations within a CBRN/TIM environment is inadequate or nonexistent.</p>
M3	Base/facility force protection plan includes CBRN/TIM protection.	<p>G: Antiterrorism/force protection (AT/FP) plans address and provide for the ready protection of the base/facility populace against exposure to and the effects of CBRN/TIM agents.</p> <p>Y: AT/FP plans address and provide for the ready protection of the at-risk base/facility populace against exposure to and the effects of CBRN/TIM agents.</p> <p>R: AT/FP plans addressing and providing protection against CBRN/TIM agents are inadequate or nonexistent.</p>
M4	CBRN/TIM response agreement exists with en route/in-theater host nation.	<p>G: CBRN/TIM response agreements are established when there is a threat, the agreement is appropriate, and host nation capabilities exist.</p> <p>Y: CBRN/TIM response agreements are established with friendly nations and where Status of Forces agreements exist.</p> <p>R: CBRN/TIM response agreements are nonexistent or do not support deploying forces.</p>
M5	Required base/facility CBRN/TIM emergency response protective equipment is on hand.	<p>G: All base/facility emergency response forces are trained and possess adequate CBRND protective equipment and measures for response to a CBRN/TIM incident without drawing upon warfighting assets.</p> <p>Y: All base/facility emergency response forces are trained and possess adequate CBRND protective equipment and measures for response to a CBRN/TIM incident.</p> <p>R: Base/facility emergency response force training and/or CBRND protective equipment and measures are inadequate or nonexistent for response to a CBRN/TIM incident.</p>
M6	Cooperative security agreement exists with en route/in-theater host nation.	<p>G: Cooperative security agreements are established when there is a threat, the agreement is appropriate, and host nation capabilities exist.</p> <p>Y: Cooperative security agreements are established with friendly nations and where Status of Forces agreements exist.</p> <p>R: Cooperative security agreements are nonexistent or do not support deploying forces.</p>

M7	Adequate COLPRO is available to support deploying and base/facility forces.	<p>G: Sufficient and adequate COLPRO is available and operational to provide sufficient CBRN/TIM protected spaces for base/facility populace plus deploying forces.</p> <p>Y: Sufficient and adequate COLPRO is available and operational to provide sufficient CBRN/TIM protected spaces for essential base/facility operations plus deploying forces.</p> <p>R: COLPRO is inadequate, insufficient, nonexistent, and/or non-operational and unable to support CBRN/TIM protection of base/facility populace and/or deploying forces.</p>
M8	Adequate individual protection is available to support deploying and base/facility forces.	<p>G: All forces (including military, eligible civilians, and MWAs) are trained and possess adequate and readily available and operational CBRND protective equipment and measures. Base/facility forces supporting deploying forces are trained and possess adequate CBRND protective equipment and measures for response to a CBRN/TIM incident without drawing upon warfighting assets.</p> <p>Y: All forces (including military, eligible civilians, and MWAs) are trained and possess adequate and readily available and operational CBRND protective equipment and measures. Base/facility forces supporting deploying forces are trained and possess adequate CBRND protective equipment and measures for response to a CBRN/TIM incident.</p> <p>R: Deployable force (includes military, eligible civilians, and MWAs) training and/or CBRND protective equipment and measures are inadequate or nonexistent for response to a CBRN/TIM incident; and/or base/facility emergency response force training and/or CBRND protective equipment and measures are inadequate or nonexistent for response to a CBRN/TIM incident.</p>

¹ DOTMLPF is currently inadequate to address CONUS and non-HTA OCONUS CBRND. DOTMLPF is adequate to address CBRND of forces located at HTA OCONUS locations. En route protection of deploying forces OCONUS is a function of perceived threat, existing capabilities, host nation willingness, and available resources.

² Planning for deploying forces includes training for operations within threat CBRN/TIM environments. Nondeploying military forces within CONUS possess varying levels of training based upon prior training at overseas locations and initial Service training (“boot camp”). OCONUS fixed-site military personnel within an HTA are trained to survive a CBRN/TIM environment. Eligible civilians are not generally trained to operate in CBRN/TIM hazards. Some government civilians are trained as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others.). However, civilians (e.g., general government employees, contractors, dependents, etc.) do not receive training to survive a CBRN/TIM environment. This statement is particularly true of CONUS locations. MWA elements of the military force (deploying and nondeploying) are not trained to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to eligible civilians and MWAs. The Guardian Program, working with the COCOMs and installations, is addressing installation/facility CBRN/TIM event capabilities.

³ Planning for deploying forces includes equipping for operations within threat CBRN/TIM environments. However, deployable force equipment is generally stored and not readily available to personnel within CONUS (and non-HTA OCONUS sites). Selected units, for example Service police elements, may elect to retain certain items and amounts of CBRND assets for duty support from warfighting stocks. Most CONUS (and non-HTA OCONUS) garrison forces are not equipped or possess ready access to protective equipment for CBRN/TIM survival. The exceptions may include hazardous materials, fire response, and other at-risk primary duty personnel. OCONUS fixed-site personnel within an HTA are equipped to survive a CBRN/TIM environment. Eligible civilians are not generally equipped to operate in CBRN/TIM hazards. Some government civilians are equipped as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others.). However, civilians (e.g., general government employees, contractors, dependents, etc.) are not equipped to survive a CBRN/TIM environment. This statement is particularly true of CONUS locations. MWA elements of the military force (deploying and nondeploying) are not equipped to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for equipping eligible civilians and MWA for CBRN/TIM survival. The Guardian Program, working with the COCOMs and the sites, is addressing installation/facility CBRN/TIM event capabilities.

⁴ HTA OCONUS fixed-site force protection plans address CBRN/TIM protection for military forces. The fixed-site AT/FP plan includes a CBRN/TIM annex. Capabilities for CBRN/TIM protection varying according to location and threat. CONUS and non-HTA OCONUS garrison forces are not generally equipped or possess ready access to protective equipment for CBRN/TIM survival. Deployable force equipment is generally stored and not readily available to forces at these sites. Military forces at OCONUS sites within an HTA are equipped and possess ready access to CBRND equipment. COLPRO within CONUS and some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites. The Guardian Program, working with the COCOMs and installations, is addressing installation/facility CBRN/TIM event capabilities.

⁵ Response agreements are requested by COCOM staffs and established when there is a threat and host-nation response is appropriate. COCOM staffs plan primarily for movement of forces through en route locations substantially operated by U.S. forces (e.g., U.S. bases located in other nations).

⁶ Selected CONUS and non-HTA OCONUS units, for example Service police elements, may elect to retain certain items and amounts of CBRND assets for duty support from warfighting stocks. Garrison emergency response forces (e.g., hazardous materials and fire response) possess variable levels of protection against CBRN/TIM agents. However, other emergency response forces are not equipped for CBRN/TIM response. These include DoD and contract police/security forces, EMS, and other first responders. Installation CBRN/TIM response is also currently limited to the initial response. These issues are currently being addressed by the Guardian Program. HTA OCONUS fixed sites are equipped to perform emergency response to a CBRN/TIM event. In both cases, eligible civilians are not generally equipped to operate in CBRN/TIM hazards. Some government civilians are equipped as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others.). However, civilians (e.g., general government employees, contractors, dependents, etc.) are not equipped to survive a CBRN/TIM environment. This statement is particularly true of CONUS locations. MWA elements of the military force are not equipped to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for equipping eligible civilians and MWAs for CBRN/TIM survival. The Guardian Program, working with the COCOMs and installations, is addressing installation/facility CBRN/TIM event capabilities.

⁷ Cooperative security agreements are requested by COCOM staffs and established when there is a threat and host nation security is appropriate. COCOM staffs plan primarily for movement of forces through en route locations substantially operated by U.S. forces (e.g., U.S. bases located in other nations) and where cooperative security agreements are in existence.

⁸ COLPRO within CONUS and some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites.

11.5.3 Functional Solution Analysis

11.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Non-deploying military forces within CONUS possess varying levels of training based upon prior training at overseas locations and initial Service training (“boot camp”).

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in DoD installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. *Organization:* Ensure resources, taskings, and staff are in place or available to support and conduct CBRND training. *Training:* Train, exercise, and evaluate the force for survivability within a CBRN/TIM environment. *Leadership:* Implement equipping, training, exercise, and evaluation of CBRND of personnel (military and civilians) for readiness to conduct CBRND.
- 2. Deficiency:** Eligible civilians (e.g., general government employees, contractors, dependents, etc.) are not generally trained to operate and/or survive in CBRN/TIM hazards, particularly at CONUS locations.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilian personnel and operations supporting the mission and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and operations supporting the mission. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.
- 3. Deficiency:** MWA, particularly MWD, elements of the military force (deploying and nondeploying) are not trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, with emphasis upon MWDs, and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of MWD CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

- 4. Deficiency:** COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities performed by, and required to support, eligible civilian personnel and operations for CBRND. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilian personnel and operations; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and operations supporting the mission. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.
- 5. Deficiency:** COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs and operations for CBRND. *Organization:* Identify organizational services and activities performed by, and required to support, MWAs and operations for CBRND. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and operations and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs and operations supporting the mission. *Personnel:* Ensure that eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of MWA CBRND resources.
- 6. Deficiency:** Deployable force equipment is generally stored and not readily available to personnel within CONUS (and non-HTA OCONUS sites).

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in DoD installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. Identified equipment should not be assets identified for deployment. *Organization:* Ensure resources, taskings, and staff are in place or available to support and conduct CBRND. Identified physical resources should not be those identified for deployment. *Training:* Train, exercise, and evaluate the force for survivability within a CBRN/TIM environment, both for home location as well as for deployable operations. *Leadership:* Implement development of plans and taskings consistent with stockpile support capabilities for nondeployable requirements.
- 7. Deficiency:** Most CONUS (and non-HTA OCONUS) garrison forces are not equipped or possess ready access to protective equipment for CBRN/TIM survival.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in DoD installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. *Organization:*

Ensure resources, taskings, and staff are in place or available to support and conduct CBRND. *Training*: Train, exercise, and evaluate the force for survivability within a CBRN/TIM environment. *Leadership*: Implement development of plans and taskings consistent with stockpile support capabilities.

- 8. Deficiency:** COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites.
Non-Materiel Solutions: *Doctrine*: Enforce existing doctrine and policy.
- 9. Deficiency:** All emergency response forces are not equipped for CBRN/TIM response. These include DoD and contract police/security forces, EMS, and other first responders.
Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the minimal psychological and physiological requirements for equipping, training, exercising, and evaluation for CBRND emergency response of all elements of first response or at-risk as primary responders to an AT/FP event, whether military or as an eligible civilian.
Organization: Establish organization resources and staffing to support CBRND emergency response. *Training*: Institute training, exercising, and evaluation to prepare and maintain readiness to conduct an emergency response with a CBRN/TIM threat and to enable survival if an event is subsequent to response determined to involve a CBRN/TIM agent. *Leadership*: Implement and manage measures and activities to obtain and maintain response and survival capabilities for CBRN/TIM threats. *Personnel*: Ensure that eligible civilian personnel performing these functions meet psychological and physiological requirements for performing CBRND measures and accomplishing their tasks within a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure (e.g., logistics, training, medical, etc.) for responder CBRND.
- 10. Deficiency:** Installation CBRN/TIM response is currently limited to the initial response.
Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the minimal psychological and physiological requirements, equipping, training, exercising, and evaluation for CBRND emergency response of all elements of first response or at-risk as primary responders to an AT/FP event, whether military or as an eligible civilian. *Organization*: Establish organization resources and staffing to support CBRND emergency response. *Training*: Institute training, exercising, and evaluation to prepare and maintain readiness to conduct an emergency response with a CBRN/TIM threat and to enable survival if an event is subsequent to response determined to involve a CBRN/TIM agent. *Leadership*: Implement and manage measures and activities to obtain and maintain response and survival capabilities for CBRN/TIM threats. *Personnel*: Ensure that eligible civilian personnel performing these functions meet psychological and physiological requirements for performing CBRND measures and accomplishing their tasks within a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure (e.g., logistics, training, medical, etc.) for responder CBRND.
- 11. Deficiency:** DOTMLPF is currently inadequate to address CONUS and non-HTA OCONUS CBRND.
Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the equipping, training, exercising, and evaluation for CBRND all personnel (military and

eligible civilians) and activities in CONUS and non-HTA OCONUS locations. *Organization:* Establish organization resources and staffing to support CBRND. *Training:* Institute training, exercising, and evaluation to prepare and maintain readiness for CBRND at CONUS and non-HTA OCONUS locations. *Leadership:* Implement and manage measures and activities to obtain and maintain CBRND capabilities at CONUS and non-HTA OCONUS locations. *Personnel:* Ensure that eligible civilian personnel supporting the mission/military operations meet psychological and physiological requirements for performing CBRND measures and accomplishing their tasks within a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure (e.g., logistics, training, medical, etc.) for CBRND.

11.5.3.2 IMA Assessment Summary

N/A

11.6 Task STSHLD 6: Establish Protective Posture Protocols to ensure protection level is consistent with the threat and minimizes risk while limiting the impact on mission execution

11.6.1 Functional Area Analysis

11.6.1.1 Definition

To establish general guidance for protective posture at theater level based on the friendly and enemy situation, mission, terrain and weather, state of CBRND training, availability of protective equipment and supplies, and medical considerations. This guidance considers all possible threat capabilities and establishes plans and procedures to react to the adversary's use of any type of CBRN/TIM weapon/agent combination and/or material releases resulting from accidents or combat actions. The protocol is flexible and tailorable at lower levels of command to accommodate current intelligence/enemy action and status/mission of friendly forces. Threat, vulnerability, and risk assessments are essential inputs to determining the appropriate protective posture. The goal is to establish and maintain the lowest possible protective postures (to reduce performance degradation and minimize physical encumbrances) while minimizing the risk of exposure or contamination. NBC staff officers provide the commander and other staff officers with information concerning protective posture effects on mission performance.

11.6.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 2.4.1.1, ST 2.4.1.2, ST 5.3.3, ST 5.4.1, ST 6, ST 6.1.6, ST 6.2, ST 6.2.1, ST 9.4).

11.6.1.2.1 Supported Task: SNSHLD 10

11.6.1.2.2 Lateral Task: STSHA 6

11.6.1.2.3 Supporting Task: OPSHLD 1

11.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Adequate forces allocated. (C2.2.3)
3. Normal personnel experience. (C2.2.4.5)

4. Partial interoperability. (C2.2.6)
5. Negligible staff expertise (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. Limited prepositioned materiel. (C2.8.4)

Civil. N/A

11.6.2 Functional Needs Analysis

11.6.2.1 Capability and Deficiency Assessment Summary

Table 11.6-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for the planning and implementation of Protective Posture Protocols. They are developed, disseminated, and monitored based upon the potential threat and the assessment of force vulnerabilities and risks to subordinate command levels. Included is the provisioning of the force with appropriate CBRND capabilities. Included in the deficiencies is the ability of the force to maintain operations tempo within a sustained CBRN/TIM environment.

Current Capability and Deficiency

Adequate doctrine, policy, and procedures exist to guide commanders and staffs on these flexible levels of protection. The provisioning of the forces with adequate CBRND capabilities is determined based upon the identified threat used to develop the Protective Posture Protocols. Forces are generally equipped with IPE when stationed in HTAs, and IPE positioning and force equipment are included during planning. Existing fixed sites and mature theaters possess limited amounts of CPS to conduct CBRND. The COCOM and staff adjust the plans, reallocate, and obtain additional COLPRO systems as necessary to meet operational requirements. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and the movement of identified CBRND resources from stockpiles and reallocation activities are all pursued to prepare and support the deploying forces. The Joint Mission Essential Task Lists (JMETLs), based upon the *Universal Joint Task List (UJTL)*, are developed to identify essential tasks to be performed by to attain the mission. Training of the force against the identified threat is performed, and the implementation of the protocols is monitored. Deficiencies include the availability of COLPRO systems and the significant logistics required to move and support the existing systems; the limited quantities of CPSs available for use at originating and en route locations to protect deploying, redeploying, and en route forces from potential CBRN/TIM threats; the inadequacy of current CPSs to support forced entry and expeditionary operations, and lack of IPE at CONUS and non-HTA OCONUS locations to protect garrisoned personnel (military and civilian). MWDs are not afforded CBRND protective equipment, measures, and are not adequately addressed in DOTLPF for CBRND operations. Plan requirements, further, are not centrally correlated with other plans to determine CBRND support requirements of two or more concurrent operations and sustained operations within a CBRN/TIM environment is not addressed in DOTLPF.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.6-1. STSHLD 6: Capability and Deficiency Assessment

Capability: COCOM Staff	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	G²	G³	Y⁴	Y⁵	R⁶	Y⁷	Y⁸	Y⁹
Near/Mid-Term Overall Capability	G	G	Y	Y	R	Y	Y	Y
Far-Term Overall Capability	G	G	Y	Y	R	Y	Y	Y

	FAA Measure	Scale
M1	Protective Posture Protocols are established and disseminated.	<p>G: Specific, flexible Protective Posture Protocols are incorporated into plans and disseminated to all units in the force. All personnel are trained and ready to perform the associated protective actions.</p> <p>Y: General Protective Posture Protocols are incorporated into plans and disseminated to force units. Unit personnel are trained and ready to perform protective actions.</p> <p>R: Protective Posture Protocols are inadequate, not widely disseminated, and/or force personnel are not trained and/or ready to perform protective actions.</p>
M2	Protective posture protocols have been implemented.	<p>G: In-place Protective Posture Protocols are rapidly and effectively implemented by all affected force units.</p> <p>Y: In-place Protective Posture Protocols are implemented by all affected force units.</p> <p>R: Implementation of Protective Posture Protocols is inadequate or nonexistent.</p>
M3	CPSs are available for in-place forces.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M4	CPSs are available for deploying forces.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M5	IPE is issued to in-place forces.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWAs) are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Equipping of Strategic Theater forces (including military, eligible civilians, and/or MWAs) to perform functions and conduct operations within a CBRN/TIM environment is inadequate or nonexistent.</p>
M6	Forces are trained, manned, and equipped to operate in a CBRN/TIM environment.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWAs) are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are adequately equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Equipping of Strategic Theater forces (including military, eligible civilians, and/or MWAs) to perform functions and conduct operations within a CBRN/TIM environment is inadequate or nonexistent.</p>

M7	All units that perform Joint Mission Essential Tasks (JMETs) are fully prepared to successfully perform the tasks in a CBRN/TIM environment.	<p>G: All units performing JMETs are fully prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>Y: Units performing JMETs are generally prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>R: Units performing JMETs are inadequately prepared and/or ready to successfully conduct their tasks within a CBRN/TIM environment.</p>
M8	Deploying forces meet CBRN/TIM protection requirements.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWA) meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Strategic Theater forces (including military, eligible civilians, and/or MWA) meeting CBRN/TIM protection requirements to perform functions and conduct operations within a CBRN/TIM environment are inadequate or nonexistent.</p>

¹ Adequate DOTMLPF exists to address planning and support of the force. However, DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

² COCOM staff develop and disseminate Protective Posture Protocols based upon the potential threat and their assessments of force vulnerabilities and risks. U.S. forces may be required to operate after radiological attacks or in areas contaminated from fallout caused by attacks not directed at U.S. forces. In these cases, the current Radiation Exposure Status categories do not provide commanders sufficient guidance to manage risk to their forces. They do not address low-level radiation and are based on the assumption that the United States is directly engaged in a nuclear conflict. Dissemination of the Protective Posture Protocols is through the subordinate command levels.

³ COCOM staff monitors overall implementation of Protective Posture Protocols to ensure force readiness for the CBRN/TIM threat. Subordinate levels of command monitor the implementation for their subordinate units.

⁴ Not all critical facilities and activities are equipped with COLPRO. Existing fixed sites and mature theaters possess limited amounts of CPS for CBRND. JTCOPS, CP-DEPMEDS, TEMPER systems, and Service-designed systems provide CPS for mature theaters and may supplement CPS at existing fixed sites. COCOM staff planning includes CBRND for identified threats and identifies type, quantity, and allocation to meet mission requirements. However, these systems are in limited numbers and require significant logistics to move and establish. Concurrent operations with CBRN/TIM threat may further restrict the availability of COLPRO systems to meet plan and operational requirements. The COCOM staff adjusts plans, reallocates, and obtains COLPRO systems as necessary to meet operational requirements.

⁵ Limited quantities of existing CPSs at originating and en route locations limits the ability to provide COLPRO to deploying forces. Positioning of transportable shelters (e.g., JTCOPS, TEMPER systems, and Service-designed systems) at these locations is dependent upon threat, operational need, ongoing operations, movement and establishment requirements, and availability of the systems. CPSs for the AO to support deploying forces is dependent upon a number of factors. These include concurrent operations, availability of CPSs of the required types, mission requirements, stage of operations (initial or mature), and threat. These factors are addressed both during the planning and execution phase by the COCOM staff. The COCOM staff adjusts plans, reallocates, and obtains COLPRO systems as necessary to meet operational requirements. Availability of CPSs within the AO is likely to increase as the AO matures and the threat is validated. Additionally, the longer the preparatory period between plan notice of execution and before commencement of hostilities, the more likely CPSs will be available and established in support of operations. However, CPSs are inadequate to support expeditionary and forced-entry operations. This statement is particularly true for austere environments, locations deep within adversary territory, and highly mobile forces possessing reduced logistical footprints.

⁶ The COCOM staff plans for the provisioning of forces with appropriate CBRND capabilities based upon the identified threat. IPE positioning and force equipment are included in the plan. Forces are generally equipped or possess access to CBRND IPE when stationed in HTAs. Personnel assigned to CONUS and selected OCONUS locations do not possess or have ready access to IPE. Forces within a mature theater forces and at established support centers within the AO, where a CBRN/TIM threat exists, are equipped or possess access to CBRN/TIM IPE. However, fixed-site operations frequently include civilians directly supporting force activities. Although some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force] and selected others, most civilians are not equipped or have access to IPE enabling survival within a CBRN/TIM environment. This statement is particularly true of contractors. Further, MWAs (particularly MWDs) elements of the force do not possess CBRND protection. The COCOM staff does not possess clear guidance for planning and providing CBRND protection of eligible civilians and MWAs.

⁷ The COCOM staff identifies forces and the potential threat for planned operations. Time permitting, specified forces train and prepare for operations involving the potential threat. Equipping the task force is an integral part of planning and preparation. The COCOM staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. However, plan requirements are not centrally correlated with other plans for consideration of CBRND support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁸ The COCOM staff develops JMETLs, based upon the UJTL, essential to the accomplishment of the planned mission(s). The JMETLs provide the ability to develop joint training requirements, planning and executing joint tainting, and assessing joint proficiency. Plan identified forces are trained and assessed against the JMETLs for readiness to perform the tasks successfully. Assessment is performed through a variety of means including inspections, exercises, and reporting. However, current doctrine the UJTL and operational planning do not adequately address sustained operations within a CBRN/TIM environment. JMETL development generally does not specify these circumstances as an execution condition. Exercises and training do not emphasize task performance and operations in these conditions.

⁹ The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. However, plan requirements are not centrally correlated with other plans for consideration of CBRND support requirements of two or more concurrent operations with CBRN/TIM threat. Expeditionary operations are a particular concern as most CBRND systems and associated logistics do not support a highly mobile force, with a reduced logistical footprint, and sustained activity during the initial period of operations (the period until the theater matures, usually the first 30–90 days). Deploying units may not achieve full CBRND readiness and capabilities during the initial stages of deployment and until after arrival within the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not generally prepared to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for CBRN/TIM protection readiness of deploying eligible civilians and MWAs.

11.6.3 Functional Solution Analysis

11.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There is a lack of doctrine for risk management of forces operating in radiological contaminated environments. Current guidance is based on cold-war assumptions and does not reflect modern threats and mission priorities.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, and procedures that address appropriate operationally oriented command dose levels for low-level radiation exposure based on mission priority across the range of military operations. *Training:* Train leaders and personnel on operationally oriented low-level radiation exposure control standards and procedures
- 2. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.

Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 3. Deficiency:** COLPRO systems are in limited numbers and require significant logistics to move and establish. Concurrent operations with CBRN/TIM threat may further restrict the availability of COLPRO systems to meet plan and operational requirements.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.
- 4. Deficiency:** Limited quantities of existing CPSs at originating and en route locations limit the ability to provide COLPRO to deploying forces.

Non-Materiel Solutions: *Doctrine:* Enforce planning for CBRND of deploying, redeploying, and en route forces. Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources, ability and willingness of en route and host nations to provide CBRND of moving forces, and the availability and feasibility of support by existing OCONUS U.S. military installations. *Organization:* Organization structures, resources, staffing, and capabilities to provide CBRND of deploying, redeploying, relocation, and en route forces as well as organic forces. *Training:* Train, exercise, and evaluate capabilities of locations providing support to deploying, redeploying, relocating, and en route forces to conduct and provide CBRND. *Leadership:* Recognize challenges associated with CBRND support of deploying, redeploying, relocating, and en route forces as well as organic forces. Plan for the provision of CBRND and conduct comprehensive exercises and evaluations to ensure readiness of the

organic force to perform CBRND and protect transient forces. *Facilities*: Develop supporting infrastructure to protect transient forces from the effects of CBRN/TIM agents.

- 5. Deficiency:** CPSs are inadequate to support expeditionary and forced entry operations. This statement is particularly true for austere environments, locations deep within adversary territory, and highly mobile forces possessing reduced logistical footprints.

Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures standards for expeditionary forces possessing reduced logistical footprint during the first 30–90 days of operations following commencement of hostilities. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint
- 6. Deficiency:** Personnel assigned to CONUS and selected OCONUS locations do not possess or have ready access to IPE.

Non-Materiel Solutions: *Doctrine*: Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in DoD installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. *Organization*: Ensure resources, taskings, and staff are in place or available to support and conduct CBRND. *Training*: Train, exercise, and evaluate the force for survivability within a CBRN/TIM environment. *Leadership*: Implement development of plans and taskings consistent with stockpile support capabilities.
- 7. Deficiency:** Fixed site operations frequently include civilians directly supporting force activities. Although some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force] and selected others), most civilians are not equipped or have access to IPE enabling survival within a CBRN/TIM environment. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians supporting the mission/military operations addressing the variation within the potential protected working population. *Leadership*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations.

- 8. Deficiency:** MWA (particularly MWD) elements of the force do not possess CBRND protection.
- Non-Materiel Solutions:** *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).
- 9. Deficiency:** The COCOM staff does not possess clear guidance for planning and providing CBRND protection of eligible civilians.
- Non-Materiel Solutions:** *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 10. Deficiency:** The COCOM staff does not possess clear guidance for planning and providing CBRND protection of MWAs.
- Non-Materiel Solutions:** *Doctrine:* Develop doctrine, policy, and procedures addressing MWA, particularly MWD, operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by MWA operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 11. Deficiency:** Plan requirements are not centrally correlated with other plans for consideration of CBRND support requirements of two or more concurrent operations with CBRN/TIM threat.
- Non-Materiel Solutions:** *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, including replenishment. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of national and strategic plans and taskings.

12. Deficiency: Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

13. Deficiency: Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during and throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route

14. Deficiency: Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures

and requirements for eligible civilians survivability. *Facilities*: Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 15. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Develop institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integration into CBRND exercises and evaluations. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 16. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 17. Deficiency:** JMETL development generally does not specify sustained operations in a CBRN/TIM environment as an execution condition.

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 18. Deficiency:** Exercises and training do not emphasize sustained task performance and operations in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills

to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

19. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

20. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWA, particularly MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWA; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.

11.6.3.2 IMA Assessment Summary

N/A

11.7 Task STSHLD 7: Integrate coalition/non-U.S. and joint force CBRN/TIM protective measures and assets

11.7.1 Functional Area Analysis

11.7.1.1 Definition

To integrate CBRN/TIM protection for joint force elements to ensure survivability and the sustained conduct of operations despite the CBRN/TIM threat. The availability of CBRN/TIM protective and medical assets is both a joint and coalition/non-U.S. force concern. The base/facility FP plan must consider all tenant units and the base/facility general populace to maximize capability and minimize vulnerability. Operational units must determine the level of CBRND training and protective equipment status of sister and coalition/non-U.S. forces. Planners and NBC staff officers must have knowledge of and track the status of protective assets of coalition/non-U.S. partners and each U.S. component and major unit. Assets may require redistribution depending on local threats and/or actual adversary use of CBRN/TIM. Plans for sustained operations in a hazardous environment must be prepared, reviewed, and coordinated. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities.

11.7.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (ST 2.4.1.1, ST 2.4.1.2, ST 4.2.4, ST 5.1.3, ST 5.1.4, ST 5.2, ST 5.4.1, ST 5.4.3, ST 6, ST 6.2, ST 6.2.1, ST 6.2.2, 8.1.2, ST 8.1.3, ST 8.1.4, ST 8.2, ST 8.3.2, ST 9.3, ST 9.4, ST 9.5, ST 9.6).

11.7.1.2.1 Supported Task: N/A

11.7.1.2.2 Lateral Task: STSHA 11

11.7.1.2.3 Supporting Task: OPSHLD 2

11.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Partial interoperability. (C2.2.6)

5. Partial joint staff integration. (C2.3.1.1)
6. Moderate staff expertise. (C2.3.1.3)
7. Limited deployed supplies. (C2.8.2)
8. Sufficient CONUS resupply. (C2.8.3)
9. Limited prepositioned materiel. (C2.8.4)
10. Limited host-nation support. (C2.8.5)

Civil

1. Limited foreign government support (C3.1.2.3)
2. Technical language translation. (C3.2.1.1)
3. Few language translators. (C3.2.1.2)

11.7.2 Functional Needs Analysis

11.7.2.1 Capability and Deficiency Assessment Summary

Table 11.7-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for the planning and implementation of integration of coalition and non-U.S. force CBRND measures and assets. Coordination with participant coalition and non-U.S. force staffs provides common frameworks for information, asset, and capability sharing for successful operation outcome. Discussions and negotiations between partners determine the capabilities of each partner within the full spectrum of support. Force requirements and commitments are obtained from each participant and minimum capability standards and a certification process covering the areas of concern is established. Specific tasks are assigned to the elements of the overall force most capable of completing the task. Included in the deficiencies is the ability of the force to maintain operations tempo within a sustained CBRN/TIM environment and to integrate Service-specific logistical information into a single overall logistics picture.

Current Capability and Deficiency

Adequate doctrine, policy, and procedures exist to guide commanders and staffs with coalition and non-U.S. force participation in joint operations. Planning, tracking, and monitoring is performed in coordination with partner staffs under a negotiated plan outlining requirements, taskings, training, reporting, information sharing, standards, and operational certifications for participation. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among partners is planned to complement capabilities and to minimize weaknesses. Acquisition Cross-Service Agreements (ACSA) between partners enable acquisition and cross-servicing support between the partners. The more specific agreement, the Implementing Arrangement (IA), provides for a wide range of support including sheltering, medical care, and other support activities. The COCOM and combined staff monitor, track, and assess the readiness of the Joint Coalition Force and addresses issues and concerns as they arise. Deficiencies include the limited availability of COLPRO systems in each of the COLPRO categories, the inadequacy of COLPRO systems located within CONUS and non-HTA

OCONUS as well as for highly mobile/expeditionary forces, visibility of CBRND resources, and the protection of eligible civilians and MWDs.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.7-1. STSHLD 7: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	Y ²	G ³	G ³	G ³	G ⁴	R ⁵	Y ⁶	Y ⁷	R ⁸	R ⁹
Near/Mid-Term Overall Capability	Y	G	G	G	G	R	Y	Y	R	R
Far-Term Overall Capability	Y	G	G	G	G	R	Y	Y	R	R

	FAA Measure	Scale
M1	Joint forces are equipped with or possess access to COLPRO.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M2	Coalition/non-U.S. forces are equipped with or possess access to COLPRO.	<p>G: Planning and coordination is conducted to address partner forces equipping or access to COLPRO.</p> <p>Y: Partner force equipping or access to COLPRO is considered when planning operations with threat.</p> <p>R: Partner force equipping or access to COLPRO is not considered or is inadequately considered when planning operations with threat.</p>
M3	Joint forces meet combatant commander CBRN/TIM protection requirements (training, equipping, and manning).	<p>G: Processes and means exist to monitor, track, and assess joint forces readiness and preparations status against COCOM requirements.</p> <p>Y: Processes exist to identify joint forces readiness meeting COCOM requirements.</p> <p>R: Processes and/or means are inadequate or nonexistent to identify joint forces readiness and/or preparations meeting COCOM requirements.</p>
M4	Coalition/non-U.S. forces meet combatant commander CBRN/TIM protection requirements (training, equipping, and manning).	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces readiness and preparations status against COCOM requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces readiness meeting COCOM requirements.</p> <p>R: Processes and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces readiness and/or preparations meeting COCOM requirements.</p>
M5	Joint and coalition/non-U.S. force CBRN/TIM protection consumables are interoperable.	<p>G: CBRN/TIM protection consumables are interoperable between coalition/non-U.S. forces and joint forces or adequate stocks of noninteroperable consumables are determined and available to support operations with threat.</p> <p>Y: CBRN/TIM protection consumables are interoperable between coalition/non-U.S. forces and joint forces or stocks of noninteroperable consumables are available to support operations with threat.</p> <p>R: CBRN/TIM protection consumables are noninteroperable between coalition/non-U.S. forces and joint forces and/or stocks of noninteroperable consumables are inadequate or nonexistent to support operations with threat.</p>
M6	Sustained operational planning includes allocation and placement (and redistribution if necessary) of joint and coalition force CBRN/TIM protection assets.	<p>G: The planned and operational control of allocation, placement, and, when necessary, redistribution of CBRN/TIM protection assets of coalition and joint forces is performed and coordinated throughout operations to sustain and support forces.</p> <p>Y: Allocation and placement of CBRN/TIM protection assets of coalition and joint forces is performed and coordinated prior to commencement of operations.</p> <p>R: The planned and operational control of the allocation, placement, and/or redistribution of joint and coalition force CBRN/TIM protection assets is inadequate or nonexistent.</p>

M7	Theaterwide system to identify and track CBRN/TIM protective equipment for joint and coalition/non-U.S. forces in place.	<p>G: Integrated and interoperable logistics systems provide theaterwide identification, tracking, status, and visibility of joint, coalition, and non-U.S. forces CBRN/TIM protective equipment to the COCOM.</p> <p>Y: Processes and means exist to provide the COCOM with information about joint, coalition, and non-U.S. forces CBRN/TIM protective equipment.</p> <p>R: Process and means are inadequate or nonexistent to provide the COCOM with information about joint, coalition, and non-U.S. forces CBRN/TIM protective equipment.</p>
M8	Theaterwide system to track CBRN/TIM protective training of joint, and coalition/non-U.S. forces in place.	<p>G: Integrated and interoperable systems provide theaterwide identification, tracking, status, and visibility of joint, coalition, and non-U.S. forces CBRN/TIM protective training to the COCOM.</p> <p>Y: Processes and means exist to provide the COCOM with information about joint, coalition, and non-U.S. forces CBRN/TIM protective training status.</p> <p>R: Process and means are inadequate or nonexistent to provide the COCOM with information about joint, coalition, and non-U.S. forces CBRN/TIM protective training status.</p>
M9	FP plan for bases/facilities includes CBRN/TIM protection for base/facility general populace.	<p>G: AT/FP plans address and provide for the ready protection of the base/facility general populace against exposure to and the effects of CBRN/TIM agents.</p> <p>Y: AT/FP plans address and provide for the ready protection of the at-risk base/facility general populace against exposure to and the effects of CBRN/TIM agents.</p> <p>R: AT/FP plans addressing and providing general populace protection against CBRN/TIM agents are inadequate or nonexistent.</p>
M10	FP plan for bases/facilities includes CBRN/TIM protection for tenant and transiting units/forces.	<p>G: AT/FP plans address and provide for the ready protection of tenant and transiting units/forces against exposure to and the effects of CBRN/TIM agents.</p> <p>Y: AT/FP plans address and provide for the ready protection of the at-risk tenant and transiting units/forces against exposure to and the effects of CBRN/TIM agents.</p> <p>R: AT/FP plans addressing and providing tenant and transiting units/forces protection against CBRN/TIM agents are inadequate or nonexistent.</p>

¹ DOTMLPF is adequate for the coordination and integration of coalition forces. Adequate DOTMLPF exists to address and support these forces. However, DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs. DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

² Limited quantities of COLPRO are available for operations. Not all critical facilities and activities are equipped with COLPRO. Transportable CPSs (e.g., JTCOPS, CP-DEPMEDS, TEMPER systems, and Service-designed systems) provide CPS for mature theaters or within the AO if there exists adequate time between notification of plan activation and the commencement of hostilities. However, these systems are in limited numbers, require significant logistics to move and establish, and concurrent operations with CBRN/TIM threat may further limit their availability. Mobile CPSs (ground) are also limited in quantities and types. Coalition partner and host-nation (when applicable) CPSs may offset these limitations. The COCOM staff, in coordination with coalition partner staff, develop the campaign plan and address requirements and commitments by each coalition participant. Discussions and negotiations between the COCOM staff and partners determine the capabilities of each partner within the full spectrum of support. Commitments are obtained from each participant. Specific tasks are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among coalition partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange including sheltering, medical care, and other support activities.

³ In coordination with coalition partner staff, the COCOM staff develops a comprehensive campaign plan for successful achievement of the desired end states. Discussions and negotiations between partners determine the capabilities of each partner within the full spectrum of support. Force requirements and commitments are obtained from each coalition participant. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. Specific tasks are assigned to elements of the coalition force most capable of

completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual logistics support among coalition partners is planned to complement partners' capabilities and to minimize weaknesses. For example, U.S. Marine Corps forces were equipped with lightweight CBRN/TIM IPE by the U.K. during Operation Desert Storm. The United States installed COLPRO capabilities in Saudi critical command and control facilities for the same operation. The COCOM and the combined staff monitors, tracks, and assesses the readiness of the joint coalition force. COLPRO availability and readiness is addressed throughout the process for CBRND.

⁴ In coordination with coalition partner staff, the COCOM staff determines logistical efficiencies among the partners during the planning process. Standardization and interoperability between the participating nations is assessed and adjustments are made as necessary to plans. Support consumable levels are determined and incorporated into the plans. Commitments are obtained from each coalition participant. Minimum capability standards for participation and a certification process covering areas of concern (including logistics capabilities) are established and applied by all participants. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for sheltering, medical care, consumables, and other support activities. Standardization of consumables for interoperability, although sought and existing with selected countries (e.g., North Atlantic Treaty Organization [NATO] participants), may not be possible with all coalition partners and U.S. forces. Interoperability between two or more partners may alleviate the increased logistics of nonstandardized consumables. Issues associated with nonstandardized consumables are addressed when necessary and appropriate during planning.

⁵ The allocation, placement, and reallocation of protective assets is a function of the planning and operational control of the COCOM, COCOM staff, and combined staff. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange including consumables, sheltering, medical care, and other support activities. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

⁶ Service logistics systems provide some visibility of the location of CBRN/TIM protective equipment (real and warehoused property). These systems also include a standardized condition indicator. However, these indicators are assigned upon receipt of property and are generally unchanged unless there is an assigned limitation code specifying automatic condition code downgrade timing or Lot Number identifier. Issued property from logistics warehouse systems, other than real property, are not identified in the wholesale logistics system. The accuracy of logistics systems are dependent upon the quality of inventory controls and logistics management. Service-specific supply systems do not exchange information at the theater and local level. The Defense Logistics Agency does possess a degree of ability to view and track assets across the services. The COCOM staff does not possess this capability and must request the information from the component Services. The allocation, operation, manning, management, and resupply of non-U.S. force CBRND assets are generally the responsibility of the owning nation. The tracking of these assets are internal to those forces and nations. Integration of U.S. and non-U.S. logistics systems is not currently required. Tracking of non-U.S. equipment supplied for U.S. force application is largely performed manually and not integrated with existing component Service systems.

⁷ CBRN/TIM protective training is tracked and recorded by individual force units. A theaterwide system to track CBRN/TIM protective training does not exist. Readiness monitoring is performed by the COCOM staff. However, CBRN/TIM is part of a composite readiness rating. CBRN/TIM protective training of non-U.S. forces is generally the responsibility of the owning nation. The training of these forces is tracked internally to those forces and nations. The integration of training tracking systems between the U.S. and non-U.S. systems is not currently required.

⁸ AT/FP plans include a CBRN/TIM annex. The annex must address the notification and protective measures for the base/facility general populace. However, CBRND protective equipment is not issued or available to the base/facility general populace at CONUS and non-HTA OCONUS locations. The Guardian Program is addressing these issues. FP plans for bases and facilities within HTA do address CBRN/TIM protection. However, the common assumption is nonessential civilians will be evacuated prior to commencement of hostilities or the hazard area will be limited; therefore, nonessential civilians are not generally addressed for protection in other than in generic terms or NEO planning. Operations frequently include civilians directly supporting force activities. Although some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force] and selected others, most civilians are not equipped or have access to IPE enabling survival within a CBRN/TIM environment. This statement is particularly true of contractors. Further, MWAs (particularly MWDs) elements of the force do not possess CBRND protection. The COCOM staff does not possess clear guidance for planning and providing CBRND protection of eligible civilians and MWA.

⁹ AT/FP plans generally do not include protection for transiting units/forces. Tenant organizations are included in garrison/base protection plans and planning. Operations frequently include civilians directly supporting force activities and other eligible civilians (not supporting the mission). Although some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force] and selected others, most civilians are not equipped or have access to IPE enabling survival within a CBRN/TIM environment. This statement is particularly true of contractors. Further, MWAs (particularly MWDs) elements of the force do not possess CBRND protection. The COCOM staff does not possess clear guidance for planning and providing CBRND protection of eligible civilians and MWAs.

11.7.3 Functional Solution Analysis

11.7.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 2. Deficiency:** Mobile CPSs (ground) are limited in quantity and type.
Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.
- 3. Deficiency:** Transportable COLPRO systems are in limited numbers and require significant logistics to move and establish.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.
- 4. Deficiency:** Concurrent operations with CBRN/TIM threat may limit CPS availability.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of Strategic Theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of Strategic Theater plans and taskings.
- 5. Deficiency:** Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and

staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

6. **Deficiency**: Issued property from logistics warehouse systems, other than real property, is not identified in the wholesale logistics system.
Non-Materiel Solutions: *Organization*: Develop structures for logistics systems integration and information sharing to support decisioning and asset visibility. *Facilities*: Develop logistics infrastructure (national to unit) supporting flow of information.
7. **Deficiency**: Service-specific supply systems do not exchange information at the theater and local level.
Non-Materiel Solutions: *Organization*: Develop structures for logistics systems integration and information sharing to support decisioning and asset visibility. *Facilities*: Develop logistics infrastructure (national to unit) supporting flow of information.
8. **Deficiency**: The COCOM staff does not possess the ability to view and track CBRND assets across the services and must request the information from the component Services.
Non-Materiel Solutions: *Organization*: Develop structures for logistics systems integration and information sharing to support decisioning and asset visibility. *Facilities*: Develop logistics infrastructure (national to unit) supporting flow of information.
9. **Deficiency**: Tracking of non-U.S. equipment supplied for U.S. force application is largely performed manually and not integrated with existing component Service systems.
Non-Materiel Solutions: *Organization*: Develop structures for logistics systems integration and information sharing to support decisioning and asset visibility, including assets provided by other nations to support U.S. forces. *Facilities*: Develop logistics infrastructure (national to unit) supporting flow of information, including information on assets provided by other nations to support U.S. forces.
10. **Deficiency**: A theaterwide system to track CBRN/TIM protective training does not exist.
Non-Materiel Solutions: *Organization*: Develop structures for Service-specific training tracking systems integration and information sharing to support decisioning and asset visibility. *Facilities*: Develop automated systems infrastructure supporting the compilation and flow of information of all force elements.
11. **Deficiency**: CBRND protective equipment is not issued or available to the base/facility general populace at CONUS and non-HTA OCONUS locations.
Non-Materiel Solutions: *Doctrine*: Institute in doctrine, policy, and procedures CBRND of personnel (military and civilian) located in DoD installations, sites, and facilities to include equipping, training, exercising, and evaluations for CBRN/TIM survival. *Organization*: Ensure resources, taskings, and staff are in place or available to support and conduct CBRND. *Training*: Train, exercise, and evaluate the force for survivability within a

CBRND/TIM environment. *Leadership*: Implement development of plans and taskings consistent with stockpile support capabilities.

- 12. Deficiency:** The common assumption for HTA fixed sites is that nonessential civilians will be evacuated prior to commencement of hostilities or the hazard area will be limited; therefore, nonessential civilians are not generally addressed for protection in other than in generic terms or NEO planning.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organizational services and activities supporting eligible civilians. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilian personnel and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel. *Facilities*: Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.

- 13. Deficiency:** Although some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force] and selected others), most civilians are not equipped or have access to IPE enabling survival within a CBRND/TIM environment. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians supporting the mission/military operations addressing the variation within the potential protected working population. *Leadership*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRND/TIM training, exercises, and evaluations.

- 14. Deficiency:** MWA, particularly MWD, elements of the force do not possess CBRND protection.

Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs and training for CBRND/TIM environment survival. *Organization*: Organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Develop institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

- 15. Deficiency:** The COCOM staff does not possess clear guidance for planning and providing CBRND protection of eligible civilians.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization*: Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel*: Ensure that eligible civilians supporting the mission/military operations are

qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

16. Deficiency: The COCOM staff does not possess clear guidance for planning and providing CBRND protection of MWAs.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWA, particularly MWD, operations for CBRND. *Organization*: Identify organizational services and activities supporting the mission performed by MWA operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities*: Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

17. Deficiency: AT/FP plans generally do not include protection for transiting units/forces.

Non-Materiel Solutions: *Doctrine*: Enforce planning for CBRND support of deploying, redeploying, and en route forces by supporting installations. *Organization*: Develop organization structures, resources, staffing, and capabilities to provide CBRND support of deploying, redeploying, relocation, and en route forces as well as organic forces. *Training*: Train, exercise, and evaluate capabilities of locations providing support to deploying, redeploying, relocating, and en route forces to conduct and provide CBRND. *Leadership*: Recognize challenges associated with CBRND support of deploying, redeploying, relocating, and en route forces as well as organic forces. Plan for the provision of CBRND and conduct comprehensive exercises and evaluations to ensure readiness of the organic force to perform CBRND and protect transient forces. *Facilities*: Develop supporting infrastructure to protect transient forces from the effects of CBRN/TIM agents.

18. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

19. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWDs for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWDs.

20. Deficiency: DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

11.7.3.2 IMA Assessment Summary

N/A

11.8 Task STSHLD 8: Ensure adequate protective measures and resources are available to coalition partners and other designated non-U.S. forces

11.8.1 Functional Area Analysis

11.8.1.1 Definition

To ensure that CBRN/TIM protective measures and resources are available to coalition/non-U.S. forces. The availability of CBRN/TIM protective measures and resources is both a joint and coalition/non-U.S. force concern. This task includes IPE, COLPRO, CBRND equipment and supplies, protection of equipment and supplies, and medical CBRN/TIM countermeasure resources. The base/facility FP plan must integrate coalition forces to maximize capability and minimize vulnerability. Operational units must determine and track the level of NBC training and equipment status of their fellow coalition/non-U.S. forces. Planners and NBC staff officers must establish and track the status of protective assets of coalition/non-U.S. partners. U.S. forces may be required to provide protective assets (especially IPE, detection and warning devices, medical support, and decontaminants) to coalition/non-U.S. partners, depending on local threats and/or actual adversary use of CBRN/TIM. Joint forces NBC staff officers should offer to review coalition/non-U.S. force CBRN/TIM protection plans and assist as necessary. U.S. forces may be required to train coalition/non-U.S. forces in CBRND. Supports assistance to nations provided under military assistance and the family of engagement plans to eliminate WMD vulnerabilities.

11.8.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (ST 2.4.1.1, ST 2.4.1.1, ST 4.2.4, ST 5.4.1, ST 5.4.3, ST 6, ST 6.2, ST 6.2.1, ST 8.1.4, ST 8.2, ST 8.3.2, ST 9.3, ST 9.4).

11.8.1.2.1 Supported Task: SNSHLD 12

11.8.1.2.2 Lateral Task: STSHA 4

11.8.1.2.3 Supporting Task: OPSHLD 5

11.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C 1.2)
3. Natural and induced air. (C 1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Partial joint staff integration. (C2.3.1.1)
4. Moderate staff expertise. (C2.3.1.3)
5. Fair personnel nutrition and health. (C2.2.4.1)
6. Partial interoperability. (C2.2.6)
7. Limited deployed supplies. (C2.8.2)
8. Sufficient CONUS resupply. (C2.8.3)
9. Limited prepositioned materiel. (C2.8.4)
10. Limited host-nation support. (C2.8.5)
11. Extensive commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support. (C3.1.2.3)
3. Moderately opposed foreign public opinion. (C3.1.2.4)

11.8.2 Functional Needs Analysis**11.8.2.1 Capability and Deficiency Assessment Summary**

Table 11.8-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for ensuring the adequacy of protective measures and resources of coalition partners and other designed non-U.S. forces. Structures for mutual support can be applied in cases where necessary to complement capabilities and minimize weaknesses within the Joint Coalition Force. No deficiencies were noted within this task.

Current Capability and Deficiency

Adequate doctrine, policy, and procedures exist to guide commanders and staffs with coalition and non-U.S. force participation in joint operations. Planning, tracking, and monitoring is performed in coordination with partner staffs under a negotiated plan outlining requirements, taskings, training, reporting, information sharing, standards, and operational certifications for participation. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among partners is planned to complement capabilities and to minimize weaknesses. ACSAs between partners enables acquisition and cross-servicing support between the partners. The more specific IA provides for a wide range of support including sheltering, medical care, and other support activities. The COCOM and combined staff monitors, tracks, and assesses the readiness of the Joint Coalition Force and addresses issues and concerns as they arise. No deficiencies were noted within this task.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.8-1. STSHLD 8: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4
Current Overall Capability¹	G²	G³	G⁴	G⁵
Near/Mid-Term Overall Capability	G	G	G	G
Far-Term Overall Capability	G	G	G	G

	FAA Measure	Scale
M1	Coalition/non-U.S. forces are protected by medical prophylaxes.	<p>G: Planning and coordination is conducted to address partner forces readiness and preparations for operations with CBRN/TIM threat and includes all CBRND protective measures.</p> <p>Y: Partner forces CBRND capabilities are considered when planning operations with CBRN/TIM threat.</p> <p>R: Partner force CBRND capabilities are not considered or is inadequately considered when planning operations with CBRN/TIM threat.</p>
M2	Coalition/non-U.S. forces are equipped with or possess access to CBRN/TIM COLPRO.	<p>G: Planning and coordination is conducted to address partner forces equipping or access to COLPRO.</p> <p>Y: Partner force equipping or access to COLPRO is considered when planning operations with threat.</p> <p>R: Partner force equipping or access to COLPRO is not considered or is inadequately considered when planning operations with threat.</p>
M3	Coalition/non-U.S. forces are trained to operate in CBRN/TIM hazards.	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces training, readiness, and preparations status against COCOM requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces training meeting COCOM requirements.</p> <p>R: Process and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces training meeting COCOM requirements.</p>
M4	Coalition/non-U.S. forces are equipped with CBRN/TIM IPE.	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces equipping, readiness, and preparations status against COCOM requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces equipping meeting COCOM requirements.</p> <p>R: Process and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces equipping meeting COCOM requirements.</p>

¹ There is adequate DOTMLPF in place to conduct this task.

² National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the COCOM and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. In coordination with coalition/non-U.S. forces partner staff, the COCOM staff develop and address requirements and commitments by each partner. Discussions and negotiations between the COCOM staff and partners determine the capabilities of each partner within the full spectrum of support. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis.

³ In coordination with coalition/non-U.S. forces partner staff, the COCOM staff develop and address requirements and commitments by each partner. Discussions and negotiations between the COCOM staff and partners determine the capabilities of each partner within the full spectrum of support. Specific tasks are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA, a

more specific arrangement, provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to CBRND COLPRO.

⁴ In coordination with coalition/non-U.S. forces partner staff, the COCOM staff develop a comprehensive plan for successful achievement of the desired end states. Discussions and negotiations between partners determine the capabilities of each partner within the full spectrum of support. Force requirements and commitments are obtained from each participant. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. The COCOM and the combined staff monitor, track, and assess the readiness of the joint coalition force. Indigenous forces supporting operations may not be equipped and prepared for CBRND operations. The COCOM staff, in coordination with partners, determines the need for CBRND capabilities of these forces based upon the threat. A determination is made on the provision CBRND training to these forces.

⁵ In coordination with coalition/non-U.S. forces partner staff, the COCOM staff develop and address requirements and commitments by each partner. Discussions and negotiations between the COCOM staff and partners determine the capabilities of each partner within the full spectrum of support. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to CBRND IPE. The COCOM staff, in coordination with partners, determine the need for IPE based upon the threat.

11.8.3 Functional Solution Analysis

11.8.3.1 DOTLPF Assessment Summary

No deficiencies were noted within this task.

11.8.3.2 IMA Assessment Summary

N/A

11.9 Task STSHLD 9: Provide COLPRO for critical activities/functions, rest, and relief**11.9.1 Functional Area Analysis****11.9.1.1 Definition**

To provide COLPRO by CPSs, which provide protection against CBRN/TIM hazards in particulate, liquid, or vapor forms. *JP 1-02* defines COLPRO as “protection provided to a group of individuals in a nuclear, biological, and chemical environment which permits relaxation of individual nuclear, biological, and chemical protection.” COLPRO provides a contamination-free environment where critical activities (e.g., command and control, communication, and medical activities and maintenance of low-density assets) can be performed and provides mission-oriented protective posture relief for individuals, units, and MWAs.

A collective protection system (CPS) is a complete and integrated system of protection. The components are designed to function in concert to successfully protect the occupants. COLPRO may be incorporated in or an additive component to a fixed facility, transportable shelter, mobile mounted shelter, vehicle, aircraft, ship, or an expedient shelter. Prior to an actual attack, a CPS may be activated and the following tasks performed:

- CPS are assessed and prepared for use. The commander may place a CPS into operation or on standby for an anticipated attack.
- Facilities, vehicles, vessels, and aircraft are prepared wherever possible against infiltration of a CBRN/TIM agent.
- Expedient shelters are established in facilities, vehicles, vessels, aircraft, etc., for protection of resources. Expedient shelters also may be constructed using available materials.

11.9.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 5, ST 5.1, ST 5.1.2, ST 6, ST 6.2.1, ST 9.3, ST 9.4).

11.9.1.2.1 Supported Task: N/A

11.9.1.2.2 Lateral Tasks: STSHA 3, STSHA 4

11.9.1.2.3 Supporting Task: OPSHLD 7

11.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)

3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Partial interoperability. (C2.2.6)
4. Moderate staff expertise. (C2.3.1.3)

Civil. N/A

11.9.2 Functional Needs Analysis**11.9.2.1 Capability and Deficiency Assessment Summary**

Table 11.9-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures exist to provide CBRND COLPRO for critical activities, functions, and to enable rest and relief of the force. Deficiencies include limitations in types, quantities, and application of existing COLPRO.

Current Capability and Deficiency

Radiological (fallout) COLPRO does exist in CONUS and OCONUS. The combination of individual protection, contamination avoidance, and available COLPRO provides critical activities and functions with a level of capability. Allocation of limited COLPRO resources is made based upon the threat, mission, criticality of performed activity, and availability of COLPRO for the function. Planning and prioritization of COLPRO resources is performed during operational planning. Fixed-site operations within a mature theater may possess sufficient COLPRO to provide access to personnel within a 24-hour period. The current concept for CBRN/TIM environment operations is contamination avoidance or withdrawal. Mobile COLPRO does exist in selected tactical combat mobile assets (air, ground, and sea) and support vehicles. Mature theater-transportable CPSs are available in limited quantities and inclusion of Service-specific systems provides additional COLPRO capabilities to the force. Fixed-site critical facilities within HTA are prioritized and equipped for COLPRO based upon mission, criticality, assessments, and available funding. Transportable CPSs as an expansion of existing fixed-site capabilities are planned as appropriate and necessary. Deficiencies include inadequate quantities and types of COLPRO; lack of COLPRO in tactical/strategic airframes (particularly airlift) and supporting vessels (e.g., hospital ships, cargo vessels, etc.); critical facility COLPRO; COLPRO systems (designs, quantities, and types) supporting highly mobile and expeditionary forces; and the lack of doctrine, policy, and procedures for the implementation and application of expedient COLPRO. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.9-1. STSHLD 9: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	R ²	Y ³	R ⁴	R ⁵	R ⁶	G ⁷	R ⁸	R ⁹	Y ¹⁰	R ¹¹
Near/Mid-Term Overall Capability	R	Y	R	R	R	G	R	R	Y	R
Far-Term Overall Capability	R	Y	R	R	Y	G	R	R	Y	R

	FAA Measure	Scale
M1	All critical activities and functions are collectively protected.	<p>G: All critical facilities and activities are equipped with operational COLPRO.</p> <p>Y: All identified critical facilities and activities possess or are programmed to be equipped with COLPRO.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M2	Operational activities and functions are not degraded/unavailable due to CBRN/TIM attacks.	<p>G: All operational activities and functions are protected and are not degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>Y: All operational activities and functions are afforded protection and are not seriously degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>R: Protection of operational activities and/or functions is inadequate or nonexistent and may result in serious degradation or nonavailability resulting from CBRN/TIM attacks.</p>
M3	Sustained operational capability is achievable with COLPRO.	<p>G: Sufficient and adequate COLPRO is available and operational to sustain operational capabilities in a CBRN/TIM environment.</p> <p>Y: Sustainable operational capabilities for selected functions and activities are achievable with available and operational COLPRO.</p> <p>R: Sustainable operational capabilities are not sustainable with available and operational COLPRO.</p>
M4	Forces are trained to apply and use expedient COLPRO.	<p>G: Forces are trained and routinely exercised and evaluated on the effective application of expedient COLPRO measures and equipment.</p> <p>Y: Forces are trained and exercised and evaluated on the application of expedient COLPRO measures and equipment upon predeployment notification for operations with threat.</p> <p>R: Training, exercising, and evaluation of forces on the application of expedient COLPRO measures and equipment is inadequate or nonexistent.</p>
M5	Required expedient collective protective kits and materials (e.g., adaptation kits, plywood, sprays, gel packs, tape, etc.) are readily available.	<p>G: The full range of expedient COLPRO kits and materials are readily available for application by forces in the field.</p> <p>Y: Expedient COLPRO kits and materials are generally available for force application in selected field environments.</p> <p>R: Expedient COLPRO kits are inadequate, unavailable, or nonexistent.</p>
M6	Adequate CPSs are available for in-place forces.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>

M7	Adequate CPSs are available for deploying forces.	G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations. Y: COLPRO is available in sufficient types and quantities to support major operations. R: COLPRO is inadequate or nonexistent to support operations.
M8	Required mobile CPSs are available.	G: Operational mobile CPSs are available in required quantities and types to support the full range of envisioned and planned operations. Y: Operational mobile CPSs are available in sufficient types and quantities to support major operations. R: Operational mobile CPSs are inadequate or nonexistent to support operations.
M9	Required transportable CPSs are available.	G: Operational transportable CPSs are available in required quantities and types to support the full range of envisioned and planned operations. Y: Operational transportable CPSs are available in sufficient types and quantities to support major operations. R: Operational transportable CPSs are inadequate or nonexistent to support operations.
M10	Required CPSs for fixed facilities are installed and available.	G: All fixed facilities and activities are equipped with operational COLPRO. Y: All critical fixed facilities and activities are equipped with operational COLPRO. R: COLPRO within fixed facilities and activities is inadequate or nonexistent to support operations.

¹ DOTMLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days. Current DOTMLPF does not adequately address the establishment and operation of expedient COLPRO activities and measures.

² Not all critical facilities and activities are equipped with COLPRO. COLPRO within CONUS and some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). The combination of individual protection, contamination avoidance, and available COLPRO provides critical activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to ensure mission success.

³ The limited availability of COLPRO systems requires careful planning and prioritization of resources. The COCOM staff and the components establish and allocate COLPRO resources based upon the threat, risk, and vulnerability assessments. Operational activities and functions are prioritized based upon mission, criticality, assessments, and available resources. The combination of individual protection, contamination avoidance, and available COLPRO provides operational activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to ensure mission success.

⁴ Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment. The establishment and operation of existing COLPRO for sustained CBRN/TIM environment operations will require DOTMLPF and significant logistical support. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). The combination of individual protection, contamination avoidance, and available COLPRO provides a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to ensure mission success.

⁵ Expedient COLPRO kits, procedures, and training do not currently exist.

⁶ Expedient COLPRO kits, procedures, and training do not currently exist. Identification, development and/or acquisition of assets for Joint Expeditionary Collective Protection (JECF) include ECP assets for adaptation of tentage and structures to support expeditionary operations. The JECF effort is currently proceeding through the JCIDS process.

⁷ The limited availability of COLPRO systems requires careful planning and prioritization of resources. The COCOM staff and the components establish and allocate COLPRO resources based upon the threat, risk, and vulnerability assessments. Operational activities and functions are prioritized based upon mission, criticality, assessments, and available resources. The combination of individual protection, contamination avoidance, and available COLPRO provides operational activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to ensure mission success.

⁸ Maneuvering forces are inadequately equipped with COLPRO capabilities. Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This statement is particularly true of forward-operating light forces. COLPRO within

CONUS and some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites. Fixed-site operations within a mature theater may possess sufficient COLPRO to provide access to personnel within a 24-hour period. Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment. Current concept is contamination avoidance or withdrawal.

⁹ Quantities and availability of mobile COLPRO is inadequate. Mobile COLPRO exists in selected tactical combat and support vehicles. The quantities and types of these vehicles are limited and dedicated to specific missions. Current mobile COLPRO is inadequate to support operations by highly mobile forces. Airframe COLPRO is limited to tactical combat airframes. Airlift (both tactical and strategic) are not equipped with COLPRO. Sea-based COLPRO (the CITADEL System) is available in specific classes of naval warfare vessels (e.g., amphibious assault ship [LHA], destroyer, etc.). Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.

¹⁰ Mature theater CPSs are available in limited quantities. These include JTCOPS, CP-DEPMEDS, TEMPER systems, and Service-designed systems. Integration of Service-specific systems into joint plans provides additional COLPRO capabilities. These, however, are identified in the Service component plans. They are not generally integrated in COCOM joint plans. Current CPSs are inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprint.

¹¹ COLPRO within CONUS and some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites. COLPRO within HTA is installed and available for selected critical facilities and operations. The COCOM staff and the components establish and allocate funding and resources based upon the threat, risk, and vulnerability assessments. Fixed facilities (e.g., permanent structures, etc.) within the HTA are prioritized for COLPRO based upon mission, criticality, assessments, and available funding. Expansion of COLPRO capabilities is planned, as appropriate and necessary, using transportable COLPRO systems.

11.9.3 Functional Solution Analysis

11.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 2. Deficiency:** COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS, particularly CONUS sites.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 3. Deficiency:** Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 4. Deficiency:** Expedient COLPRO (ECP) kits, procedures, and training do not currently exist.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization:* Organizational structures supporting the application of ECP for CBRND. *Training:* Institutional and unit level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership:* Awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities:* Infrastructure to support ECP (e.g., logistics, training, etc.).
- 5. Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership:* Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 6. Deficiency:** Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This statement is particularly true of forward-operating light forces.

Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policies.

- 7. Deficiency:** Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 8. Deficiency:** Current mobile COLPRO is inadequate in quantities, types, and availability to support operations by highly mobile forces.

Non-Materiel Solutions: *Doctrine:* Completion of analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND

operations by highly mobile forces; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

- 9. Deficiency:** Airlift (both tactical and strategic) are not equipped with COLPRO.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training*: Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership*: Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities*: Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.
- 10. Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization*: Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at risk. *Training*: Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership*: Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities*: Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.
- 11. Deficiency:** Service-specific COLPRO capabilities are not generally integrated in COCOM joint plans.
Non-Materiel Solutions: *Doctrine*: Emphasize in doctrine, policy, and procedures the central correlation of national and Strategic Theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, joint and Service-specific, including replenishment. *Leadership*: Implement development of plans and taskings consistent joint and Service-specific CBRND support capabilities.
- 12. Deficiency:** Current CPSs are inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprint.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures standards for expeditionary forces possessing reduced logistical footprint during the first 30–90 days of operations following commencement of hostilities. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting

expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

13. Deficiency: Current DOTMLPF does not adequately address the establishment and operation of expedient COLPRO activities and measures.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization*: Organizational structures supporting the application of ECP for CBRND. *Training*: Institutional and unit level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership*: Awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities*: Infrastructure to support ECP (e.g., logistics, training, etc.).

11.9.3.2 IMA Assessment Summary

N/A

11.10 Task STSHLD 10: Employ protective measures to minimize the effects of adversary use of CBRN weapons and TIM exposure

11.10.1 Functional Area Analysis

11.10.1.1 Definition

To protect resources (with an emphasis on people) from the effects of CBRN/TIM weapons/exposure and permit friendly forces to continue operations with minimum performance degradation. Staffs normally direct general protective actions, which delineate broad policy and guidance. Commanders must balance protection against the need to perform the mission and maintain personnel in a fit-to-fight status. The results of not performing protective tasks adequately are degradation of mission or task performance as well as casualties/fatalities from CBRN/TIM exposure or contamination.

11.10.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 2.4.1, ST 2.4.1.1, ST 2.4.1.2, St 5.3.1.1, ST 5.3.1.2, ST 5.3.1.3, ST 5.3.1.4, ST 5.4.1, ST 6, ST 6.1.6, ST 6.2, ST 6.2.1, ST 6.2.2, ST 9, ST 9.3, ST 9.4, ST 9.5).

11.10.1.2.1 Supported Task: N/A

11.10.1.2.2 Lateral Task: N/A

11.10.1.2.3 Supporting Task: OPSHLD 12

11.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Partial interoperability. (C2.2.6)
6. Partial joint staff integration. (C2.3.1.1)
7. Moderate staff expertise. (C2.3.1.3)
8. Limited deployed supplies. (C2.8.2)

- 9. Limited prepositioned materiel. (C2.8.4)
- 10. Limited host-nation support. (C2.8.5)

Civil. N/A

11.10.2 Functional Needs Analysis

11.10.2.1 Capability and Deficiency Assessment Summary

Table 11.10-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures exist for the implementation, adjustment, and direction of planned CBRND measures for the protection of deploying military forces against the effects of adversary employment of CBRN/TIM. Deficiencies include the lack of medical prophylaxis against all threat CBRN/TIM agents, eligible civilian and MWA readiness for CBRND, and sustained operations within a CBRN/TIM environment.

Current Capability and Deficiency

Predeployment planning and preparation includes the vaccination of the force to an adequate level of acquired immunity against threat CBRN/TIM agents. Other prophylaxis (e.g., presymptomatic medications, protective creams, etc.) are applied alone or in concert upon direction as appropriate and based upon established plans and guidance. JMETLs are developed based upon the *UJTL* and identify essential tasks for mission accomplishment. Plan-identified forces are trained and assessed against the JMETLs for readiness to perform the tasks. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and relocation activities are performed as outlined in the plan and adjusted as necessary. Planning and plan execution seeks to balance mission requirements with CBRND protection of the force. DOTLPF is adequate for planning, training, equipping, and deploying military forces. Deficiencies the lack of medical prophylaxis against all threat CBRN/TIM agents and the efficacy of existing prophylaxis (particularly vaccines) widely varies. Current prophylaxis and supporting CBRND doctrine, policy, and procedures fail to adequately address the application of prophylactic protection by eligible civilians and MWDs. Further, eligible civilians and MWDs are not adequately equipped, trained, and prepared to survive a CBRN/TIM environment. Current doctrine, policy, *UJTL*, procedures, and TTPs fail to address sustained operations within a CBRN/TIM environment and exercises/evaluations fail to emphasize and assess task performance (including JMETLs) in these conditions. The overall current capability is assessed as “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.10-1. STSHLD 10: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R ²	R ³	Y ⁴	Y ⁵	G ⁶	G ⁷
Near/Mid-Term Overall Capability	R	R	Y	Y	G	G
Far-Term Overall Capability	R	R	Y	Y	G	G

	FAA Measure	Scale
M1	Forces are protected by medical prophylaxes.	<p>G: Medical CBRND countermeasures exist for all threat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasures exist for selected high-threat CBRN and high-risk TIM agents for U.S. military and eligible civilian members.</p> <p>R: Medical CBRND countermeasures are inadequate or do not exist for high-threat CBRN and high-risk TIM agents.</p>
M2	Forces are trained and equipped to operate in a CBRN/TIM environment.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWAs) are adequately trained and equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are adequately trained and equipped to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Equipping and/or training of Strategic Theater forces (including military, eligible civilians, and/or MWAs) to perform functions and conduct operations within a CBRN/TIM environment is inadequate or nonexistent.</p>
M3	All units that perform JMETs are fully prepared to successfully perform the tasks in a CBRN/TIM environment.	<p>G: All units performing JMETLs are fully prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>Y: Units performing JMETLs are generally prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>R: Units performing JMETLs are inadequately prepared and/or ready to successfully conduct their tasks within a CBRN/TIM environment.</p>
M4	Deploying forces meet CBRN/TIM protection standards.	<p>G: All Strategic Theater forces (military, eligible civilians, and MWA) meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Strategic Theater forces (including military, eligible civilians, and/or MWA) meeting CBRN/TIM protection requirements to perform functions and conduct operations within a CBRN/TIM environment are inadequate or nonexistent.</p>
M5	Warfighting capability is not degraded as a result of enemy CBRN/TIM attacks.	<p>G: Warfighting capabilities are protected and are not degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>Y: Warfighting activities and functions are afforded protection and are not seriously degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>R: Protection of warfighting capabilities is inadequate or nonexistent and may result in serious degradation or non-availability resulting from CBRN/TIM attacks.</p>

M6	Adequate resources are available to implement the required protective measures.	<p>G: CBRND systems and resources are available in plan identified quantities and types to implement identified protective measures.</p> <p>Y: CBRND systems and resources are available in sufficient quantities and types to support protective measures. Adjustments are made to adjust to limitations in quantities and types of specific CBRND systems.</p> <p>R: CBRND systems and/or resources are inadequate or not available to implement protective measures.</p>
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¹ DOTMLPF is adequate for planning, training, equipping, and deploying forces. However, DOTMLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days. Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment. Current DOTMLPF is inadequate for preparing, training, and equipping deploying eligible civilians and MWAs.

² Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs is not currently available due to the relatively recent consideration of these agents as potential threats. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. FP using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary CBRN/TIM agent employment is a function of the preplanning and deployment operations. However, many agents require the application of, if not in concert with vaccination, of other prophylaxis. These include immunity assistive and barrier medical materials (e.g., medications, lotions, etc.). The COCOM staff directs the implementation of these measures when and as appropriate based upon established plans and guidance.

³ Planning for deploying forces includes training for operations within threat CBRN/TIM environments. Nondeploying military forces within CONUS possess varying levels of training based upon prior training at overseas locations and initial Service training (“boot camp”). OCONUS fixed-site military personnel within an HTA are trained to survive a CBRN/TIM environment. Eligible civilians are not generally trained to operate in CBRN/TIM hazards. Some government civilians are trained as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others.). However, civilians (e.g., general government employees, contractors, dependents, etc.) do not receive training to survive a CBRN/TIM environment. This statement is particularly true of CONUS locations. MWA elements of the military force (deploying and nondeploying) are not trained to survive a CBRN/TIM environment. COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to eligible civilians and MWA. The Guardian Program, working with the COCOMs and installations, is addressing installation/facility event capabilities. The COCOM staff preplanning for operations also includes continuing training of personnel within the theater prior to hostilities.

⁴ The COCOM staff developed JMETLs are based upon the UJTLs and the essential tasks for accomplishment of the planned mission(s). Plan-identified forces are trained and assessed against the JMETLs for their readiness to perform the tasks successfully. However, current doctrine, the UJTL, and operational planning guidance do not adequately address sustained operations within a CBRN/TIM environment. JMETL development generally does not specify these circumstances as an execution condition. Exercises and training do not emphasize task performance and operations in these conditions. However, the JMETLs can usually be accomplished successfully with adjustments for the environment and allowances for the limitations and encumbrances associated with CBRN/TIM protective equipment.

⁵ The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities pursued by the COCOM staff during the period prior to and through deployment of forces are as outlined by the appropriate plan and adjusted as necessary to reflect actual available resources against requirements. Elements of deploying forces may not achieve full CBRND readiness and capabilities during the initial stages of deployment and until after arrival within the AOR. Adjustments to tasked units reflecting other ongoing commitments and the length of the preparatory period between plan notice of execution and before commencement of hostilities may affect element readiness for CBRN/TIM environment operations. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not generally prepared to survive a CBRN/TIM environment.

⁶ The COCOM staff planning and plan execution seeks to balance mission requirements with protection of the force against CBRN/TIM threat(s). Planning considers the impact of operations within CBRN/TIM environments and provide for adjustments to ensure successful retention of warfighting capabilities. Operations within a CBRN/TIM environment will degrade individual and unit capabilities. The combination of training, readiness, and flexibility to adjust and maintain operational capabilities provides the basis for maintenance of mission capability. However, current DOTMLPF and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

⁷ The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities pursued by the COCOM staff during the period prior to and through deployment of forces are as outlined by the appropriate plan and adjusted as necessary to reflect actual available resources against requirements. Elements of deploying forces may not be issued their full CBRND capabilities during the initial stages of deployment and until after arrival within the AOR. The COCOM staff also provides guidance and direction on the implementation of planned protective measures. However, deploying eligible civilians and MWAs (particularly MWDs) are not generally equipped and prepared to survive a CBRN/TIM environment.

11.10.3 Functional Solution Analysis

11.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 2. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 3. Deficiency:** Prophylaxis against most high-threat TIMs are not currently available.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established metrics (see Footnote 7 above) for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 4. Deficiency:** Eligible civilians (e.g., general government employees, contractors, dependents, etc.) are not generally trained to operate in CBRN/TIM hazards, particularly at CONUS locations.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilian personnel and operations supporting the mission; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND

training, equipping, and protection of eligible civilian personnel and operations supporting the mission. *Personnel*: Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.

5. **Deficiency**: MWAs, with emphasis on MWD elements of the military force (deploying and nondeploying), are not trained to survive a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization*: Organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Develop institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities*: Develop supporting infrastructure for MWAs CBRND (e.g., logistics, veterinary surveillance, etc.).
6. **Deficiency**: COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to eligible civilians.
Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization*: Identify organizational services and activities performed by, and required to support, eligible civilian personnel and operations for CBRND. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilian personnel and operations; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and operations supporting the mission. *Personnel*: Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of eligible civilian CBRND resources.
7. **Deficiency**: COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training to MWAs.
Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs and operations for CBRND. *Organization*: Identify organizational services and activities performed by, and required to support, MWAs and operations for CBRND. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and operations; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs and operations supporting the mission. *Facilities*: Develop supporting infrastructure for the acquisition, stockpiling, prepositioning, maintenance, and movement of MWA CBRND resources.

- 8. Deficiency:** Current doctrine, the *UJTL*, and operational planning guidance do not adequately address JMETLS for sustained operations within a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 9. Deficiency:** JMETL development generally does not specify sustained operations within a CBRN/TIM environment as an execution condition. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 10. Deficiency:** Exercises and training do not emphasize JMETL task performance and sustained operations in a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, *UJTL*, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 11. Deficiency:** Deploying eligible civilians are not generally equipped and prepared to survive a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of eligible civilians for CBRND measures and activities. Integration into CBRND exercises and evaluations is critical. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians survivability. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).

12. Deficiency: Deploying MWAs (particularly MWDs) are not generally equipped and prepared to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWA, particularly MWDs and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of MWA handlers, and MWAs for CBRND measures and activities. Integration into CBRND exercises and evaluations is critical. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

13. Deficiency: DOTMLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force (military and eligible civilians) for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

14. Deficiency: Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

15. Deficiency: Current DOTMLPF is inadequate for preparing, training, and equipping deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a

CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel. *Personnel*: Ensure eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).

16. Deficiency: Current DOTMLPF is inadequate for preparing, training, and equipping deploying MWAs.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, communications, training, etc.).

11.10.3.2 IMA Assessment Summary

N/A

11.11 Task STSHLD 11: Ensure adequate CBRN/TIM protective equipment and supplies to support medical operations

11.11.1 Functional Area Analysis

11.11.1.1 Definition

To position medical and support resources (equipment, supplies, and personnel) to ensure the efficient and consistent application of medical care and measures preparing and protecting the force against the debilitating effects of CBRN/TIM hazards (threat or actual). This task includes the identification, movement, application, and management of CBRND and medical resources. These resources perform immunizations of the force and eligible civilians, isolate infected or contaminated personnel and/or MWAs until risk is resolved, and conduct quarantine to prevent the spread of infectious disease. The task addresses the full range of necessary resources required to attend to and resolve the circumstances.

11.11.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (ST 1.1.2, ST 2.4.1.1, ST 4.2.2, ST 5.1.1, ST 5.1.3, ST 5.2.1, ST 5.3.3, ST 5.4.1, ST 6, ST 7.1.1, ST 9.4).

11.11.1.2.1 Supported Task: SNSHLD 12

11.11.1.2.2 Lateral Task: STSHA 4

11.11.1.2.3 Supporting Task: N/A

11.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Fair personnel nutrition and health. (C2.2.4.1)
4. Good personnel physical conditioning (C2.2.4.3)

5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
7. Negligible personnel experience. (C2.2.4.5)
8. Partial interoperability. (C2.2.6)
9. Partial joint staff integration. (C2.3.1.1)
10. Limited deployed supplies. (C2.8.2)
11. Sufficient CONUS resupply. (C2.8.3)
12. Limited prepositioned materiel. (C2.8.4)
13. Limited host-nation support. (C2.8.5)
14. Extensive commercial procurement. (C2.8.6)

Civil

1. Fair civil health. (C3.3.1.4)
2. High health risk. (C3.3.1.5)

11.11.2 Functional Needs Analysis

11.11.2.1 Capability and Deficiency Assessment Summary

Table 11.11-1 discusses the two capabilities existing to perform the task to the designated standard. The COCOM and staff identify the required capabilities, conduct planning and coordination to identify CBRND resources, requirements, and taskings for CBRND. This task includes the integration of medical operations and support requirements for CBRND as well as the direction for development of supporting medical plans and procedures. Doctrine, policy, and procedures exist for the planning, equipping, and deployment of forces and coordination of Medical Services support for CBRND operations. Deficiencies include inadequacies in DOTLPF addressing eligible civilians and MWDs for CBRND, and sustained operations within a CBRN/TIM environment. The second capability is within Medical Services and the Medical Services staffs. They coordinate with the COCOM and COCOM staff to address medical aspects and support requirements for COCOM planning and operations. The Medical Services staff(s) prepare medical plans to support COCOM plans and include CBRND considerations and requirements in the plans. The staff further identifies required capabilities and conducts planning and coordination to identify medical and support resources to ensure medical care and measures to prepare and protect the force, including the identification, movement, application, and management of medical service and medical CBRND resources. Adequate DOTLPF exists for planning, equipping, and deploying of forces, and for coordination of Medical Services support. Deficiencies include inadequacies in DOTLPF for preparing and equipping deploying eligible civilians and MWD; sustained operations in CBRN/TIM environments; and addressing large-scale medical operations, especially quarantine operations potentially involving non-U.S. personnel.

Current Capability and Deficiency

The COCOM and Medical Services staff planning includes predeployment medical screening and the stockpiling, allocation, and distribution of medical prophylaxis. COCOM plans generally address medical measures in generic terms and refer to implementing or topic medical plans. The Medical Services staff planning addresses the specifics to perform medical activities and procedures in support of the COCOM plans. Specific implementation for the application of prophylactic immunizations is addressed in the Medical Services plans supporting COCOM plans. Planning for large-scale medical operations are coordinated by the Medical Services Staffs with the COCOM staff for COCOM planning support and appropriate resourcing. COCOM plans address medical activities by referring to appropriate medical plans, policies, and procedures. The Medical Services Staff plans and associated policies address medical activities and procedures. The invocation of quarantine and enforcement of medical isolation are Medical Services decisions, coordinated with the COCOM and COCOM staff, supported by the COCOM, and are a consideration for medical planning for operations with a CBRN/TIM threat. The prevention of the need for stringent mass medical activity includes predeployment screening, the provision of medical prophylaxis, and medical surveillance. Coordination between the COCOM and Medical Services staffs provides for an integrated and rapid response to an event. Should large-scale medical operations be required (e.g., mass immunizations, quarantine, etc.), both staffs respond applying their resources as appropriate. Deficiencies include inadequate DOTLPF to address large-scale medical CBRN/TIM operations; particularly sustained operations within a CBRN/TIM environment. FP using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary CBRN/TIM agent employment is a function of the preplanning and deployment operations. However, many agents require the application of, if not in concert with vaccination, of other prophylaxis. These include immunity assistive and barrier medical materials (e.g., medications, lotions, etc.). The COCOM staff directs the implementation of these measures when and as appropriate based upon established plans and guidance. The Medical Services Staff administers and issues these measures upon direction of the COCOM and as based upon established Medical Services plans and guidance. COCOM and Medical Services actions associated with large-scale medical operations (especially those involving non-U.S. personnel such as indigenous civilians, third-party nations, and others) is not adequately discussed and outlined in DOTLPF. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Efficacy of the medical prophylaxis that does exist widely varies. Their application to eligible civilians and MWAs is inadequately addressed in existing DOTLPF. DOTLPF is also inadequate for large-scale medical quarantine and/or enforcement of medical isolation by both Medical Services and the COCOM. The overall current capability is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 11.11-1. STSHLD 11: Capability and Deficiency Assessment

Capabilities/Measures	M1	M2	M3	M4	M5
Current					
COCOM Staff	R ¹	Y ²	R ³	G ⁴	Y ⁵
Medical Services Staff	R ⁶	Y ⁷	R ⁸	G ⁹	Y ¹⁰
Near/Mid					
COCOM Staff	R	Y	R	G	Y
Medical Services Staff	R	Y	R	G	Y
Far					
COCOM Staff	R	Y	R	G	Y
Medical Services Staff	R	Y	R	G	Y
Current Overall Capability¹¹	R ¹²	Y ¹³	R ¹⁴	G ¹⁵	Y ¹⁶
Near/Mid-Term Overall Capability	R	Y	R	G	Y
Far-Term Overall Capability	R	Y	R	G	Y

	FAA Measure	Scale
M1	Plans exist for large-scale medical operations addressing CBRN/TIM.	<p>G: Detailed plans exist and are coordinated between COCOM and Medical Services staffs for large-scale CBRN/TIM medical operations involving the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Plans exist and are coordinated between COCOM and Medical Services staffs for Medical Services support of operations involving CBRN/TIM threat and address large-scale medical operations the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>R: Plans addressing large-scale medical operations are inadequate, nonexistent, not coordinated between the COCOM and Medical Services staffs, and/or do not address the forces and/or non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).</p>
M2	Theater policy addresses the conditions and authorities required to invoke quarantine and/or enforce medical isolation.	<p>G: Detailed policies and plans exist and are coordinated between COCOM and Medical Services staffs specifying the conditions and appropriate authorities and actions/activities to invoke quarantine and/or enforce medical isolation for large-scale CBRN/TIM medical operations involving forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.)</p> <p>Y: Policies and plans exist and are coordinated between COCOM and Medical Services staffs for large-scale Medical Services operations involving quarantine and/or enforcement of medical isolation..</p> <p>R: Plans and policies addressing large-scale medical quarantine and/or medical isolation are inadequate, nonexistent, and/or are not coordinated between the COCOM and Medical Services staffs.</p>
M3	Forces are protected by medical prophylaxes.	<p>G: Medical CBRND countermeasures exist for all threat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasures exist for selected high-threat CBRN and high-risk TIM agents for U.S. military and eligible civilian members.</p> <p>R: Medical CBRND countermeasures are inadequate or do not exist for high-threat CBRN and high-risk TIM agents.</p>

M4	Force has completed deployment medical preparation.	<p>G: Strategic Theater forces are medically prepared for operations with threat.</p> <p>Y: Selected Strategic Theater forces generally are generally medically prepared for operations with threat.</p> <p>R: Strategic Theater forces medical preparedness for operations with threat is inadequate or nonexistent.</p>
M5	All required protective supplies and equipment are available.	<p>G: CBRND systems, components, and consumables are available in plan identified quantities and types to support sustained large-scale medical operations involving the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.) within a CBRN/TIM environment.</p> <p>Y: CBRND systems, components, and consumables are identified in plans and are adjusted to limitations in quantities and types to support medical operations involving CBRN/TIM threat.</p> <p>R: CBRND systems, components, and consumables are inadequate or insufficient to support medical operations involving CBRN/TIM threat.</p>

¹ COCOM staff plans includes predeployment medical screening and the stockpiling, allocation, and distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is address in medical support plans. Planning for large-scale medical operations are coordinated by the Medical Services staffs with the COCOM staff for COCOM support and appropriate resourcing. However, DOTMLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or COCOM actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

² COCOM plans address medical activities by referring to appropriate medical plans, policies, and procedures. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The COCOM staff provides support as defined in the coordinated and appropriate medical plans. However, DOTMLPF is inadequate to address COCOM actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³ Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWA and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as potential threats. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. FP using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary CBRN/TIM agent employment is a function of the preplanning and deployment operations. However, many agents require the application of, if not in concert with vaccination, of other prophylaxis. These include immunity assistive and barrier medical materials (e.g., medications, lotions, etc.). The COCOM staff directs the implementation of these measures when and as appropriate based upon established plans and guidance. However, the application of medical prophylaxis is not adequately addressed for eligible civilians and MWA within the force.

⁴ The COCOM staff tracks the deployment status of tasked units throughout the deployment process. However, the routine rotation and movement of personnel to and from units, the administration period of some vaccines for acquired immunity, and other considerations impact completion of medical preparation for deployment. Completion of deployment medical preparation is contingent upon timing of notice to deployment, availability of medical personnel to perform force preparation, and the availability of sufficient medical prophylaxis to meet preparation requirements. Short-notice operations and reallocated taskings also impact medical preparations prior to deployment into theater. Forces have, and may in the future, require medical preparation upon arrival in the AOR. The COCOM staff plans generally include provisions for medical preparation of the force including both predeployment and AOR arrival. Supporting Medical Services plans, coordinated with the COCOM staff, discuss Medical Services activities to attain force preparedness for operations.

⁵ The COCOM staff plans include the identification of CBRND supplies and equipment for operations with a CBRN/TIM threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the Joint Task Force staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Systems are reallocated, when necessary, from prepositioned and dispersed stocks of units deploying or operating within a Joint Operations Area (JOA). Elements of deploying forces may not be issued their full CBRND capabilities during the initial stages of deployment and until after arrival within the AOR. Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the

AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The COCOM staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

⁶ COCOM plan support planning by Medical Services staff includes predeployment medical screening and the stockpiling, allocation, and administration/ distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is addressed in the Medical Services plans. Planning for large-scale medical operations are coordinated by the Medical Services staffs with the COCOM staff for COCOM planning support and appropriate resourcing. However, DOTMLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

⁷ The Medical Services staff plans and associated policies address medical activities and procedures. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the COCOM staff for Medical Services support requirements and associated taskings and their inclusion in COCOM staff planning. However, DOTMLPF is inadequate to address Medical Services actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

⁸ Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWA and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as potential threats. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. FP using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary CBRN/TIM agent employment is a function of the preplanning and deployment operations. However, many agents require the application of, if not in concert with vaccination, of other prophylaxis. These include immunity assistive medical materials (e.g., medications, etc.). The Medical Services staff administers and issues these measures upon direction of the COCOM and as based upon established Medical Services plans and guidance. However, the application of medical prophylaxis is not adequately addressed for eligible civilians and MWA within the force.

⁹ The Medical Services staff tracks the medical deployment status of tasked units throughout the deployment process. However, the routine rotation and movement of personnel to and from units, the administration period of some vaccines for acquired immunity, and other considerations impact completion of medical preparation for deployment. Completion of deployment medical preparation is contingent upon timing of notice to deployment, availability of medical personnel to perform force preparation, and the availability of sufficient medical prophylaxis to meet preparation requirements. Short-notice operations and reallocated taskings also impact medical preparations prior to deployment into theater. Forces have, and may in the future, require medical preparation upon arrival in the AOR. The Medical Services staff plans include provisions for medical preparation of the force including both predeployment and AOR arrival. The Supporting Medical Services plans, coordinated with the COCOM staff, task Medical Services and outline medical activities to attain force preparedness for operations.

¹⁰ The COCOM and Medical Services staffs conduct coordinated planning for operations including the identification of CBRND supplies and equipment for operations with a CBRN/TIM threat. Equipping the tasked Medical Services units are an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the Medical Services staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Medical resources and systems are reallocated, when necessary and in coordination with the COCOM staff, from prepositioned and dispersed stocks of Medical Services units deploying or operating within the JOA. Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The COCOM Medical Services staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWA. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹¹ DOTLFP is adequate for planning, equipping, deployment of forces, and coordination of Medical Services support. DOTLFP is inadequate to support sustained operations (medical and nonmedical) within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days. Current DOTLFP does not fully address the unique

aspects of CBRND and the impact upon operations within a CBRN/TIM environment. Current DOTLPP is inadequate for preparing and equipping deploying eligible civilians and MWA. DOTLPP is also inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or COCOM and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.). DOTLPP is, further, inadequate for medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.)

¹² COCOM and Medical Services staff plans includes predeployment medical screening and the stockpiling, allocation, and distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is addressed in the Medical Services plans supporting COCOM plans. Planning for large-scale medical operations are coordinated by the Medical Services staffs with the COCOM staff for COCOM planning support and appropriate resourcing. DOTLPP is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or COCOM and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹³ COCOM plans address medical activities by referring to appropriate medical plans, policies, and procedures. The Medical Services staff plans and associated policies address medical activities and procedures. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the COCOM staff for Medical Services support requirements and associated taskings and their inclusion in COCOM staff planning. DOTLPP is inadequate to address COCOM and Medical Services actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹⁴ FP using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary CBRN/TIM agent employment is a function of the preplanning and deployment operations. However, many agents require the application of, if not in concert with vaccination, of other prophylaxis. These include immunity assistive and barrier medical materials (e.g., medications, lotions, etc.). The COCOM staff directs the implementation of these measures when and as appropriate based upon established plans and guidance. The Medical Services staff administers and issues these measures upon direction of the COCOM and as based upon established Medical Services plans and guidance. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as potential threats. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. The application of medical prophylaxis is not adequately addressed for eligible civilians and MWAs within the force.

¹⁵ The COCOM staff tracks the deployment status of tasked units throughout the deployment process. The Medical Services staff also tracks the medical deployment status of tasked units throughout the deployment process. However, the routine rotation and movement of personnel to and from units, the administration period of some vaccines for acquired immunity, and other considerations impact completion of medical preparation for deployment. Completion of deployment medical preparation is contingent upon timing of notice to deployment, availability of medical personnel to perform force preparation, and the availability of sufficient medical prophylaxis to meet preparation requirements. Short-notice operations and reallocated taskings also impact medical preparations prior to deployment into theater. Forces have, and may in the future, require medical preparation upon arrival in the AOR. The COCOM and Medical Service staff plans include provisions for medical preparation of the force including both predeployment and AOR arrival. Supporting Medical Services plans, coordinated with the COCOM staff, task Medical Services and outline medical activities to attain force preparedness for operations.

¹⁶ The COCOM and Medical Services staffs conduct coordinated planning for operations including the identification of CBRND supplies and equipment for operations with a CBRN/TIM threat. Equipping the tasked Medical Services units are an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the Medical Services staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Medical resources and systems are reallocated, when necessary and in coordination with the COCOM staff, from prepositioned and dispersed stocks of Medical Services units deploying or operating within the JOA. Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR. Deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The COCOM Medical Services staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWA. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTLPP; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

11.11.3 Functional Solution Analysis

11.11.3.1 DOTLPP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** DOTMLPP is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or COCOM and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment. Include COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for sustained operations within a CBRN/TIM environment and operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).
- 2. Deficiency:** DOTMLPP is inadequate to address COCOM and Medical Services actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.)

3. **Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 1 above) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
4. **Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding eligible civilians.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

- 5. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRN/TIM protective countermeasures by other than U.S. forces, excluding MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.
- 6. Deficiency:** Prophylaxis against most high-threat TIMs are not currently available.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established metrics (see Footnote 7 above) for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 7. Deficiency:** The efficacy of existing prophylaxis, particularly vaccines, widely varies.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.
- 8. Deficiency:** The application of medical prophylaxis is not adequately addressed for eligible civilians within the force.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRN/TIM protective countermeasures by eligible civilians. *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, Medical Services, veterinary surveillance, etc.).
- 9. Deficiency:** The application of medical prophylaxis is not adequately addressed for MWAs within the force.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRN/TIM protective countermeasures by MWAs, particularly MWDs. *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to MWAs, particularly MWDs. *Training:* Include MWAs in CBRND training, exercises, and evaluations. *Leadership:*

Ensure leadership awareness of criticality of MWA, particularly MWD resources. *Facilities:* Develop supporting infrastructure for MWA, particularly MWD CBRND (e.g., logistics, Medical Services, veterinary surveillance, etc.).

- 10. Deficiency:** Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR. **Non-Materiel Solutions:** *Doctrine:* Complete the JCIDS process and central correlation/comparison of operations plans to identify CBRND resources necessary and available to support expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary medical operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary medical operations. *Leadership:* Recognize differences and challenges associated with expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary medical operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 11. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of eligible civilians for CBRND measures and activities. Integration into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians survivability. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).
- 12. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs and training for CBRN/TIM environment survival. *Organization:* Organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Develop institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting

infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

13. Deficiency: DOTMLPF is inadequate to support sustained operations (medical and nonmedical) within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force (military and eligible civilians) for sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

14. Deficiency: Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Personnel:* Ensure eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

11.11.3.2 IMA Assessment Summary

N/A

CHAPTER 12. OPERATIONAL SHIELD TASKS

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12.0 Operational Shield

12.0.1 Introduction

This chapter focuses upon the operational (OP) level of war at the Joint Task Force (JTF) level of task development and implementation. The OP level of war is where campaigns and major operations are planned, organized, executed, conducted, and sustained to accomplish the defined strategic objectives within theaters or areas of operations (AOs). Plans and activities at the OP level link tactics and strategy through defining and establishing operational objectives essential for the successful accomplishment of the strategic objectives, sequencing events achieving the operational objectives, initiating actions and activities, and applying resources to generate and sustain these events. OP activities involve a broader and more “macro” concept of time or space than is inherent to tactics. These activities include the adequate support and provisioning of forces and means to exploit tactical successes to achieve strategic objectives. It includes the integration of coalition and partner force capabilities to enhance JTF capacity to successfully achieve operational and strategic goals.¹

This chapter restates relevant information from the chemical, biological, radiological, and nuclear defense (CBRND) Functional Area Analysis (FAA) including a description of each of the 11 OP Shield (SHLD) tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. OPSHLD solutions are non-materiel and are reflected in one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. Annotations under Materiel are non-materiel in nature, but do not align in one of the six non-materiel aspects of DOTLPPF. These annotations include research, analysis, and other actions to address and establish solutions for the deficiencies.

Most of the OPSHLD tasks involve doctrine, policies, and procedures providing parameters for planning, decisioning, and actions or activities to accomplish the tasks. These range from the positioning and sustainment of CBRND materiel and resources, through protection of forces throughout the deployment cycle and the integration of coalition CBRND resources, to mass medical and contaminated/exposed casualty and remains operations.

Tasks associated with forces includes constituent elements of the transforming force such as civilians, military working animals (MWAs), coalition/alliance forces, and third-party nationals. Increasing reliance upon nonmilitary personnel (such as government employees and contractors) as operational enablers dictated their inclusion as force members.

¹ Appendix A to Enclosure B, para. 3b, CJCMS 3500.04C, *Universal Joint Task List*, July 2002, CJCS.

12.0.2 FNA Summary

Table 12.0-1 summarizes the overall current and projected capability to perform the OPSHLD tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow.” There are key deficiencies in combatant command (COCOM) ability to protect populations other than military members as well as support concurrent CBRND operations, especially those associated with sustained and expeditionary operations within a CBRN/TIM environment. It is projected that the overall status will remain “yellow” in the near/mid term with limited improvements in specific measures within specific tasks.

Table 12.0-1. Operational Shield Summary FNA Findings

CBRN Operational Shield Task Number	CBRN Operational Shield Task Title	Capability		
		Current	Near/Mid	Far
OPSHLD 1	Adjust Protective Posture Protocols to ensure protection level is consistent with the threat and minimizes risk while limiting the impact on mission execution	●	●	●
OPSHLD 2	Integrate coalition/non-U.S. and joint force CBRN/TIM protective measures and assets	●	●	●
OPSHLD 3	Establish local medical prophylactic approach to reduce impact of CBRN/TIM	●	●	●
OPSHLD 4	Ensure that IPE for forces (including patients) and MWAs are ready to minimize casualties and to ensure survivability and effective performance	●	●	●
OPSHLD 5	Ensure adequate protective measures and resources are available to coalition partners and other designated non-U.S. forces	●	●	●
OPSHLD 6	Ensure adequate individual protection for eligible civilians	●	●	●
OPSHLD 7	Provide COLPRO for all critical activities/functions, rest, and relief	●	●	●

OPSHLD 8	Supply protective measure consumables, expendables, and replacements	●	●	●
OPSHLD 9	Ensure safety of water/food supplies to protect forces	●	●	●
OPSHLD 10	Protect equipment and supplies through coatings, coverings, and packaging to reduce contamination of contents and to contain contamination	●	●	●
OPSHLD 11	Provide protective measures for forced-entry forces operating in antiaccess and area-denial CBRN/TIM environments	●	●	●
OPSHLD 12	Employ protective measures to minimize effects of adversary use of CBRN weapons and TIM exposure	●	●	●
OPSHLD 13	Establish large-scale medical CBRND operations	●	●	●
OPSHLD 14	Establish mortuary process to handle contaminated remains	●	●	●
OVERALL		●	●	●

12.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions for the capability gaps identified in the FNA section. The summaries also address the non-materiel solutions annotated under Materiel as discussed earlier. OPSHLD addresses non-materiel actions and activities. Therefore, materiel solutions are not applicable to this level of war.

12.0.3.1 DOTLPF

The non-materiel DOTLPF solutions identified in this chapter are associated primarily with the the level of protection afforded by CBRND systems and measures and the readiness of force populations for CBRND activities and actions. Non-materiel solutions are identified. These solutions include such actions as the establishment of doctrine addressing the needs of the force, its constituent populations, and mass medical operations potentially involving non-U.S. military personnel; applicable training programs, infrastructures, and organizational structures supporting

CBRND operations within sustained CBRN/TIM environments for the transformed force; leadership CBRND awareness and decisioning enablers; and criteria for civilian personnel performing mission-related activities within a CBRN/TIM environment. Also identified are analyses, assessments, evaluations, and programs to assist the clarification and resolution of identified deficiencies.

12.0.3.2 IMA

All identified OPSHLD solutions are non-materiel approaches. Materiel solutions are not applicable to this Shield level of war.

12.1 Task OPSHLD 1: Adjust Protective Posture Protocols to ensure protection level is consistent with the threat and minimizes risk while limiting the impact on mission execution

12.1.1 Functional Area Analysis

12.1.1.1 Definition

To ensure that general guidance for protective posture is established at theater level and adjusted to

- operational friendly and enemy situation;
- mission;
- terrain and weather;
- state of chemical, biological, radiological, and nuclear (CBRN)/toxic industrial material (TIM) defense trainin;
- availability of protective equipment and supplies; and
- medical considerations.

The protocol is flexible and tailorable at lower levels of command to accommodate current intelligence/enemy action and status/mission of friendly forces. Threat, vulnerability, and risk assessments are essential inputs to determining the appropriate protective posture. The goal is to establish and maintain the lowest possible protective postures (to reduce performance degradation and minimize physical encumbrances) while minimizing the risk of exposure or contamination. Nuclear, biological, and chemical (NBC) personnel provide the commander and other staff officers with information concerning protective posture effects on mission performance.

12.1.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operation, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 2.2, OP 2.2.1, OP 2.4.1.1, OP 2.4.1.2, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.3, OP 5.3.1, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.4, OP 7.2, OP 7.3).

12.1.1.2.1 Supported Task: STSHLD 6

12.1.1.2.2 Lateral Task: OPSHA 6

12.1.1.2.3 Supporting Task: N/A

12.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, temperate, arctic, and arid climate. (C1.3.1)
2. Cold to hot air temperature. (C1.3.1.3.1)
3. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (2.1.3)
2. Adequate forces allocated. (C2.2.3)
3. Limited personnel experience. (C2.2.4.5)
4. Partial interoperability. (C2.2.6)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. Limited prepositioned materiel. (C2.8.4)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

12.1.2 Functional Needs Analysis**12.1.2.1 Capability and Deficiency Assessment Summary**

Table 12.1-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for the planning and implementation of Protective Posture Protocols. They are developed, disseminated, and monitored based upon the potential threat and the assessment of force vulnerabilities and risks to subordinate command levels. Included is the provisioning of the force with appropriate CBRND capabilities. Included in the deficiencies is the ability of the force to maintain operations tempo (OPTEMPO) within a sustained CBRN/TIM environment.

Current Capability and Deficiency

JTF HQ staffs assess threat capabilities, risk, and vulnerabilities. They also establish plans and procedures to react to adversary's use of any type of CBRN/TIM weapon/agent combination and/or material releases resulting from accidents or combat actions. Developed plans and procedures minimize protective postures while maximizing CBRND protection. They integrate into protocols flexibility for tailoring and adaptation by subordinate commanders to their specific circumstances based upon expert advice. They also monitor implementation of protective postures. Adequate doctrine, policy, and procedures exist to guide commanders and staffs on

these flexible levels of protection. The provisioning of the forces with adequate CBRND capabilities is determined based upon the identified threat used to develop the Protective Posture Protocols. The JTF staff adjusts the plans, reallocates, and obtains additional COLPRO systems as necessary to meet operational requirements. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and the movement of identified CBRND resources from stockpiles and reallocation activities are all pursued to prepare and support the deploying forces. The COCOM-developed Joint Mission Essential Task Lists (JMETLs), based upon the *Universal Joint Task List (UJTL)*, are adjusted by the JTF staff to reflect the essential tasks to be performed for mission attainment. Training of the force against the identified threat is performed and the implementation of the protocols is monitored. Deficiencies include the inadequacy, or absence, of DOTMLPF addressing CBRND and the application of the Protective Posture Protocols to eligible civilians and MWAs and deploying units may not possess full CBRND resources and capabilities until after arrival in the area of responsibility (AOR). The overall current capability is assessed as “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 12.1-1. OPSHLD 1: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3
Current Overall Capability¹	G²	R³	Y⁴
Near/Mid-Term Overall Capability	G	R	Y
Far-Term Overall Capability	G	R	Y

	FAA Measure	Scale
M1	Protective Posture Protocols are adjusted to address mission, functions, conditions, and threat.	<p>G: Specific, flexible, Protective Posture Protocols are incorporated into plans and disseminated to all elements in the force. The protocols are adjustable to address local requirements and needs such as mission, functions, conditions, and threat. All personnel are trained and ready to perform the associated protective actions.</p> <p>Y: General Protective Posture Protocols are incorporated into plans and disseminated to force units. Unit personnel are trained and ready to perform protective actions.</p> <p>R: Protective Posture Protocols are inadequate, not widely disseminated, and/or force personnel are not trained and/or ready to perform protective actions.</p>
M2	Forces are trained, manned, and equipped to perform sustained operations in a CBRN/TIM environment.	<p>G: All joint force elements (military, eligible civilians, and MWAs) are adequately trained, equipped, and manned to perform their functions and conduct sustained operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission are adequately trained, equipped, and manned to perform their functions and conduct sustained operations within a CBRN/TIM environment.</p> <p>R: Training, equipping, and/or manning of joint forces (including military, eligible civilians, and/or MWAs) to perform functions and conduct sustained operations within a CBRN/TIM environment is inadequate or nonexistent.</p>
M3	All units that perform Joint Mission Essential Tasks (JMETs) are fully prepared to successfully perform the tasks in a CBRN/TIM environment.	<p>G: All units performing JMETs are fully prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>Y: Units performing JMETs are generally prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>R: Units performing JMETs are inadequately prepared and/or ready to successfully conduct their tasks within a CBRN/TIM environment.</p>

¹ Adequate DOTMLPF exists to address the application and adjustment of Protective Posture Protocols for the force. However, DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

² The JTF staff planning incorporates Protective Posture Protocols developed and disseminated by the COCOM. The protocols are adjusted based upon the potential threat and the JTF staff's assessment of force vulnerabilities, risks, mission and the CBRN/TIM threat. Flexibility for JTF elements to further adjust the protocols for their conditions, functions, missions, and local threats are incorporated into the plan. However, the DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

³ The JTF staff reviews identified forces and the potential threat for planned operations. Specified forces, time permitting, train and prepare for operations involving the potential threat. Equipping the tasked force is an integral part of planning and preparation. The JTF staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff to prepare and support deploying forces as outlined by the appropriate plan. Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the

initial stages of deployment and until after arrival within the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁴ The JTF staff adjusts the COCOM-developed JMETLs to reflect the tasks essential to the accomplishment of the planned mission(s). The JMETLs provide the ability to develop joint training requirements, planning and executing joint training, and assessing joint proficiency. Plan-identified forces are trained and assessed against the JMETLs for readiness to perform the tasks successfully. Assessment is performed through a variety of means including inspections, exercises, and reporting. However, current doctrine the UJTL, and operational planning do not adequately address sustained operations within a CBRN/TIM environment. JMETL development generally does not specify these circumstances as an execution condition. Exercises and training do not emphasize task performance and operations in these conditions.

12.1.3 Functional Solution Analysis

12.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the Ideas for Materiel Approaches (IMA) section.

- 1. Deficiency:** DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
- 2. Deficiency:** DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly military working dogs (MWDs), for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 3. Deficiency:** There is a lack of doctrine for risk management of forces operating in radiologically contaminated environments. Current guidance is based on cold-war assumptions and does not reflect modern threats and mission priorities.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, and procedures that address appropriate operationally oriented command dose levels for low-level radiation exposure based on mission priority across the range of military operations. *Training:* Train leaders and personnel on operationally oriented low-level radiation exposure control standards and procedures
- 4. Deficiency:** There is a lack of doctrine and data supporting risk management of forces exposed to low-level chemical contamination.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policies, and procedures that address appropriate operationally oriented exposure limits and how to keep personnel from exceeding those limits using available detection and monitoring equipment and techniques. *Training:* Train leaders and personnel on operationally oriented low-level chemical exposure control standards and procedures.
- 5. Deficiency:** Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical

footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the Joint Capabilities Integration and Development System (JCIDS) process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 6. Deficiency:** Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route

- 7. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians. *Facilities:* Develop

supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).

8. **Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

9. **Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs and eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).

10. **Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization:* Identify organizational services and activities supporting CBRN/TIM survival of MWAs and MWA mission operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

11. **Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a

CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force

- 12. Deficiency:** JMETL development generally does not specify these circumstances as an execution condition.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 13. Deficiency:** Exercises and training do not emphasize task performance and operations in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

12.1.3.2 IMA Assessment Summary

N/A

12.2 Task OPSHLD 2: Integrate coalition/non-U.S. and joint force CBRN/TIM protective measures and assets

12.2.1 Functional Area Analysis

12.2.1.1 Definition

To integrate CBRN/TIM protection for joint force elements to ensure survivability and the sustained conduct of operations despite the CBRN/TIM threat. The availability of CBRN/TIM protective and medical assets is a joint and coalition/non-U.S. force concern. Operational units must determine the level of CBRND training and protective equipment status of sister and coalition/non-U.S. forces. Joint and coalition/non-U.S. force requirements and assets must be assessed to ensure all forces are adequately protected and survivability is promoted. Joint and coalition/non-U.S. force assets may require redistribution depending on local threats and/or actual adversary use of CBRN/TIM. Redistribution and integration may require mixes of forces and assets between joint and coalition/non-U.S. force elements to enhance survivability and operational success. Plans for sustained operations in a hazardous environment must be prepared, reviewed, and coordinated.

12.2.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.2, OP 2.2.1, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 5, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.2, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.3.8, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5, OP 5.5.1, OP 5.5.2, OP 5.5.7, OP 5.5.8, OP 5.7, OP 5.7.3, OP 5.7.4, OP 5.7.5, OP 5.7.6, OP 6.2.1, OP 7, OP 7.1, OP 7.2, OP 7.3, OP 7.4).

12.2.1.2.1 Supported Task: STSHLD 7

12.2.1.2.2 Lateral Task: OPSHA 8

12.2.1.2.3 Supporting Task: N/A

12.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Some interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)
6. Partial multinational integration. (C2.3.1.2)
7. Limited staff expertise. (C2.3.1.3)
8. Mobile facility survivability. (C2.7.6)
9. Limited deployed supplies. (C2.8.2)
10. Sufficient continental United States (CONUS) resupply. (C2.8.3)
11. Limited prepositioned materiel. (C2.8.4)
12. Limited host nation support. (C2.8.5)
13. Limited commercial procurement. (C2.8.6)

Civil

1. Technical language translation. (C3.2.1.1)
2. Few language translators. (C3.2.1.2)

12.2.2 Functional Needs Analysis**12.2.2.1 Capability and Deficiency Assessment Summary**

Table 12.2-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for the planning and implementation of integration of coalition and non-U.S. force CBRND measures and assets. Coordination with participant coalition and non-U.S. force staffs provides common frameworks for information, asset, and capability sharing for successful operation outcome. Each participant in the force must meet minimum capability standards and a certification process covering the areas of concern is applied. Specific tasks are assigned to the elements of the overall force most capable of completing the task. Included in the deficiencies is the ability of the force to maintain OPTEMPO within a sustained CBRN/TIM environment.

Current Capability and Deficiency

JTF HQ staffs conduct planning and coordination with coalition partners to determine resources, requirements, and taskings best accomplishing mission tasking. They track readiness of forces and equipment for operations. They also adjust plans and resources as necessary to meet changing operational needs and conditions. Adequate doctrine, policy, and procedures exist to guide commanders and staffs with coalition and non-U.S. force participation in joint operations. Planning, tracking, and monitoring is performed in coordination with partner staffs under a negotiated plan outlining requirements, taskings, training, reporting, information sharing, standards, and operational certifications for participation. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among partners

is planned to complement capabilities and to minimize weaknesses. Acquisition Cross-Service Agreements (ACSAs) between partners enables acquisition and cross-servicing support between the partners. The more specific agreement, the Implementing Arrangement (IA), provides for a wide range of support including sheltering, medical care, and other support activities. The JTF Commander, JTF staff, and combined staff monitors, tracks, and assesses the readiness of the Joint Coalition Force and addresses issues and concerns as they arise. Deficiencies include the limited availability of COLPRO systems in each of the COLPRO categories, and the protection of eligible civilians and MWDs.

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.2-1. OPSHLD 2: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	Y ²	G ³	Y ⁴	G ³	Y ⁶	R ⁷
Near/Mid-Term Overall Capability	Y	G	Y	G	Y	R
Far-Term Overall Capability	Y	G	Y	G	Y	R

	FAA Measure	Scale
M1	Joint forces are equipped with or possess access to COLPRO.	<p>G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: COLPRO is available in sufficient types and quantities to support major operations.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M2	Coalition/non-U.S. forces are equipped with or possess access to COLPRO.	<p>G: Planning and coordination is conducted to address partner forces equipping or access to COLPRO.</p> <p>Y: Partner force equipping or access to COLPRO is considered when planning operations with threat.</p> <p>R: Partner force equipping or access to COLPRO is not considered or is inadequately considered when planning operations with threat.</p>
M3	Joint forces meet combatant commander CBRN/TIM protection requirements (training, equipping, and manning).	<p>G: All joint force elements (military, eligible civilians, and MWAs) meet CBRN/TIM protection requirements (training, equipping, and manning) to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Joint forces (including military, eligible civilians, and/or MWAs) meeting CBRN/TIM protection requirements to perform functions and conduct operations within a CBRN/TIM environment are inadequate or nonexistent.</p>
M4	Coalition/non-U.S. forces meet combatant commander CBRN/TIM protection requirements (training, equipping, and manning).	<p>G: Processes and means exist to monitor, track, and assess joint forces readiness and preparations status against COCOM requirements.</p> <p>Y: Processes exist to identify joint forces readiness meeting COCOM requirements.</p> <p>R: Processes and/or means are inadequate or nonexistent to identify joint forces readiness and/or preparations meeting COCOM requirements.</p>
M5	Joint and coalition/non-U.S. force CBRN/TIM protection consumables are interoperable.	<p>G: CBRN/TIM protection consumables are interoperable between coalition/non-U.S. forces and joint forces or adequate stocks of noninteroperable consumables are determined and available to support operations with threat.</p> <p>Y: CBRN/TIM protection consumables are interoperable between coalition/non-U.S. forces and joint forces or stocks of noninteroperable consumables are available to support operations with threat.</p> <p>R: CBRN/TIM protection consumables are noninteroperable between coalition/non-U.S. forces and joint forces and/or stocks of noninteroperable consumables are inadequate or nonexistent to support operations with threat.</p>

M6	Sustained operational planning includes allocation and placement (and redistribution if necessary) of joint and coalition/non-U.S. force CBRN/TIM protection assets.	<p>G: The planned and operational control of allocation, placement, and, when necessary, redistribution of CBRN/TIM protection assets of coalition/non-U.S. and joint forces is performed and coordinated throughout operations to sustain and support forces.</p> <p>Y: Allocation and placement of CBRN/TIM protection assets of coalition/non-U.S. and joint forces is performed and coordinated prior to commencement of operations.</p> <p>R: The planned and operational control of the allocation, placement, and/or redistribution of joint and coalition force CBRN/TIM protection assets is inadequate or nonexistent.</p>
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¹ DOTMLPF is adequate for the coordination and integration of coalition forces. Adequate DOTMLPF exists to address and support these forces. However, DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs. DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

² Limited quantities of COLPRO are available for operations. Not all critical facilities and activities are equipped with COLPRO. Transportable collective protection systems (CPSs) (e.g., Joint Transportable Collective Protection System [JTCOPS], Chemically Protected Deployable Medical System [CP-DEPMEDS], Tent, Expandable, Modular, Personnel [TEMPER] systems, and Service designed systems) provide CPSs for mature theaters or within the AO if there exists adequate time between notification of plan activation and the commencement of hostilities. However, these systems are in limited numbers and require significant logistics to move and establish, and concurrent operations with CBRN/TIM threat may further limit their availability. Mobile CPSs (ground) are also limited in quantities and types. Coalition partner and host-nation (when applicable) CPSs may offset these limitations. In coordination with COCOM and coalition partner staffs, JTF staff develops plans and addresses requirements and commitments by each coalition participant in the JTF. Based upon the guidance and restrictions identified by the COCOM, specific tasks are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among coalition partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange including sheltering, medical care, and other support activities.

³ In coordination with the COCOM and coalition partner staffs, JTF staff develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. Specific tasks are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual logistics support among coalition partners is planned to complement partners' capabilities and to minimize weaknesses. For example, U.S. Marine Corps forces were equipped with lightweight CBRN/TIM individual protective equipment (IPE) by the United Kingdom during Operation Desert Storm. The United States installed COLPRO capabilities in Saudi critical command and control facilities for the same operation. The JTF Commander, JTF staff, and the combined staff monitor, track, and assess the readiness of the joint coalition force.

⁴ In coordination with the COCOM and coalition partner staffs, JTF staff develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. The JTF Commander, JTF staff, and the combined staff monitor, track, and assess the readiness of the joint coalition force.

⁵ In coordination with the COCOM and coalition partner staffs, JTF staff develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. The JTF Commander, JTF staff, and the combined staff monitor, track, and assess the readiness of the joint coalition force.

⁶ In coordination with the COCOM and coalition partner staffs, JTF staff identifies and applies logistical efficiencies among the partners during the planning process. Standardization and interoperability between the participating nations is assessed and adjustments are made as necessary to plans. Support consumable levels are determined and incorporated into the plans. Minimum capability standards for participation and a certification process covering areas of concern (including logistics capabilities) are established and applied by all participants. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for sheltering, medical care, consumables, and other support activities. Standardized consumables may not be possible with all coalition partners and U.S. forces. Issues associated with nonstandardized consumables are addressed when necessary and appropriate during planning.

⁷ The allocation, placement, and reallocation of protective assets is a function of the planning and operational control of the JTF Commander, JTF staff, and combined staff. ACSAs between coalition partners enable acquisition and cross-servicing support between the partners. The IA, a more specific arrangement, provides for a wide range of support exchange including consumables, sheltering, medical care, and other support activities. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

12.2.3 Functional Solution Analysis

12.2.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 2. Deficiency:** Mobile COLPRO (ground) is limited in quantities and types.
Non-Materiel Solutions: *Doctrine:* Completion of analysis and central correlation/ comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.
- 3. Deficiency:** Transportable COLPRO systems are in limited numbers and require significant logistics to move and establish.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of strategic theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of strategic tactical plans and taskings.
- 4. Deficiency:** Concurrent operations with CBRN/TIM threat may limit COLPRO availability.
Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of strategic theater plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of strategic tactical plans and taskings.
- 5. Deficiency:** Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and

staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

6. **Deficiency:** DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWDs and eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and MWDs.

7. **Deficiency:** DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

12.2.3.2 IMA Assessment Summary

N/A

12.3 Task OPSHLD 3: Establish local medical prophylactic approach to reduce impact of CBRN/TIM

12.3.1 Functional Area Analysis

12.3.1.1 Definition

To assess potential operational impacts of CBRN/TIM agents based on the threat information. Identify medical and veterinary services resources, and develop employment plans to minimize the effects of CBRN/TIM attacks.

Prophylaxes exist for a number of chemical, biological, and radiological agents. Prophylaxes may be administered prior to actual exposure or following exposure but prior to presentation of signs and symptoms. Prophylaxes can eliminate or reduce the agent effects from exposures and/or increase the effectiveness of post-exposure treatments. The use of prophylaxes, if indicated, is determined and the required resources allocated. Integration and information resource sharing between the commander's NBC cell staff and supporting medical services are essential to force effectiveness and survivability as relating to a CBRN/TIM attack or release other than attack (ROTA).

Medical and veterinary personnel review the prophylactic status of force members, MWAs, and eligible civilians to ensure currency. Installations and units will have varied levels of diagnosis and treatment options available to treat CBRN/TIM casualties. Items such as surfactant topicals and oral prophylaxes should be issued to force members, MWA handlers, and eligible civilians to carry instead of bulk packaged and shipped. Issuance ensures the availability of protection immediately rather than when the bulk-packed items are broken out and disseminated.

Adequate medical plans, availability of trained medical and veterinary personnel, quantity and range of treatments and other medical supplies, and well-equipped facilities are key.

12.3.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 2.4.1.1, OP 2.4.1.2, OP 5.1.1, OP 5.3.2, OP 5.3.9, OP 5.4, OP 5.4.2, OP 6.2.10, OP 7, OP 7.1, OP 7.3, OP 7.4).

12.3.1.2.1 Supported Task: N/A

12.3.1.2.2 Lateral Task: OPSHA 7

12.3.1.2.3 Supporting Task: N/A

12.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Limited staff expertise. (C2.3.1.3)
5. Limited deployed supplies. (C2.8.2)
6. Limited prepositioned materiel. (C2.8.4)

Civil

1. Poor civil health. (C3.3.1.4)
2. High health risk. (C3.3.1.5)
3. TIMs present in the civilian sector. (C3.3.7.5)

12.3.2 Functional Needs Analysis

12.3.2.1 Capability and Deficiency Assessment Summary

Table 12.3-1 discusses the two capabilities that exist to perform the task to the designated standard. The JTF HQ staff coordinates the issuance and administration of medical prophylaxis for CBRND of the force. Doctrine, policy, and procedures exist for the coordination of issuance and administration of medical prophylaxis to the military force against the debilitating effects of CBRN/TIM agents. Deficiencies include the lack of prophylaxis against all threat CBRN/TIM agents, the absence of medical prophylaxes for MWAs and the inadequate provision of medical prophylaxes to eligible civilians. The JTF Medical Services staff coordinates and manages the issuance and administration of CBRND medical prophylaxis to the force. The deficiencies are shared with the JTF HQ staff.

Current Capability and Deficiency

The identified individual capabilities are the coordination and management of issuance and administration of medical prophylaxis to the military force against the debilitating effects of CBRN/TIM agents. Doctrine, policy, and procedures require all command levels perform CBRN/TIM threat and risk assessment for their units and operations. Coordination with coalition

and non-U.S. forces minimizes weaknesses in capabilities while maximizing the strengths that exist, including medical. Existing or negotiated agreements facilitate the exchange of services and materiel. Predeployment screening is planned and performed of forces allocated and tasked under the JTF. Preplanning for CBRND includes the positioning of stocks, based upon the identified threat, for issue and administration, availability of sufficient medical personnel to perform required administrations, and the availability of sufficient medical prophylaxis to meet the anticipated need. Adverse reactions to prophylactic materials are annotated in the individual's medical records for future screening and follow-up activities. Minimization of the potential for adverse reaction to prophylaxis is included in the research and development (R&D) specifications for the material. Medical facilities regularly conduct exercises including the reception and treatment of contaminated/exposed casualties. All Services have mandated CBRN basic training, but it is not fully implemented at this time. Medical Services planning includes medical surveillance and medical activities to support the JTF, including CBRND-related activities and actions. Deficiencies include the lack of medical prophylaxes for all threat CBRN/TIM agents; predeployment medical screenings do not consider prior presymptomatic low-dose CBRND exposures and associated potential long-term effects as relates to CBRN/TIM threats; the wide variance in efficacy of existing prophylaxes; lack of prophylaxes for MWDs; the absence of a requirement for mandatory in-depth institutional medical CBRN/TIM casualty handling and treatment training for all deployable medical practitioners; and the inadequacy of existing doctrine, policy, and procedures for MWAs and eligible civilians.

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.3-1. OPSHLD 3: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current											
JTF HQ Staff	G ¹	R ²	R ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	Y ⁸	R ⁹	Y ¹⁰	R ¹¹
JTF Medical Services (Medical Services (Staff))	G ¹²	R ¹³	R ¹⁴	Y ¹⁵	Y ¹⁶	G ¹⁷	Y ¹⁸	Y ¹⁹	R ²⁰	Y ²¹	R ²²
Near/Mid											
JTF HQ Staff	G	R	R	Y	Y	G	Y	Y	R	Y	R
JTF Medical Services (Medical Services (Staff))	G	R	R	Y	Y	G	Y	Y	R	Y	R
Far											
JTF HQ Staff	G	R	R	Y	Y	G	Y	Y	R	Y	R
JTF Medical Services (Medical Services (Staff))	G	R	R	Y	Y	G	Y	Y	R	Y	R
Current Overall Capability	G	R	R	Y	Y	G	Y	Y	R	Y	R
Near/Mid-Term Overall Capability	G	R	R	Y	Y	G	Y	Y	R	Y	R
Far-Term Overall Capability	G	R	R	Y	Y	G	Y	Y	R	Y	R

	FAA Measure	Scale
M1	All units have prepared medical threat and risk assessment reports.	<p>G: Doctrine, policy, procedures, and TTPs require all command levels perform threat and risk assessments for their units and operations. Detailed guidance, processes, and requirements address the determination and evaluation of CBRN/TIM, medical, and operational threats to the force and operations.</p> <p>Y: Doctrine, policy, procedures, and TTPs require all command levels perform threat and risk assessments for their units and operations. General guidance and processes include consideration of CBRN/TIM, medical, and operational threats to the force and operations.</p> <p>R: Doctrine, policy, procedures, and TTPs are inadequate or nonexistent requiring the performance of threat and risk assessments by all command levels for their units and operations and/or inclusion of CBRN/TIM, medical, and/or operational threats to the force and/or operations is inadequately addressed or nonexistent.</p>
M2	In-theater forces are protected by medical prophylaxes.	<p>G: Medical CBRND countermeasures, encompassing all eligible at-risk populations, exist and are available for all threat CBRN and high-risk TIM agents.</p> <p>Y: Medical CBRND countermeasures for U.S. military and eligible civilian members exist and are available for selected high-threat CBRN and high-risk TIM agents.</p> <p>R: Medical CBRND countermeasures are inadequate, do not exist, and/or are not available for high-threat CBRN and high-risk TIM agents.</p>
M3	Deploying forces are protected by medical prophylaxes.	<p>G: Deploying forces are medically prepared for all operations with CBRN/TIM threat.</p> <p>Y: Deploying forces are medically prepared for operations with threat involving all CBRN warfare agents and High Threat TIMs.</p> <p>R: Deploying forces medical preparedness for operations with CBRN/TIM threat is inadequate or nonexistent.</p>

M4	Required medical prophylaxes are available for issue/administration.	<p>G: Medical prophylaxis is available for issue and administration to all at-risk populations, including military members, eligible civilians, and MWAs.</p> <p>Y: Medical prophylaxis is available for issue and administration to military personnel.</p> <p>R: Availability of medical prophylaxis is inadequate or nonexistent for issue and administration.</p>
M5	Required medical prophylaxis are issued/administered.	<p>G: Medical prophylaxis is issued and administered to all at-risk populations, including military members, eligible civilians, and MWAs.</p> <p>Y: Medical prophylaxis is issued and administered to military personnel.</p> <p>R: Medical prophylaxis issuance and/or administration is inadequate or nonexistent.</p>
M6	Force is screened for potential adverse reaction to medical prophylaxes.	<p>G: Forces are predeployed screened for potential potential of adverse reaction to medical prophylaxis for operations with threat.</p> <p>Y: Selected forces generally are predeployment screened for potential of adverse reactions to medical prophylaxis for operations with threat.</p> <p>R: Forces predeployment screening for potential of adverse reactions to medical prophylaxis for operations with threat is inadequate or nonexistent.</p>
M7	Force members do not exhibit adverse reactions to medical prophylaxes.	<p>G: Forces administered medical prophylaxis do not exhibit adverse reactions from the prophylaxis.</p> <p>Y: Adverse reactions to administered medical prophylaxis are present, but are within the maximum percentage of the targeted population for adverse reactions and do not seriously impact.</p> <p>R: Adverse reactions to administered medical prophylaxis exceeds the maximum percentage of the targeted population for adverse reactions and/or seriously impacts operations.</p>
M8	Joint Operations Area (JOA) medical facilities are able to treat contaminated/exposed casualties.	<p>G: All JOA medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. All assigned medical practitioners and medical support personnel (including emergency medical services [EMS], medical aides, etc.) are formally trained, and receive recurring training, for the evaluation and care of contaminated/exposed casualties. Medical provider based medical treatment is provided, when needed, throughout the process from reception to post-decontamination.</p> <p>Y: JOA medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. Formal training is available to for the evaluation and treatment of contaminated/exposed casualties. Medical support personnel (including EMS, medical aides, etc.) are trained, on the evaluation, decontamination, and care of contaminated/exposed casualties.</p> <p>R: The ability of JOA medical facilities to treat contaminated/exposed casualties is inadequate or nonexistent.</p>
M9	Identified threat CBRN/TIM capabilities are defended against.	<p>G: Effective medical prophylaxis is available for all CBRN warfare agents and high-risk TIM agents for the protection of the force.</p> <p>Y: Medical prophylaxis is available for all CBRN warfare agents and selected high-risk TIM agents for the protection of the force.</p> <p>R: Medical prophylaxis in nonexistent or inadequate for protection of the force against all CBRN warfare and selected high-risk TIM agents.</p>

M10	Preventive medicine policy and countermeasures are established for identified medical threats in the JOA (after deployment).	<p>G: Detailed plans and policies exist and are coordinated between JTF and Medical Services staffs for the effective application of preventative medicine activities and countermeasures addressing the health and well-being of the entire force and includes large-scale medical activities addressing both the force and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Plans exist and are coordinated between JTF and Medical Services staffs for preventative medicine activities and countermeasures for support of operations and the general health and well-being of the force.</p> <p>R: Preventative medicine activities and/or countermeasures plans and/or policies are inadequate or nonexistent for support of operations and/or the general health and well-being of the force.</p>
M11	MWAs are prepared for operation in CBRN/TIM environment.	<p>G: JOA MWA forces are fully equipped, trained, and prepared for survival while performing operations involving CBRN/TIM threat.</p> <p>Y: Selected JOA MWA forces are fully equipped, trained, and prepared for survival while performing operations involving CBRN/TIM threat.</p> <p>R: JOA MWA forces are inadequately equipped, trained, and/or prepared for survival while performing operations involving CBRN/TIM threat.</p>

¹ Existing doctrine, policy, and procedures require all command levels perform threat and risk assessments for their units and operations. The threat assessment includes CBRN/TIM, TIM, medical, and operational threats and their associated risks for the force.

² Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF staff, in coordination with coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enables acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF staff, in coordination with partners, determines the need for medical prophylaxis based upon the threat. A determination is made on the provision of medical prophylaxis to these forces.

³ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines requires multiple administrations over a period of time for acquired immunity. The JTF staff plans generally include provisions for medical preparation of the force.

⁴ Medical prophylaxes are developed for the military force. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines requires multiple administrations over a period of time for acquired immunity. The JTF staff plans generally include provisions for medical preparation of the force.

⁵ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the JTF staff during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

⁶ JTF plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. However, predeployment medical screenings do not consider prior presymptomatic low-dose CBRND exposures, associated potential cumulative long-term effects, and the potential threat. The routine rotation and movement of personnel to and from units. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. The JTF staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment.

⁷ Medical prophylaxes seek to protect the largest percentage of the force possible. Allergic or adverse reactions to a prophylaxis are annotated into an individual's medical record upon evaluation and treatment. However, reactions may not occur until after a number of administrations or applications are made in an individual's lifetime. Minimization of adverse reactions is part of the R&D process, and a very small percentage without major reaction is considered acceptable.

⁸ Existing medical facilities within a high-threat area (HTA) exercise the reception of contaminated/exposed casualties. All Services have mandated CBRN basic training, but it is not fully implemented at this time. The ability of the JTF staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners.

⁹ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF staff, in coordination with coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF staff, in coordination with partners, determines the need for medical prophylaxis based upon the threat. A determination is made on the provision of medical prophylaxis to these forces.

¹⁰ The Medical Services staff plans and associated policies address medical activities and procedures, including Preventative Medicine. Medical surveillance and the implementation of medical countermeasures are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Preventive Medicine support requirements, associated taskings, and their inclusion in JTF staff planning. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹¹ MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

¹² Existing doctrine, policy, and procedures require all command levels perform threat and risk assessments for their units and operations. The threat assessment includes CBRN/TIM, TIM, medical, and operational threats and their associated risks for the force. Medical information and associated threats for the operating area is provided to the JTF staffs.

¹³ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander, Medical Services, and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF Medical Services staff, in coordination with the JTF staff and coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enables acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including medical care. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF Medical Services staff, in coordination with the JTF staff and partners, determines the need for medical prophylaxis based upon the threat. A recommendation is made to the JTF Commander on the provision of medical prophylaxis to these forces.

¹⁴ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines requires multiple administrations over a period of time for acquired immunity. The JTF Medical Services staff plans detail provisions for medical preparation of the force.

¹⁵ Medical prophylaxes are developed for the military force. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines requires multiple administrations over a period of time for acquired immunity. The JTF Medical Services staff plans detail provisions for medical preparation of the force.

¹⁶ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the JTF Medical Services staff during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

¹⁷ JTF supporting Medical Services plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. However, predeployment medical screenings do not consider prior presymptomatic low-dose CBRND exposures, associated potential cumulative long-term effects, and the potential threat. The routine rotation and movement of personnel to and from units. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. The JTF Medical Services staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment.

¹⁸ Medical prophylaxes seek to protect the largest percentage of the force possible. Allergic or adverse reactions to a prophylaxis are annotated into an individual's medical record upon evaluation and treatment. However, reactions may not occur until after a number of administrations or applications are made in an individual's lifetime. Minimizations of adverse reactions are part of the R&D process and a very small percentage without major reaction is considered acceptable.

¹⁹ Existing medical facilities within an HTA exercise the reception of contaminated/exposed casualties. Training for the treatment of contaminated/exposed casualties is available through Army Medical Department (AMEDD), but is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the JTF Medical Services staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed by medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners.

²⁰ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander, Medical Services, and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF Medical Services staff, in coordination with the JTF and coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including medical care. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF Medical Services staff, in coordination with the JTF staff and partners, determines the need for medical prophylaxis based upon the threat. A recommendation is made to the JTF Commander on the provision of medical prophylaxis to these forces.

²¹ The Medical Services staff plans and associated policies address medical activities and procedures, including Preventative Medicine. Medical surveillance and the implementation of medical countermeasures are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Preventive Medicine support requirements, associated taskings, and their inclusion in JTF staff planning. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²² MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

12.3.3 Functional Solution Analysis

12.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Forces are not protected against all identified threat CBRN/TIM capabilities.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 17 above) for prophylactic CBRND protection.
- 2. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 1 above) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 3. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures to not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding eligible civilians.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 4. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures to not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 5. Deficiency:** Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use

of prophylactic CBRND protection against threat agents. *Leadership*: Enforce compliance with established readiness criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

- 6. Deficiency:** The efficacy of existing prophylaxis, particularly vaccines, widely varies. **Non-Materiel Solutions:** *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.
- 7. Deficiency:** Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. **Non-Materiel Solutions:** *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.
- 8. Deficiency:** Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. **Non-Materiel Solutions:** *Doctrine*: Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization*: Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training*: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership*: Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities*: Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.
- 9. Deficiency:** The administration of many vaccines requires multiple administrations over a period of time for acquired immunity. **Non-Materiel Solutions:** *Doctrine*: Include in doctrine, policy, and procedures requirement for CBRN/TIM protective prophylaxis protecting the force through the deployment cycle. *Organization*: Establish organizational incentives to address CBRN/TIM protective prophylaxis providing protection of the force throughout the deployment cycle. *Leadership*: Ensure standards, criteria, and metrics for CBRN/TIM medical prophylaxis R&D are concise and adequately protect the force throughout the deployment cycle with a minimum of administrations, preferably one.
- 10. Deficiency:** Prophylaxis for MWAs is virtually nonexistent. **Non-Materiel Solutions:** *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival.

Organization: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

11. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

12. Deficiency: Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

13. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

14. Deficiency: Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, and non-U.S. forces. *Training:* Include eligible civilians in CBRND training,

exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership*: Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel*: Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

- 15. Deficiency:** Predeployment medical screenings do not consider prior presymptomatic low-dose CBRND exposures, associated potential cumulative long-term effects, and the potential threat.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings. *Leadership*: Enforce compliance with established doctrine, policy, and procedures (see Footnote 10 above) for low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings.

- 16. Deficiency:** Reactions to a prophylaxis may not occur until after a number of administrations or applications are made in an individual's lifetime.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection addressing adverse reactions to a prophylaxis (including long-term) within a potential protected population.

- 17. Deficiency:** The ability of the JTF and Medical Services staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements.

Non-Materiel Solutions: *Doctrine*: Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization*: Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions. *Training*: Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership*: Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties/MWAs by all activities and functions conducting these functions including nonmedical activities and functions.

- 18. Deficiency:** Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners.

Non-Materiel Solutions: *Doctrine*: Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization*: Ensure resources, taskings, and

trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training*: Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership*: Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 19. Deficiency:** Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, procedures, and *UJTL* COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization*: Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training*: Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership*: Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel*: Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

- 20. Deficiency:** MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWDs and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of MWD CBRND

protective equipment, measures, and activities. *Training*: Provide institutional and unit training of handlers and MWDs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities*: Develop supporting infrastructure for MWD CBRND (e.g., logistics, veterinary surveillance, etc.).

21. Deficiency: Existing DOTMLPF is inadequate, or nonexistent, for eligible civilians.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

22. Deficiency: Existing DOTMLPF is inadequate, or nonexistent, for MWAs.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs.

12.3.3.2 IMA Assessment Summary

N/A

12.4 Task OPSHLD 4: Ensure that IPE for forces (including patients) and MWAs are ready to minimize casualties and to ensure survivability and effective performance

12.4.1 Functional Area Analysis

12.4.1.1 Definition

To ensure that IPE provides individual protection from CBRN/TIM hazards by the proper use of masking devices (respiration and ocular) and wear of protective gear and clothing (percutaneous). The gear must ensure survivability by prohibiting agents from entering the body while allowing individuals to perform mission tasks while wearing it. While some performance degradation is inherent because of the physical properties of the protective gear, the goal is to reduce the physical and mental stresses of its wear without substantially degrading mission performance. IPE must be correctly fitted to the individual. These provisions also apply to MWAs.

12.4.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 5.3, OP 5.3.9, OP 5.4, OP 5.4.6, OP 5.5.9, OP 7, OP 7.2, OP 7.3, OP 7.4).

12.4.1.2.1 **Supported Task:** N/A

12.4.1.2.2 **Lateral Task:** OPSHA 4

12.4.1.2.3 **Supporting Task:** N/A

12.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Good personnel physical conditioning. (C2.2.4.3)
4. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)

5. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Negligible personnel experience. (C2.2.4.5)
7. Limited deployed supplies. (C2.8.2)
8. Limited prepositioned materiel. (C2.8.4)
9. Limited host nation support. (C2.8.5)
10. Limited commercial procurement. (C2.8.6)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

12.4.2 Functional Needs Analysis

12.4.2.1 Capability and Deficiency Assessment Summary

Table 12.4-1 discusses the only capability that exists to perform the task to the designated standard. The JTF HQ Staff conducts planning and preparation of forces deploying to and/or within the JOA for CBRND protection. Adequate doctrine, policy, and procedures exist for the planning and management of resources affording individual protection of the force. Included in the deficiencies is the ability of the force to perform sustained operations within a CBRN/TIM environment and CBRND of eligible civilians and MWAs.

Current Capability and Deficiency

Adequate doctrine, policies, and procedures exist to guide the JTF staff in planning, allocation, equipping, and preparing the force with CBRND IPE. Training, exercises, and evaluations serve to build individual capability to perform tasks while encumbered by IPE. Specialized IPE and supporting DOTMLPF exists for CBRND of uncontaminated casualties unable to wear standard IPE. Deficiencies include the potential for deploying units not to be equipped for CBRND until after arrival in the JOA; eligible civilians and MWAs are not equipped and trained to survive a CBRN/TIM environment; CBRND systems do not adequately support expeditionary and highly mobile forces; replenishment of CBRND systems may be impacted by non-U.S. manufacturer sources; IPE encumbrances do degrade performance; CBRND is inadequate for TIMs; the designs of specialized IPE (e.g., explosive ordnance disposal [EOD] IPE, firefighter bunker gear, etc.) do not incorporate CBRND qualities and features; the provision of medical treatment to casualties within a CBRN/TIM environment can be performed only within COLPRO; and DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for CBRND of eligible civilians and MWDs. The overall current capability is “red.”

Projected Near/Mid-Term Capability and Deficiency

The fielding of improved joint IPE (Joint Service Lightweight Integrated Suit Technology [JSLIST], Joint Service Aircrew Mask [JSAM], Joint Service General Purpose Mask [JSGPM], and Joint Protective Aircrew Ensemble [JPACE]) provides improved protection for the force. The IPE will provide protection against limited TIMs in addition to the known CBRN warfare agents. National Institute for Occupational Safety and Health review for compliance with

Occupational Safety and Health Administration standards was requested to support joint and DoD requirements. Joint Firefighter's Integrated Response Ensemble (JFIRE), the application of JSLIST capabilities to firefighter bunker gear, provides firefighters with increased CBRND capabilities within a CBRN/TIM environment. Initial operational capability (IOC) fielding of JFIRE is programmed during the mid term. Otherwise, no change from current capabilities is projected.

Projected Far-Term Capability and Deficiency

No projected change for this task.

Table 12.4-1. OPSHLD 4: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	Y ⁶	R ⁷	G ⁸	R ⁹	R ¹⁰	R ¹¹	R ¹²	R ¹³	R ¹⁴
Near/Mid-Term Overall Capability	Y	Y	Y	R	Y	R	G	R	Y	R	R	R	Y
Far-Term Overall Capability	Y	Y	Y	R	Y	R	G	R	Y	R	R	R	Y

	FAA Measure	Scale
M1	Deploying forces possess CBRN/TIM IPE prior to deployment to the JOA.	<p>G: Plan-identified forces (military, eligible civilians, and MWDs) are equipped with CBRND IPE during predeployment and deployment prior to departure to the JOA for survivability and operational readiness throughout deployment into the JOA.</p> <p>Y: Plan-identified military forces are equipped with CBRND IPE prior to or immediately upon arrival in the JOA for survivability and operational readiness throughout deployment into the JOA.</p> <p>R: Plans are inadequate or nonexistent to equip forces with CBRND IPE prior to conducting operations within the JOA.</p>
M2	Required individual protective assets are available for deploying forces.	<p>G: All deploying forces (including military, eligible civilians, and MWAs) are trained and possess adequate and readily available and operational CBRND protective equipment and measures for survivability and operational readiness throughout deployment into the JOA.</p> <p>Y: Deploying uniformed forces are trained and possess adequate and readily available and operational CBRND protective equipment and measures for survivability and operational readiness throughout deployment into the JOA</p> <p>R: Training, possession, and/or availability of adequate and operational CBRND protective equipment and/or measures for deploying forces are inadequate or nonexistent.</p>
M3	Theater forces are issued individual protective assets to operate in a CBRN/TIM environment.	<p>G: All JTF forces (including military, eligible civilians, and MWAs) are trained and possess adequate and readily available and operational CBRND protective equipment and measures.</p> <p>Y: JTF uniformed forces are trained and possess adequate and readily available and operational CBRND protective equipment and measures.</p> <p>R: Training, possession, and/or availability of adequate and operational CBRND protective equipment and/or measures for JTF forces are inadequate or nonexistent.</p>
M4	Requirements are on hand, enabling theater forces to sustain operations over multiple CBRN/TIM attacks based upon organic, on-hand, and issued CBRN/TIM protective assets, consumables, and expendables.	<p>G: JTF forces (including military, eligible civilians, and MWAs) are adequately equipped and possess ready access to sufficient CBRND resources to support sustained operations through multiple CBRN/TIM attacks across the spectrum of operations and without unplanned and unforecasted resupply.</p> <p>Y: JTF forces (including military and eligible civilians) are equipped and possess ready access to sufficient CBRND to support sustained operations through multiple CBRN/TIM attacks involving major operations with planned and forecasted resupply.</p> <p>R: JTF forces are inadequately equipped and/or possess limited access to CBRND resources to sustain operations through multiple CBRN/TIM attacks and/or are reliant upon resupply.</p>

M5	Forces achieve CBRN/TIM individual protective capability immediately after initial arrival in the JOA.	<p>G: Plan-identified forces (military, eligible civilians, and MWDs) are equipped with CBRND IPE and measures prior to arrival in the JOA for survivability and operational readiness throughout deployment into and upon immediate arrival in the JOA.</p> <p>Y: Plan-identified military forces are equipped with CBRND IPE and measures prior to or immediately upon arrival in the JOA for survivability and operational readiness throughout deployment into and/or upon arrival in the JOA.</p> <p>R: Plans are inadequate or nonexistent to equip forces with CBRND IPE and/or measures immediately upon arrival in the JOA.</p>
M6	CBRND asset replenishment effectively maintains OPTEMPO and force survivability.	<p>G: CBRND resources are stockpiled and prepositioned in plan-identified required quantities and types to support sustained operations against multiple CBRN/TIM attacks upon the JTF. Replenishment of stockpiles and prepositioned stocks maintains plan established and operations-related adjusted stock levels.</p> <p>Y: CBRND resources are stockpiled and prepositioned in plan-identified required quantities and types to support sustained operations in a CBRN/TIM environment. Replenishment of stockpiles and prepositioned stocks maintains plan established stock levels.</p> <p>R: Stockpiles and/or prepositioned stocks of CBRND resources and/or replenishment of stock levels is inadequate to support sustained operations in a CBRN/TIM environment.</p>
M7	Forces are trained in the effective use of IPE.	<p>G: Training, exercising, and evaluation of tasked forces addresses the use, care, and limitations of CBRND IPE.</p> <p>Y: Training, exercising, and evaluation of deploying forces addresses the use, care, and limitations of CBRND IPE.</p> <p>R: Training, exercising, and/or evaluation of the force on the use, care, and/or limitations of CBRND IPE is inadequate or nonexistent.</p>
M8	MWAs are equipped with IPE.	<p>G: All JTF MWA forces are fully equipped, trained, and prepared for survival using CBRND IPE while performing operations involving CBRN/TIM threat</p> <p>Y: Selected JTF MWA forces are fully equipped, trained, and prepared to apply CBRND IPE for survival during operations involving CBRN/TIM threat.</p> <p>R: JTF MWA forces are inadequately equipped, trained, and/or prepared to apply CBRND IPE for survival during operations involving CBRN/TIM threat.</p>
M9	Forces are fully capable while wearing IPE.	<p>G: JTF forces capabilities are not degraded by the wear of CBRND IPE for sustained operations in a CBRN/TIM environment.</p> <p>Y: JTF forces capabilities are not significantly degraded by the wear of CBRND IPE in a CBRN/TIM environment.</p> <p>R: JTF force capabilities while wearing CBRND IPE is significantly degraded and/or operations are adversely impacted.</p>
M10	Specialized IPE is available for casualties unable to wear standard IPE.	<p>G: Specialized casualty IPE is readily available for casualties unable to wear standard IPE and provides safe and full visibility, support, and access to the casualty by Medical Services personnel, equipment, and materiel.</p> <p>Y: Specialized casualty IPE is readily available for selected casualties unable to wear standard IPE and provides safe support and access to the casualty by Medical Services personnel, equipment, and materiel.</p> <p>R: Specialized casualty IPE is nonexistent or inadequate for the protection of casualties unable to wear standard IPE and/or does not or is inadequate for the safe support and access of Medical Services personnel, equipment, and materiel.</p>

M11	Specialized TIM IPE (e.g., hazardous materials–specific respirators, overgarments, gloves, and boots) is available for specialized protective needs.	<p>G: TIM protective assets are readily available or TIM protective capabilities are built into standard IPE for protection of the force against all high-risk TIM agents.</p> <p>Y: TIM protective assets are readily available or TIM protective capabilities are built into standard IPE for protection of the force against select high-risk TIM agents.</p> <p>R: TIM protective assets or TIM protective capabilities of standard IPE are inadequate or nonexistent.</p>
M11	Specialized EOD IPE (e.g., bomb suits compatible with CBRN/TIM IPE) is available for EOD personnel.	<p>G: Specialized EOD IPE incorporates into design and materials operational protection against all CBRN and high-risk TIM agents.</p> <p>Y: Specialized EOD IPE incorporates into design and materials operational protection against CBRN warfare agents and selected high-risk TIM agents.</p> <p>R: Specialized EOD IPE is inadequate or protection against CBRN and/or TIM agents is not incorporated into design and materials.</p>
M13	Specialized medical IPE is available for medical care providers.	<p>G: Medical practitioners and personnel are equipped with specialized CBRN/TIM protective equipment for the handling and treatment of exposed and contaminated CBRN/TIM casualties.</p> <p>Y: Medical practitioners and personnel are equipped with CBRN/TIM protective equipment and supplemented using standard protective medical assets.</p> <p>R: Equipping of medical practitioners and personnel for the handling and treatment of exposed and contaminated CBRN/TIM casualties is inadequate or nonexistent.</p>

¹ Adequate DOTMLPF exists to address planning and support of the force. However, DOTMLPF is inadequate for nonexistent addressing CBRND of eligible civilians and MWAs. DOTMLPF for CBRND is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary operations with reduced logistical footprint.

² The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

³ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁴ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁵ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Systems are reallocated, when necessary, from prepositioned and dispersed stocks of units deploying or operating within an JOA. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment.

⁶ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁷ Available CBRND systems are not prepositioned in sufficient quantities to support concurrent military operations. Timing for replenishment of systems is dependent upon manufacturing capabilities, system age, and funding availability. Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities.

⁸ Doctrine, policy, and procedures exist for the training, exercising, and evaluation of forces for the application of IPE against CBRN/TIM agents.

⁹ MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

¹⁰ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing IPE. However, the encumbrances associated with IPE do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets). Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

¹¹ Specialized IPE is available for uncontaminated casualties unable to wear standard IPE. The preference is to use COLPRO to protect these casualties against the effects of CBRN/TIM agents. DOTMLPF exists for the application of specialized IPE for uncontaminated casualties.

¹² Doctrine, policy, and procedures for specialized TIM IPE are generally limited to specialized operations and functions such as hazardous materials teams. TIM protective assets are not commonly available and provided to the general force. TIM is not adequately addressed by current doctrine, policy, and procedures. Current and near-term standard IPE provides varying degrees of protection from selected TIMs with no protection against a number of TICs.

¹³ The design and application of EOD IPE does not consider compatibility with CBRND IPE, nor incorporate CBRND features.

¹⁴ Medical Services doctrine, policy, and procedures are inadequate for the provision of medical care by medical providers in a CBRN/TIM environment. Casualties are decontaminated before treatment is rendered by medical providers. Medical assessment and emergency stabilization is provided during the triage and decontamination process. The standard IPE is supplemented using standard medical protective assets (e.g., surgical gloves, drapes, etc.) to reduce the potential for cross-contamination and contact with body fluids.

12.4.3 Functional Solution Analysis

12.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.
- 2. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).
- 3. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWAs, particularly MWDs, CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability.

Facilities: Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 4. Deficiency:** JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

Personnel: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 5. Deficiency:** JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization:* Identify organizational services and activities supporting CBRN/TIM survivability of MWAs and mission operations.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations.

Leadership: Implement and manage CBRND training, equipping, and protection of MWAs.

Facilities: Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 6. Deficiency:** Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities.

Training: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for

expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 7. Deficiency:** Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 8. Deficiency:** Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This statement is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities.
Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the identification of critical CBRND components and systems; to include the identification of alternatives (e.g., other sources of supply, stockpiling, manufacturing incentives, etc.). *Leadership:* Ensure awareness of vulnerabilities associated with procurement of non-U.S.-manufactured critical CBRND components and planning for vulnerability mitigation.
- 9. Deficiency:** MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).
- 10. Deficiency:** The encumbrances associated with IPE do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets).
Non-Materiel Solutions: *Doctrine:* Consider implications of IP encumbrances upon task performance within a CBRN/TIM environment for training and task development. *Organization:* Consider limitations of IP encumbered personnel within a CBRN/TIM environment for task structuring. *Training:* Include task performance within a CBRN/TIM environment during formal and unit training and as an essential requirement element. *Leadership:* Leadership training and awareness of limitations and restrictions associated with task performance within a CBRN/TIM environment. *Personnel:* Ensure personnel are both

psychologically and physiologically matched with specialty for task completion requirements within a CBRN/TIM environment.

- 11. Deficiency:** TIM protective assets are not commonly available and provided to the general force.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs CBRND protection of the force against threat TIM agents. *Organization:* Address organizational issues associated with CBRND for TIM threats. *Training:* Train, exercise, and evaluate the force for CBRND operations within threat CBRN/TIM and TIM environments. *Leadership:* Recognize criticality of readiness and survivability of the force for potential CBRND operations within threat CBRN/TIM and TIM environments; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.
- 12. Deficiency:** TIM is not adequately addressed by current doctrine, policy, and procedures.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs CBRND protection of the force against threat TIM agents.
- 13. Deficiency:** Current and near-term standard IPE provides varying degrees of protection from selected TIMs with no protection against a number of TICs.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures standards, criteria, and metrics for CBRND materiel for protection of the force against threat TIM agents. *Leadership:* Enforce compliance with established readiness criteria for CBRND protective materiel.
- 14. Deficiency:** The design and application of EOD IPE does not consider compatibility with CBRND IPE, nor incorporate CBRND features.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures standards, criteria, and metrics for the inclusion of CBRND protective qualities and features into specialized protective garments and equipment (e.g., EOD IPE, firefighter bunker gear, etc.). *Leadership:* Enforce compliance with established readiness criteria for inclusion of CBRND protective qualities and features in specialized garments and equipment.
- 15. Deficiency:** Medical Services doctrine, policy, and procedures are inadequate for the provision of medical care by medical providers in a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing the provision of medical care by medical providers within a CBRN/TIM environment (both with and without CPSs). *Organization:* Identify organization services and activities necessary to support the provision of medical care by medical providers within a CBRN/TIM environment (both with and without CPSs). *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for medical care by medical providers within a CBRN/TIM environment (both with and without CPSs); and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection

of medical providers and supporting medical staff. *Personnel*: Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

16. Deficiency: DOTMLPF is inadequate for nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and MWDs.

17. Deficiency: DOTMLPF is inadequate for nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs.

12.4.3.2 IMA Assessment Summary

N/A

12.5 Task OPSHLD 5: Ensure adequate protective measures and resources are available to coalition partners and other designated non-U.S. forces

12.5.1 Functional Area Analysis

12.5.1.1 Definition

To ensure that CBRN/TIM protective measures and resources are available to coalition/non-U.S. forces. The availability of CBRN/TIM protective measures and resources is both a joint and coalition/non-U.S. force concern. This task includes IPE, COLPRO, CBRND equipment and supplies, protection of equipment and supplies, and medical resources. The joint forces must integrate coalition/non-U.S. forces to maximize capability and minimize vulnerability. U.S. forces may be required to provide protective assets (especially IPE, detection and warning devices, medical support, and decontaminants) to coalition/non-U.S. partners, depending on local threats and/or actual adversary use of CBRN/TIM weapons. Joint forces NBC personnel should offer to review coalition/non-U.S. force CBRN/TIM protection plans and assist as necessary. U.S. forces may be required to train coalition/non-U.S. forces in CBRND.

12.5.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.2, OP 2.2.1, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 5, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.2, OP 5.3.4, OP 5.3.5, OP 5.3.6, OP 5.3.7, OP 5.3.8, OP 5.3.9, OP 5.4, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5, OP 5.5.1, OP 5.5.2, OP 5.5.7, OP 5.5.8, OP 5.7, OP 5.7.3, OP 5.7.4, OP 5.7.5, OP 5.7.6, OP 6.2.1, OP 7, OP 7.1, OP 7.2, OP 7.3, OP 7.4).

12.5.1.2.1 Supported Task: STSHLD 8

12.5.1.2.2 Lateral Task: OPSHA 4

12.5.1.2.3 Supporting Task: N/A

12.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)

2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Some interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)
6. Partial multinational integration. (C2.3.1.2)
7. Limited staff expertise. (C2.3.1.3)
8. Limited deployed supplies. (C2.8.2)
9. Sufficient CONUS resupply. (C2.8.3)
10. Limited prepositioned materiel. (C2.8.4)
11. Limited host nation support. (C2.8.5)
12. Limited commercial procurement. (C2.8.6)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)
2. Limited foreign government support. (C3.1.2.3)
3. Moderately opposed foreign public opinion. (C3.1.2.4)
4. TIMs present in the civilian sector. (C3.3.7.5)

12.5.2 Functional Needs Analysis

12.5.2.1 Capability and Deficiency Assessment Summary

Table 12.5-1 discusses the only capability that exists to perform the task to the designated standard. Adequate doctrine, policy, and procedures exist for ensuring the adequacy of protective measures and resources of coalition partners and other designed non-U.S. forces. Structures for mutual support can be applied in cases where necessary to complement capabilities and minimize weaknesses within the Joint Task Force. Included in the deficiencies is the ability of the force to maintain OPTEMPO within a sustained CBRN/TIM environment.

Current Capability and Deficiency

JTF HQ staffs conduct planning and coordination with coalition partners to determine resources, requirements, and taskings best accomplishing mission and CBRND preparedness of partner forces. They track readiness of forces and equipment for operations. They also adjust plans and resources as necessary to meet changing operational needs and conditions. Adequate doctrine, policy, and procedures exist to guide commanders and staffs with coalition and non-U.S. force participation in joint operations. Planning, tracking, and monitoring is performed in coordination with partner staffs under a negotiated plan outlining requirements, taskings, training, reporting, information sharing, standards, and operational certifications for participation. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual support among partners is planned to complement capabilities and to minimize weaknesses. ACSAs between partners enables acquisition and cross-servicing support between the partners. IAs provide for a wide range of support including sheltering, medical care, and other support activities. The JTF Commander, JTF staff, and combined staff monitor, track, and assess the readiness of the Joint Coalition Force and addresses issues and concerns as they arise.

Deficiencies include the limited availability of COLPRO systems in each of the COLPRO categories, and the protection of eligible civilians and MWDs.

Projected Near/Mid-Term Capability and Deficiency

No projected change for this task.

Projected Far-Term Capability and Deficiency

No projected change for this task.

Table 12.5-1. OPSHLD 5: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5
Current Overall Capability¹	G ²	G ³	G ⁴	G ⁵	R ⁶
Near/Mid-Term Overall Capability	G	G	G	G	R
Far-Term Overall Capability	G	G	G	G	R

	FAA Measure	Scale
M1	Coalition/non-U.S. forces are protected by medical prophylaxes.	<p>G: Planning and coordination is conducted to address partner forces readiness and preparations for operations with CBRN/TIM threat and includes all CBRND protective measures.</p> <p>Y: Partner forces CBRND capabilities are considered when planning operations with CBRN/TIM threat.</p> <p>R: Partner force CBRND capabilities are not considered or is inadequately considered when planning operations with CBRN/TIM threat.</p>
M2	Coalition/non-U.S. forces are equipped with or possess access to CBRN/TIM COLPRO.	<p>G: Planning and coordination is conducted to address partner forces equipping or access to COLPRO.</p> <p>Y: Partner force equipping or access to COLPRO is considered when planning operations with threat.</p> <p>R: Partner force equipping or access to COLPRO is not considered or is inadequately considered when planning operations with threat.</p>
M3	Coalition/non-U.S. forces are trained to operate in CBRN/TIM hazards.	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces training, readiness, and preparations status against COCOM and JTF requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces training meeting COCOM and JTF requirements.</p> <p>R: Process and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces training meeting COCOM and/or JTF requirements.</p>
M4	Coalition/non-U.S. forces are equipped with CBRN/TIM IPE.	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces equipping, readiness, and preparations status against COCOM and JTF requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces equipping meeting COCOM and JTF requirements.</p> <p>R: Process and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces equipping meeting COCOM and/or JTF requirements.</p>
M5	Coalition/non-U.S. forces can perform sustained CBRN/TIM operations.	<p>G: Processes and means exist to monitor, track, and assess coalition/non-U.S. forces equipping, readiness, and preparations status for sustained CBRN/TIM operations against COCOM and JTF requirements.</p> <p>Y: Processes exist to identify coalition/non-U.S. forces equipping meeting sustained CBRN/TIM operations COCOM and JTF requirements.</p> <p>R: Process and/or means are inadequate or nonexistent to identify coalition/non-U.S. forces equipping for sustained CBRN/TIM operations meeting COCOM and/or JTF requirements.</p>

¹ DOTMLPF is adequate for the coordination and integration of coalition forces. Adequate DOTMLPF exists to address and support these forces. However, DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians and MWAs. DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

² National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF staff, in coordination with coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Specific tasks, based upon the guidance and restrictions identified by the COCOM, are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF staff, in coordination with partners, determines the need for medical prophylaxis based upon the threat. A determination is made on the provision of medical prophylaxis to these forces.

³ The JTF staff, in coordination with the COCOM and coalition partner staffs, develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. Specific tasks are assigned to elements of the coalition force most capable of completing the task. Although the provision of CBRND equipment to national forces ultimately resides with their nations, mutual logistics support among coalition partners is planned to complement partners' capabilities and to minimize weaknesses. For example, U.S. Marine Corps forces were equipped with lightweight CBRN/TIM IPE by the United Kingdom during Operation Desert Storm. The U.S. installed COLPRO capabilities in Saudi critical command and control facilities for the same operation. The JTF Commander, JTF staff, and the combined staff monitor, tracks, and assess the readiness of the joint coalition force.

⁴ The JTF staff, in coordination with the COCOM and coalition partner staffs, develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. Specific tasks are assigned to elements of the coalition force most capable of completing the task. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. The COCOM and the combined staff monitor, track, and assess the readiness of the joint coalition force. Indigenous forces supporting operations may not be equipped and prepared for CBRND operations. The COCOM staff, in coordination with partners, determines the need for CBRND capabilities of these forces based upon the threat. A determination is made on the provision of CBRND capabilities and training to these forces.

⁵ The JTF staff, in coordination with the COCOM and coalition partner staffs, develops a comprehensive plan for successful achievement of the desired end states. Force requirements and commitments are obtained from each coalition participant and identified to the JTF by the COCOM. Minimum capability standards for participation and a certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are established and applied by all participants. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including sheltering, medical care, and other support activities. Indigenous forces supporting operations may not be equipped or have access to CBRND IPE. The JTF staff, in coordination with COCOM and partners, determines the need for IPE based upon the threat. A determination is made on the provision of IPE to these forces.

⁶ Sustained operations in a CBRN/TIM environment are not adequately addressed in DOTMLPF. Coalition partner DOTMLPF may or may not support operations in these conditions for sustained performance but is not addressed in existing U.S. DOTMLPF for planning consideration.

12.5.3 Functional Solution Analysis

12.5.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Coalition partner DOTMLPF may or may not support sustained operations in a CBRN/TIM environment, but is not addressed in existing U.S. DOTMLPF for planning consideration.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 2. Deficiency:** DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
- 3. Deficiency:** DOTMLPF is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 4. Deficiency:** DOTMLPF does not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training

providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

12.5.3.2 IMA Assessment Summary

N/A

12.6 Task OPSHLD 6: Ensure adequate individual protection for eligible civilians

12.6.1 Functional Area Analysis

12.6.1.1 Definition

To afford protection against CBRN/TIM agents for survival for eligible civilians (including evacuees, host-nation personnel, contractors, displaced persons, detainees, and other designated nonmilitary personnel as defined and designated by strategic and national authorities). Protection may be afforded singly or in combination by IPE, COLPRO, and medical prophylaxes. The afforded protection is commensurate with the mission and performed task and may require protection to the same level as military counterparts.

12.6.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.4.1.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.1, OP 5.3.2, OP 5.4.4, OP 5.4.5, OP 5.3.9, OP 5.4.2, OP 5.5.7, OP 5.5.8, OP 5.7, OP 5.7.4, OP 5.7.5, OP 5.7.6, OP 7, OP 7.1, OP 7.3, OP 7.4).

12.6.1.2.1 Supported Task: STSHLD 4

12.6.1.2.2 Lateral Task: OPSHA 4

12.6.1.2.3 Supporting Task: TASHLD 5

12.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Fair (civilian) personnel nutrition and health. (C2.2.4.1)
4. Good personnel physical conditioning. (C2.2.4.3)
5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)

7. Negligible personnel experience. (C2.2.4.5)
8. Limited deployed supplies. (C2.8.2)
9. Limited prepositioned materiel. (C2.8.4)
10. Limited host nation support. (C2.8.5)
11. Limited commercial procurement. (C2.8.6)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Uncertain international organization support. (C3.1.2.5)
4. Poor civil health. (C3.3.1.4)
5. TIMs present in the civilian sector. (C3.3.7.5)

12.6.2 Functional Needs Analysis

12.6.2.1 Capability and Deficiency Assessment Summary

Table 12.6-1 discusses the only capability that currently exists to perform the task to the designated standard. Procedures exist for the selected provisioning of specific eligible civilians with protective equipment. Current noncombatant evacuation operations (NEO) plans include the provisioning of non-mission support civilians (primarily military dependents at HTA fixed-site locations) with minimal protective equipment generally drawn from mission stocks or obtained commercially off-the-shelf (COTS). Some government civilians are provided and equipped with IPE as part of their primary function (e.g., hazardous materials, fire response, readiness flight (Air Force), and selected others. Deficiencies include inadequate doctrine, policy, procedures, standards, equipment, prophylaxes, training, exercising, and evaluation for CBRND for eligible civilians.

Current Capability and Deficiency

JTF HQ taffs plan, stock, equip, and train eligible civilians as necessary and appropriate for survival within a CBRN/TIM environment, including the full range of CBRN/TIM defense, including prophylaxis and IPE. The only identified individual capabilities are the existing NEO procedures addressing primarily military dependents at HTA fixed-site locations that provide for the provisioning of minimal protective equipment drawn from mission stocks or obtained COTS and the limited number of eligible civilians provided and equipped with IPE as part of their primary function. Deficiencies include the lack of a clear definition of eligible civilians; inadequate doctrine, policy, and procedures addressing CBRND of eligible civilians; the lack of IPE and medical prophylaxes addressing the variations within the population (e.g., babies, young children, disabled, tall, short, thin, obese, pregnant, etc.); and the absence of training, exercising, and evaluation of these personnel. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 12.6-1. OPSHLD 6: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	R ⁶	R ⁷	R ⁸	R ⁹	Y ¹⁰
Near/Mid-Term Overall Capability	R	R	R	R	R	R	R	R	Y
Far-Term Overall Capability	R	R	R	R	R	R	R	R	Y

	FAA Measure	Scale
M1	Policy and plans address CBRN/TIM protection of eligible civilians.	<p>G: Policies define and provide clear and specific guidance for planning and the provision of CBRND protective measures, equipment, and training to eligible civilians.</p> <p>Y: Policies provide general guidance and information for planning and the provision of CBRND protective measures, equipment, and training to eligible civilians.</p> <p>R: Clear definition and guidance for planning and provision of CBRND protective measures, equipment, and training to eligible civilians is inadequate or nonexistent.</p>
M2	Eligible civilians supporting military operations are equipped with IPE.	<p>G: All eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>Y: All mission support eligible civilians and at-risk eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>R: The training, equipping, and ready access to CBRND protective measures and equipment is limited to a select group, is nonexistent, or is inadequate to support operations.</p>
M3	Eligible civilians not supporting the mission are issued IPE.	<p>G: All eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>Y: All mission support eligible civilians and at-risk eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>R: The training, equipping, and ready access to CBRND protective measures and equipment is limited to a select group, is nonexistent, or is inadequate to support operations.</p>
M4	Eligible civilians are protected by medical prophylaxes.	<p>G: Medical prophylaxis is issued and administered to all eligible civilians.</p> <p>Y: All mission support eligible civilians and at-risk eligible civilians are issued and administered medical prophylaxis.</p> <p>R: Issuance and/or administration of prophylaxis is limited to a select group, is nonexistent, or is inadequate to support operations.</p>
M5	Eligible civilians are trained to operate in a CBRN/TIM environment.	<p>G: All eligible civilians are trained to survive and, if appropriate, operate within a CBRN/TIM environment.</p> <p>Y: All mission support eligible civilians and at-risk eligible civilians are trained to survive and, if appropriate, operate within a CBRN/TIM environment.</p> <p>R: Eligible civilian training to survive and, if appropriate, operate within a CBRN/TIM environment is limited to a select group, nonexistent, or inadequate to support operations.</p>
M6	Eligible civilian workforce requiring military force-level protection is equivalently equipped.	<p>G: All eligible civilians supporting operations are equipped with military force-level protection minimally equivalent to protection afforded military personnel performing the same function.</p> <p>Y: All eligible civilians performing mission critical functions which cannot or are not performed by uniformed personnel are provided military force-level protective equipment and measures.</p> <p>R: Protection of eligible civilians enabling the performance of functions necessary to operations is inadequate or nonexistent.</p>

M7	Eligible civilian work force requiring military force–level protection is appropriately immunized.	<p>G: All eligible civilians supporting operations are equipped with military force–level protection minimally equivalent to protection afforded military personnel performing the same function.</p> <p>Y: All eligible civilians performing mission critical functions which cannot or are not performed by uniformed personnel are provided military force–level protective equipment and measures.</p> <p>R: Protection of eligible civilians enabling the performance of functions necessary to operations is inadequate or nonexistent.</p>
M8	Protective equipment for eligible civilians covers both genders and the range of body types, ages, and disabilities of the population to be protected.	<p>G: Evacuee protective equipment is stocked, prepositioned, and readily available to cover the range of body types, genders, ages, and disabilities.</p> <p>Y: Evacuee protective equipment and measures are stocked and readily available for a target population.</p> <p>R: Evacuee protective equipment and measures are inadequate or nonexistent.</p>
M9	Required evacuee IPE (e.g., overgarment, gloves, boots, and masks) is available.	<p>G: Evacuee protective equipment is stocked, prepositioned, and readily available to cover the range of body types, genders, ages, and disabilities.</p> <p>Y: Evacuee protective equipment and measures are stocked and readily available for a target population.</p> <p>R: Evacuee protective equipment and measures are inadequate or nonexistent.</p>

¹ DOTMLPF is inadequate or nonexistent for protection of eligible civilians within a CBRN/TIM environment.

² Policies and plans do not adequately address the protection of eligible civilians from CBRN/TIM. The definition of “eligible civilians” is not clear. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

³ Some government civilians are equivalently equipped as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, most civilians performing essential activities supporting operations are not equipped to survive a CBRN/TIM environment and accomplish their tasks. This statement is particularly true of contractors. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁴ Protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians. Protective equipment drawn from mission stocks or obtained in advance COTS is considered in NEO plans for selected areas.

⁵ Prophylaxis of eligible civilians is not addressed. The issuance of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. Some government civilians may be issued medical prophylactic countermeasures as part of their primary function (e.g., hazardous materials, readiness flight [Air Force]), and selected others). However, civilians (e.g., general government employees, contractors, dependents, etc.) are not issued prophylaxis. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁶ Eligible civilians are not generally trained to operate in CBRN/TIM hazards. Some government civilians are trained as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, civilians (e.g., general government employees, contractors, dependents, etc.) generally do not receive training to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁷ Some government civilians are equivalently equipped as part of their primary function (e.g., hazardous materials, fire response, readiness flight [Air Force], and selected others). However, most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁸ Prophylaxis (CBRN/TIM vaccination) of eligible civilians is not addressed. The administration of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. Selected medical prophylaxis may be administered based upon medical judgment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

⁹ Protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians. Protective equipment drawn from mission stocks or obtained in advance COTS is considered in NEO plans for selected areas.

¹⁰ NEO plans for selected areas include the provisioning of non-mission support civilians with minimal protective equipment; generally drawn from mission stocks or obtained in advance COTS. However, protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population. Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities, are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.). JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

12.6.3 Functional Solution Analysis

12.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Policies and plans do not adequately address the protection of eligible civilians from CBRN/TIM.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations supporting the mission; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of civilian personnel and operations supporting the mission. *Personnel:* Civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 2. Deficiency:** The definition of “eligible civilians” is not clear.

Non-Materiel Solutions: *Doctrine:* Define eligible civilians supporting the mission/military operations for CBRND and establish their inclusion in the force within doctrine, policy, procedures, and TTPs. *Organization:* Identify organizational services dependent upon civilians for mission/military operations success. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians supporting the mission/military operations and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians supporting the mission/military operations. *Personnel:* Personnel meeting the definition of eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 3. Deficiency:** JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations supporting the mission; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of civilian personnel and operations supporting the mission. *Personnel:* Civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.
- 4. Deficiency:** Most civilians are not equipped or have access to IPE for survival within a CBRN/TIM environment. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the provisioning of civilians addressing the variation within a potential population. Institute in doctrine, policy, and procedures the central correlation of national and strategic plans and taskings to identify eligible civilian CBRND support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment and repositioning of CBRND assets for civilians. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations, as appropriate. *Leadership:* Implement planning and management of CBRND training, equipping, stockpiling, repositioning, and protection of eligible civilians. *Facilities:* Develop supporting infrastructure for the acquisition, stockpiling, repositioning, maintenance, and movement of eligible civilian CBRND resources.

5. **Deficiency:** Prophylaxis of eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

6. **Deficiency:** The issuance of CBRN/TIM prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

7. **Deficiency:** Eligible civilians are not generally trained to operate in CBRN/TIM hazards.

Non-Materiel Solutions: *Doctrine:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Establish CBRND training, exercise, and evaluation standards and criteria for eligible civilians.

8. **Deficiency:** Most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians supporting the mission/military operations addressing the variation within the potential protected working population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for

eligible civilians supporting the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations.

- 9. Deficiency:** Protective equipment for non-mission support civilians is not generally stocked for the full range of body types, ages, and physical capabilities inherent within a potential population.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population.

Leadership: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate.

- 10. Deficiency:** Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.).

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians not supporting the mission/military operations addressing the variation within a potential protected population.

Leadership: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians not support the mission/military operations and conduct CBRN/TIM training, exercises, and evaluations, where appropriate.

- 11. Deficiency:** DOTMLPF is inadequate or nonexistent for protection of eligible civilians within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and operations for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for civilian personnel and operations ; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

12.6.3.2 IMA Assessment Summary

N/A

12.7 Task OPSHLD 7: Provide COLPRO for all critical activities/functions, rest, and relief

12.7.1 Functional Area Analysis

12.7.1.1 Definition

To provide COLPRO by CPSs, which provide protection against CBRN/TIM hazards in particulate, liquid, or vapor forms. *JP 1-02* defines COLPRO as “protection provided to a group of individuals in a nuclear, biological, and chemical environment which permits relaxation of individual nuclear, biological, and chemical protection.” COLPRO provides a contamination-free environment where critical activities (e.g., command and control, communication, and maintenance of low-density assets) can be performed and provides Mission-Oriented Protective Posture (MOPP) relief for individuals, units, and MWAs. A CPS is a complete and integrated system of protection. The components are designed to function in concert to successfully protect the occupants. COLPRO may be incorporated in or an additive component to a fixed facility, transportable shelter, mobile mounted shelter, vehicle, aircraft, ship, or an expedient shelter. Prior to an actual attack, CPSs may be activated and the following tasks performed:

- CPSs are assessed and prepared for use. The commander may place a CPS into operation or on standby for an anticipated attack.
- Facilities, vehicles, vessels, and aircraft are prepared wherever possible against infiltration of a CBRN/TIM agent.
- Expedient shelters are established in facilities, vehicles, vessels, aircraft, etc., for protection of resources. Expedient shelters also may be constructed using available materials.

12.7.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 5, OP 5.3, OP 5.3.9, OP 5.4.2, OP 5.5, OP 5.5.8, OP 5.5.9, OP 6.2.1, OP 7, OP 7.3, OP 7.4).

12.7.1.2.1 Supported Task: STSHLD 9

12.7.1.2.2 Lateral Task: OPSHA 4

12.7.1.2.3 Supporting Tasks: TASHLD 6, TASHLD 7, TASHLD 9

12.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)

4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Partial interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)
7. Mobile facility survivability. (C2.7.6)
8. Limited deployed supplies. (C2.8.2)
9. Limited prepositioned materiel. (C2.8.4)
10. Limited host nation support. (C2.8.5)
11. Limited commercial procurement. (C2.8.6)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

12.7.2 Functional Needs Analysis**12.7.2.1 Capability and Deficiency Assessment Summary**

Table 12.7-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures exist to provide CBRND COLPRO for critical activities, functions, and to enable rest and relief of the force. Deficiencies include limitations in types, quantities, and application of existing COLPRO; and the establishment and operation of COLPRO within a CBRN/TIM environment by IPE-encumbered personnel.

Current Capability and Deficiency

JTF HQ staffs conduct planning, coordination, and allocation of COLPRO resources and taskings for protection and support of critical and operational activities and functions within a CBRN/TIM environment. They prioritize requirements for allocation of available resources based upon assessments of the threat, risk, and vulnerabilities of tasked forces; criticality of associated activities and functions; mission requirements; and the appropriateness, encumbrances, and limitations associated with alternative measures. They also direct and manage COLPRO allocation and preparedness for CBRND. Radiological (fallout) COLPRO does exist at outside the Continental United States (OCONUS) fixed sites. The combination of individual protection, contamination avoidance, and available COLPRO provides critical activities and functions with a level of capability. Allocation of limited COLPRO resources is made based upon the threat, mission, criticality of performed activity, and availability of COLPRO for the function. Planning and prioritization of COLPRO resources is performed during operational planning. Fixed-site operations within a mature theater may possess sufficient

COLPRO to provide access to personnel within a 24-hour period. The current concept for CBRN/TIM environment operations is contamination avoidance or withdrawal. Mobile COLPRO does exist in selected tactical combat mobile assets (air, ground, and sea) and support vehicles. Mature theater transportable CPSs are available in limited quantities and inclusion of Service-specific systems provides additional COLPRO capabilities to the force. Transportable CPS as an expansion of existing fixed-site capabilities is planned, as appropriate and necessary. Deficiencies include inadequate quantities and types of COLPRO, lack of COLPRO in tactical/strategic airframes (particularly airlift) and supporting vessels (e.g., hospital ships, cargo vessels, etc.); critical facility COLPRO; COLPRO systems (designs, quantities, and types) supporting highly mobile and expeditionary forces; and the lack of doctrine, policy, and procedures for the implementation and application of expedient COLPRO and the erection, maintenance, operation, and striking of COLPRO within a CBRN/TIM environment. The overall current capability is assessed as “red.”

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

Table 12.7-1. OPSHLD 7: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capability¹	R ²	Y ³	Y ⁴	R ⁵	R ⁶	R ⁷	Y ⁸	R ⁹	G ¹⁰	R ¹¹	Y ¹²	R ¹³
Near/Mid-Term Overall Capability	R	Y	Y	R	R	R	Y	R	G	R	Y	R
Far-Term Overall Capability	R	Y	Y	R	R	R	Y	R	G	R	Y	R

	FAA Measure	Scale
M1	Critical activities and functions are collectively protected.	<p>G: All critical facilities and activities are equipped with operational COLPRO.</p> <p>Y: All identified critical facilities and activities possess or are programmed to be equipped with COLPRO.</p> <p>R: COLPRO is inadequate or nonexistent to support operations.</p>
M2	Operational activities and functions are not degraded/unavailable due to CBRN/TIM attacks.	<p>G: All operational activities and functions are protected and are not degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>Y: All operational activities and functions are afforded protection and are not seriously degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>R: Protection of operational activities and/or functions is inadequate or nonexistent and may result in serious degradation or nonavailability resulting from CBRN/TIM attacks.</p>
M3	Operational capability is achievable with COLPRO.	<p>G: Sufficient and adequate COLPRO is available and operational to sustain operational capabilities in a CBRN/TIM environment.</p> <p>Y: Adequate operational capabilities for selected functions and activities are achievable with available and operational COLPRO.</p> <p>R: Operational capabilities are not achievable with available and operational COLPRO.</p>
M4	CPSs are erectable and maintainable in contaminated environment by personnel encumbered by IPE.	<p>G: COLPRO is rapidly and safely erectable/striked, placed in operation, and maintained within a CBRN/TIM environment by personnel encumbered by IPE and with minimal resources.</p> <p>Y: COLPRO is safely erectable/striked, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel.</p> <p>R: COLPRO that is safely erectable/striked, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel is nonexistent and does not exist in adequate quantities to support operations.</p>
M5	Forces are trained to apply and use expedient COLPRO.	<p>G: Forces are trained and routinely exercised and evaluated on the effective application of expedient COLPRO measures and equipment.</p> <p>Y: Forces are trained and exercised and evaluated on the application of expedient COLPRO measures and equipment upon predeployment notification for operations with threat.</p> <p>R: Training, exercising, and evaluation of forces on the application of expedient COLPRO measures and equipment is inadequate or nonexistent.</p>
M6	Required expedient collective protective kits and materials (e.g., adaptation kits, plywood, sprays, gel packs, tape, etc.) are readily available.	<p>G: The full range of expedient COLPRO kits and materials are readily available for application by forces in the field.</p> <p>Y: Expedient COLPRO kits and materials are generally available for force application in selected field environments.</p> <p>R: Expedient COLPRO kits are inadequate, unavailable, or nonexistent.</p>

M7	COLPRO is available for in-place forces.	G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations. Y: COLPRO is available in sufficient types and quantities to support major operations. R: COLPRO is inadequate or nonexistent to support operations.
M8	COLPRO is available for deploying forces.	G: COLPRO is available in required quantities and types to support the full range of envisioned and planned operations. Y: COLPRO is available in sufficient types and quantities to support major operations. R: COLPRO is inadequate or nonexistent to support operations.
M9	COLPRO is prepared (i.e., supplied, equipped, and crewed) for operation.	G: Manning, equipping, supplying, and other functional considerations for the preparation, operation, maintenance, and application of COLPRO are addressed in JTF and tasked unit plans. Y: The preparation, operation, maintenance, and application of COLPRO are generally addressed in JTF and tasked unit plans. R: JTF and tasked unit plans inadequately, or do not, address the preparation and/or application of COLPRO for operations.
M10	Required mobile CPSs are available.	G: Operational mobile CPS is available in required quantities and types to support the full range of envisioned and planned operations. Y: Operational mobile CPS is available in sufficient types and quantities to support major operations R: Operational mobile CPS is inadequate or nonexistent to support operations.
M11	Required transportable CPSs are available.	G: Operational transportable CPS is available in required quantities and types to support the full range of envisioned and planned operations. Y: Operational transportable CPS is available in sufficient types and quantities to support major operations. R: Operational transportable CPS is inadequate or nonexistent to support operations.
M12	Required CPSs for fixed facilities are installed and available.	G: All fixed facilities and activities are equipped with operational COLPRO. Y: All critical fixed facilities and activities are equipped with operational COLPRO. R: COLPRO within fixed facilities and activities is inadequate or nonexistent to support operations.

¹ DOTMLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days. Current DOTMLPF does not adequately address the establishment and operation of expedient COLPRO activities and measures.

² Not all critical facilities and activities are equipped with COLPRO. COLPRO within some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). The combination of individual protection, contamination avoidance, and available COLPRO provides critical activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to assure mission success.

³ The limited availability of COLPRO systems requires careful planning and prioritization of resources. The JTF staff allocate COLPRO resources based upon the threat, risk, and vulnerability assessments. Operational activities and functions are prioritized based upon mission, criticality, assessments, and available resources. The combination of individual protection, contamination avoidance, and available COLPRO provides operational activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to assure mission success.

⁴ Not all critical facilities and activities are equipped with COLPRO. The limited availability of COLPRO systems requires careful planning and prioritization of resources. The JTF staff allocate COLPRO resources based upon the threat, risk, and vulnerability assessments. Operational activities and functions are prioritized based upon mission, criticality, assessments, and available resources. The combination of individual protection, contamination avoidance, and available COLPRO provides operational activities and functions with a level of capability.

⁵ The encumbrances and limitations associated with IPE are considerations in the planning and conduct of operations to ensure mission success. However, current DOTMLPF does not adequately address the erection, maintenance, operations, and striking of CPS within a CBRN/TIM environment.

⁶ ECP kits, procedures, and training do not currently exist.

⁷ ECP kits, procedures, and training do not currently exist. Identification, development and/or acquisition of assets for Joint Expeditionary Collective Protection (JECP) include ECP assets for adaptation of tentage and structures to support expeditionary operations. The JECP effort is currently proceeding through the JCIDS process.

⁸ COLPRO within some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS. The limited availability of COLPRO systems requires careful planning and prioritization of resources. The JTF staff allocates COLPRO resources based upon the threat, risk, and vulnerability assessments. Operational activities and functions are prioritized based upon mission, criticality, assessments, and available resources. The combination of individual protection, contamination avoidance, and available COLPRO provides operational activities and functions with a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to assure mission success.

⁹ COLPRO within some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS. Maneuvering forces are inadequately equipped with COLPRO capabilities. Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This statement is particularly true of forward-operating light forces. Fixed-site operations within a mature theater may possess sufficient COLPRO to provide access to personnel within a 24-hour period. Current doctrine, policies, plans, and TTPs do not adequately address sustained operations within a CBRN/TIM environment. Current concept is contamination avoidance or withdrawal.

¹⁰ The JTF staff allocates COLPRO resources based upon the threat, risk, and vulnerability assessments. Planning for CBRND includes allocation of supporting services, materiel, and consumables. Manning, operation, and maintenance of the COLPRO resource is the responsibility of the allocated unit. JTF planning includes preparation of the force for CBRND. COLPRO is integral to CBRND and included in the plan.

¹¹ Quantities and availability of mobile COLPRO is inadequate. Mobile COLPRO exists in selected tactical combat and support vehicles. The quantities and types of these vehicles are limited and dedicated to specific missions. Current mobile COLPRO is inadequate to support operations by highly mobile forces. Airframe COLPRO is limited to tactical combat airframes. Airlift (both tactical and strategic) are not equipped with COLPRO. Sea-based COLPRO (the CITADEL System) is available in specific classes of naval warfare vessels (e.g., LHA, destroyer, etc.). Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.

¹² Mature theater CPS is available in limited quantities. These include JTCOPS, CP-DEPMEDS, TEMPER systems, and Service-designed systems. Integration of Service-specific systems into joint plans provides additional COLPRO capabilities. These, however, are not generally integrated in JTF plans. Current CPSs are inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprint.

¹³ COLPRO within some OCONUS locations does exist for radiological (fallout). However, COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS. COLPRO within HTA is installed and available for selected critical facilities and operations. The JTF staff allocates resources based upon the threat, risk, and vulnerability assessments. Expansion of existing COLPRO capabilities is planned, as appropriate and necessary, using transportable COLPRO systems.

12.7.3 Functional Solution Analysis

12.7.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 2. Deficiency:** CPSs for other than radiological are almost nonexistent, including critical facilities, outside HTA OCONUS.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 3. Deficiency:** Current DOTMLPF does not adequately address the erection, maintenance, operations, and striking of CPSs within a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment for CBRND. *Organization:* Develop organizational structures supporting the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment for CBRND. *Training:* Institutional and unit-level training on the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of establishing CPSs within a CBRN/TIM environment for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support erection, maintenance, operation, and striking of CPS within a CBRN/TIM environment (e.g., logistics, training, etc.).
- 4. Deficiency:** Expedient COLPRO (ECP) kits, procedures, and training do not currently exist.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization:* Develop organizational structures supporting the application of ECP for CBRND. *Training:* Institutional and unit-level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support ECP (e.g., logistics, training, etc.).
- 5. Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities

(particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership*: Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

6. **Deficiency**: Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This statement is particularly true of forward-operating light forces.

Non-Materiel Solutions: *Doctrine*: Enforce existing doctrine and policies.

7. **Deficiency**: Quantities and availability of mobile COLPRO is inadequate.

Non-Materiel Solutions: *Doctrine*: Completion of analysis and central correlation/ comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

8. **Deficiency**: Current mobile COLPRO is inadequate to support operations by highly mobile forces.

Non-Materiel Solutions: *Doctrine*: Completion of analysis and central correlation/ comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a

CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces

- 9. Deficiency:** Airlift (both tactical and strategic) are not equipped with COLPRO.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training*: Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership*: Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities*: Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.
- 10. Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization*: Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at-risk. *Training*: Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership*: Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities*: Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.
- 11. Deficiency:** Service-specific systems are not generally integrated in JTF plans.
Non-Materiel Solutions: *Doctrine*: Emphasize in doctrine, policy, and procedures the central correlation of national and strategic theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, joint and Service-specific, to include replenishment. *Leadership*: Implement development of plans and taskings consistent joint and Service-specific CBRND support capabilities.
- 12. Deficiency:** Current CPS is inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprint.
Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures standards for expeditionary forces possessing reduced logistical footprint during the first 30–90 days of operations following commencement of hostilities. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a

CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

13. Deficiency: DOTMLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days.

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, and procedures sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to perform sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force (military and eligible civilians) for sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

14. Deficiency: Current DOTMLPF does not adequately address the establishment and operation of expedient COLPRO activities and measures.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization*: Develop organizational structures supporting the application of ECP for CBRND. *Training*: Develop institutional and unit-level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership*: Ensure awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities*: Develop infrastructure to support ECP (e.g., logistics, training, etc.)

12.7.3.2 IMA Assessment Summary

N/A

12.8 Task OPSHLD 8: Supply protective measure consumables, expendables, and replacements

12.8.1 Functional Area Analysis

12.8.1.1 Definition

To ensure the supply of CBRND stocks in both medical and nonmedical categories. Items are transported and positioned in anticipation of need. Especially critical are consumables such as filters and extra sets of protective overgarments. NBC staff personnel work closely with logisticians and medical service personnel to ensure required stocks are on hand or readily available. Refer to individual Service documents for specifics.

12.8.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (OP 5.3.9, OP 5.4.2, OP 5.4.5, OP 5.5.9, OP 6.2.1, OP 7, OP 7.2, OP 7.3, OP 7.4).

12.8.1.2.1 Supported Task: STSHLD 2

12.8.1.2.2 Lateral Task: OPSHA 4

12.8.1.2.3 Supporting Task: TASHLD 8

12.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Some interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)
7. Limited deployed supplies. (C2.8.2)
8. Limited CONUS resupply. (C2.8.3)
9. No prepositioned materiel. (C2.8.4)

10. No host nation support. (C2.8.5)
11. Limited commercial procurement. (C2.8.6)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

12.8.2 Functional Needs Analysis

12.8.2.1 Capability and Deficiency Assessment Summary

Table 12.8-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures address operational planning integrating all tasked functions, activities, and staff agencies. This task includes the planning, movement, management, and positioning of CBRND materiel, including consumables, necessary to support operations. Deficiencies include the lack of CBRND systems in sufficient quantities and types to support envisioned and published plans, inadequate DOTMLPF addressing sustained operations within a CBRN/TIM environment, and CBRND of highly mobile and/or expeditionary forces with reduced logistical footprints.

Current Capability and Deficiency

JTF HQ staffs identify CBRND resource requirements and availability and conduct prepositioning, allocation, movement, distribution, reallocation, and management of resources to protect the force against the effects of CBRN/TIM agents for planned and current operations. This task includes integration of provided coalition partner and host-nation CBRND resources into CBRND plans and operations. General logistics DOTMLPF exists addressing the planning, movement, management and positioning of materiel for support of operations. Reallocation of resources and integration of coalition partner and/or host-nation contributions are addressed in existing DOTMLPF. Deficiencies include inadequate quantities and types of COLPRO, insufficient DOTMLPF for sustained operations within a CBRN/TIM environment, individual combat loads restricting available weight and space for CBRND materiel, and the absence of CBRND for MWDs. Expeditionary and highly mobile force operations, both with reduced and limited logistical support, are not adequately addressed in DOTMLPF, and the design of most CBRND systems and associated logistics do not adequately support these types of operations. Deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment; nor does the JTF staff possess clear guidance for planning and providing CBRND of these personnel and JTF elements. The overall current capability is assessed as “red.”

Projected Near/Mid-Term Capability and Deficiency

The IOC fielding of Joint Operational Effects Federation (JOEF) and Joint Effects Model (JEM) in the mid term provides increased capabilities for planning and resource determination. Otherwise, no changes from current capabilities are identified.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.8-1. OPSHLD 8: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	R²	R³	R⁴	Y⁵	Y⁶	R⁷	R⁸	G⁹
Near/Mid-Term Overall Capability	R	R	Y	Y	Y	R	R	G
Far-Term Overall Capability	R	R	Y	Y	Y	R	R	G

	FAA Measure	Scale
M1	Operational plans establish integrated support requirements (NBC, medical, logistics, etc.) for sustained CBRND operations.	<p>G: Joint operational plans establish detailed integrated JTF support requirements to support sustained operations through multiple CBRN/TIM attacks across the spectrum of operations and without unplanned and unforecasted support requirements.</p> <p>Y: Joint operational plans establish adequate integrated JTF support requirements to support sustained operations through multiple CBRN/TIM attacks involving major operations with planned and forecasted support requirements.</p> <p>R: Joint operational plans inadequately establish integrated JTF support requirements to sustain operations through multiple CBRN/TIM attacks.</p>
M2	Adequate resources are available to implement and sustain the required protective measures.	<p>G: CBRND systems and materiel are available in plan-identified required quantities and types to support multiple concurrent operations with threat.</p> <p>Y: CBRND systems and materiel are available in sufficient quantities and types to support concurrent operations with threat. Adjustments to plan requirements are made to adjust to limitations in quantities and types of CBRND systems.</p> <p>R: CBRND systems and/or materiel are not available in sufficient quantities and types to support concurrent operations with threat.</p>
M3	Forces are equipped to operate in a CBRN/TIM environment.	<p>G: Forces are adequately equipped and possess ready access to CBRND resources to conduct sustained operations in a CBRN/TIM environment.</p> <p>Y: Forces are equipped and possess access to CBRND resources to conduct operations in a CBRN/TIM environment.</p> <p>R: Forces are inadequately equipped or possess inadequate access to CBRND resources to operate in a CBRN/TIM environment.</p>
M4	Medical CBRND consumables and expendables are on hand.	<p>G: CBRND systems, components, and consumables are available in plan-identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>Y: CBRND systems, components, and consumables are identified in plans and are adjusted to limitations in quantities and types to support operations involving CBRN/TIM threat.</p> <p>R: CBRND systems, components, and consumables are inadequate or insufficient to support medical operations involving CBRN/TIM threat.</p>
M5	Nonmedical CBRND consumables and expendables are on hand.	<p>G: CBRND systems, components, and consumables are available in plan-identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>Y: CBRND systems, components, and consumables are identified in plans and are adjusted to limitations in quantities and types to support operations involving CBRN/TIM threat.</p> <p>R: CBRND systems, components, and consumables are inadequate or insufficient to support medical operations involving CBRN/TIM threat.</p>

M6	Operations are sustainable over multiple CBRN/TIM attacks based upon organic, on-hand, and issued CBRN/TIM protective assets, consumables, and expendables.	<p>G: JTF forces (including military, eligible civilians, and MWAs) are adequately equipped and possess ready access to sufficient CBRND resources to support sustained operations through multiple CBRN/TIM attacks across the spectrum of operations and without unplanned and unforecasted resupply.</p> <p>Y: JTF forces (including military and eligible civilians) are equipped and possess ready access to sufficient CBRND to support sustained operations through multiple CBRN/TIM attacks involving major operations with planned and forecasted resupply.</p> <p>R: JTF forces are inadequately equipped and/or possess limited access to CBRND resources to sustain operations through multiple CBRN/TIM attacks and/or are reliant upon resupply.</p>
M7	Support spares of equipment and supplies are available to sustain protective measures.	<p>G: CBRND systems, components, and consumables are available in plan-identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>Y: CBRND systems, components, and consumables are identified in plans and are adjusted to limitations in quantities and types to support sustained operations involving CBRN/TIM threat.</p> <p>R: CBRND systems, components, and consumables are inadequate or insufficient to support medical operations involving CBRN/TIM threat.</p>
M8	Staff efforts (NBC, medical, logistics) are integrated to prepare plan.	<p>G: JTF staff functions act cohesively and as a highly integrated advisory and expert body to the JTF Commander for the accurate and timely situational analysis, course of action (COA) development, and decisioning for JTF response, actions, and activities to a CBRN/TIM event.</p> <p>Y: JTF staff functions act as an integrated advisory body to the JTF Commander for situational analysis, COA development, and decisioning for JTF response, actions, and activities resulting from a CBRN/TIM event.</p> <p>R: JTF staff functions inadequately integrate with each other or predominantly operate autonomously of each other in support of the JTF Commander for CBRN/TIM event management and/or decisioning.</p>

¹ DOTMLPF is adequate for the planning, movement, management, and positioning of CBRND materiel in support of operations. However, DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and highly mobile force operations with reduced logistical footprints. DOTMLPF is also inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

² Doctrine, policy, and procedures for operational planning require the involvement and integration of all core and supporting functions and activities. Support requirements for CBRND are addressed in planning when there exists a CBRN/TIM threat. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

³ The allocation, placement and reallocation of protective assets is a function of the planning and operational control of the JTF Commander, JTF staff, and combined staff. ACSAs between coalition partners and/or host-nation enables acquisition and cross-servicing support between the partners. IAs provide for a wide range of support exchange including consumables, sheltering, medical care, and other support activities. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning. Quantities, types, and availability of CPSs are limited. Current CPSs are inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprints. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

⁴ The JTF staff reviews identified forces and the potential threat for planned operations. Specified forces, time permitting, train and prepare for operations involving the potential threat. Equipping the tasked force is an integral part of planning and preparation. The JTF staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff to prepare and support deploying forces as outlined by the appropriate plan. Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a

CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

⁵ Medical CBRND materiel, including consumables and expendables, are administered, issued, and prepositioned for identified CBRN/TIM threats. The types, quantities, movement, administration, issuance, and positioning of medical CBRND materiel is addressed by the JTF staff and supporting staffs during the planning and support for operations and is addressed in doctrine, policy, and procedures. Expeditionary and highly mobile force operations are particular concerns. Availability of spares and resupply will be limited for expeditionary forces during the period until the theater matures (usually the first 30–90 days). Highly mobile forces maneuvering and operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective materiel may be reduced or eliminated despite threat level. Medical CBRND materiel for MWAs is virtually nonexistent. The application of presymptomatic medical CBRND materiel to eligible civilians is not addressed in current doctrine, policy, and procedures. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

⁶ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified CBRN/TIM threat. The allocation of CBRND materiel is managed by the JTF staff. Expeditionary operations are a particular concern. Availability of spares and resupply will be limited during the period until the theater matures (usually the first 30–90 days). Maneuvering highly mobile forces operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

⁷ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Systems are reallocated, when necessary, from prepositioned and dispersed stocks of units deploying or operating within an JOA. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

⁸ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified CBRN/TIM threat. The allocation of CBRND materiel is managed by the JTF staff. The individual combat load places limitations upon weight and type of equipment and consumables. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). Availability of spares and resupply will be limited during this period. Protective equipment may be reduced or eliminated despite threat level. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

⁹ Doctrine, policy, and procedures for operational planning and operations management require the involvement and integration of all core and supporting functions and activities. Support requirements for CBRND are addressed in planning when there exists a CBRN/TIM threat. The JTF staff collects, processes, interprets, and acts upon information obtained from all applicable resources. This requires a fully integrated staff effort for accurate and timely decision-making. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

12.8.3 Functional Solution Analysis

12.8.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 2. Deficiency:** Quantities, types, and availability of CPS are limited.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of operational plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of strategic tactical plans and taskings.
- 3. Deficiency:** The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

Non-Materiel Solutions: *Leadership:* Implement development of plans and taskings consistent with stockpile and prepositioning support capabilities.
- 4. Deficiency:** A particular concern is most CBRND systems and associated logistics are not designed for expeditionary operations and/or a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of operations plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary

operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat.

Facilities: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

5. **Deficiency:** Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces.

Training: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

6. **Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival.

Organization: Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

7. **Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival.

Organization: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 8. Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.
- Non-Materiel Solutions:** *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).
- 9. Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.
- Non-Materiel Solutions:** *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization:* Identify organizational services and activities supporting survivability of MWAs and MWA mission operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 10. Deficiency:** Availability of spares and resupply will be limited for highly mobile forces maneuvering and operating in austere environments, behind adversary lines, and possessing reduced logistical footprints.
- Non-Materiel Solutions:** *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuvering highly mobile force operations with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuvering highly mobile force operations while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint using CBRND resources supporting maneuvering highly mobile force operations. *Leadership:* Recognize differences and challenges associated with maneuvering highly mobile force operations with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct maneuvering highly mobile force operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for maneuvering highly mobile force operations with a reduced logistical footprint and with a CBRN/TIM threat.

11. Deficiency: Medical CBRND materiel for MWAs is virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

12. Deficiency: The application of presymptomatic medical CBRND materiel to eligible civilians is not addressed in current doctrine, policy, and procedures.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

13. Deficiency: DOTMLPF is inadequate for expeditionary and highly mobile force operations with reduced logistical footprints.

Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures CBRND standards for expeditionary and highly mobile forces possessing reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary and highly mobile force operations while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary and highly mobile force operations with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary and highly mobile force operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary and highly mobile force operations with a reduced logistical footprint.

14. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

15. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.

12.8.3.2 IMA Assessment Summary

N/A

12.9 Task OPSHLD 9: Ensure safety of water/food supplies to protect forces**12.9.1 Functional Area Analysis****12.9.1.1 Definition**

To ensure that food and water vulnerability assessments identify potential contamination points and critical monitoring points/sites and outline protective measures. This area requires support and cooperation from medical personnel, logistics, environmental personnel, and the CBRND staff.

12.9.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.2.1, OP 2.2.3, OP 2.4.1.1, OP 2.4.2.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3.9, OP 5.4.2, OP 5.5.9, OP 6.2.10, OP 7, OP 7.3, OP 7.4)

12.9.1.2.1 Supported Task: N/A

12.9.1.2.2 Lateral Task: N/A

12.9.1.2.3 Supporting Task: N/A

12.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Normal personnel experience. (C2.2.4.5)
3. Negligible staff expertise. (C2.3.1.3)
4. Limited deployed supplies. (C2.8.2)
5. Sufficient CONUS resupply. (C2.8.3)
6. Limited prepositioned materiel. (C2.8.4)
7. Limited host nation support. (C2.8.5)
8. Limited commercial procurement. (C2.8.6)

Civil

1. Poor civil health. (C3.3.1.4)
2. High health risk. (C3.3.1.5)
3. Low economic self-sufficiency. (C3.3.4.1).
4. TIMs present in the civilian sector. (C3.3.7.5)

12.9.2 Functional Needs Analysis**12.9.2.1 Capability and Deficiency Assessment Summary**

Table 12.9-1 discusses the only capability that currently exists to perform the task to the designated standard. Doctrine, policy, procedures, and training exist for the conduct of this task. Veterinary, Bio-Environmental, and Public Health personnel are trained and perform medical intelligence analysis to assess the threat and conduct health vulnerability and risk analysis throughout the operations from preparation through post-operations to ensure the health and well-being of the force. Water and food stock safety and protection from contaminants is a function performed by elements of the Medical Services. Sources are selected and evaluated. Sampling is performed to ensure consistency of supplied edibles and potable water in the field. CBRN/TIM protection of stocks is outlined in existing doctrine, policy, and procedures. Force units are provided guidance and assistance in protecting issued stocks and for the restoration/replacement of contaminated food and potable water.

Current Capability and Deficiency

JTF Medical Services staffs identify CBRN/TIM threats to health of the force, perform and disseminate health vulnerability and risk assessments, and ensure the safety of food and water. This task includes evaluation and determination of safety of sources, protection of food and water stocks, medical surveillance for indications of CBRN/TIM contamination of food and water, and the restoration or replacement of contaminated food and water stocks. Existing doctrine, policies, and procedures address the conduct of health threat analysis, vulnerability and risk analysis, medical surveillance, the protection of food and potable water stocks, and the restoration or replacement of contaminated food and potable water stocks. No deficiencies were noted. The overall current assessment is “green.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.9-1. OPSHLD 9: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	G ²	Y ³	G ⁴	G ⁵	G ⁶	G ⁷	G ⁸
Near/Mid-Term Overall Capability	G	G	G	G	G	G	G
Far-Term Overall Capability	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Required food, water, and vector CBRN/TIM vulnerability assessments are completed and reported.	<p>G: Doctrine, policy, procedures, and TTPs exist and provide clear guidance and requirements for the performance and reporting of food, water, and vector CBRN/TIM risk and vulnerability assessments.</p> <p>Y: Doctrine, policy, procedures, and TTPs exist and provide general guidance and requirements for the performance and reporting of food, water, and vector CBRN/TIM risk and vulnerability assessments.</p> <p>R: Doctrine, policy, procedures, and TTPs are nonexistent or inadequate to provide guidance and/or requirements for the performance and/or reporting of food, water, and/or vector CBRN/TIM risk and/or vulnerability assessments.</p>
M2	Timely CBRN/TIM health risk assessment estimates are provided.	<p>G: Doctrine, policy, procedures, and TTPs exist and provide clear guidance and requirements for the timely formulation and dissemination of CBRN/TIM health risk assessments to requiring entities.</p> <p>Y: Doctrine, policy, procedures, and TTPs exist and provide general guidance and requirements for the formulation and dissemination of CBRN/TIM health risk assessments to requiring entities.</p> <p>R: Doctrine, policy, procedures, and TTPs are nonexistent or inadequate to provide guidance and/or requirements for the formulation and/or dissemination of CBRN/TIM health risk assessments to requiring entities.</p>
M3	Veterinary/Bio-Environmental/Public Health personnel are trained in food and water vulnerability assessments for CBRN/TIM environment.	<p>G: Veterinary/Bio-Environmental/Public Health personnel receive formal and recurring training on the conduct of food and water risk and vulnerability assessments and addresses CBRN/TIM threats.</p> <p>Y: Veterinary/Bio-Environmental/Public Health personnel receive training on the conduct of food and water risk and vulnerability assessments and is adequate to address CBRN/TIM threats.</p> <p>R: Training of Veterinary/Bio-Environmental/Public Health personnel is inadequate or nonexistent for the conduct of food and/or water risk and/or vulnerability assessments and/or is inadequate to assess CBRN/TIM threats.</p>
M4	Untampered food and potable water supplies are available in sufficient quantities.	<p>G: Doctrine, policy, procedures, and TTPs exist and provide clear guidance and requirements for the approval of sources and sourcing of potable water and food supplies; testing of suspected contaminated supplies, and the replacement of contaminated or unsafe food and water supplies.</p> <p>Y: Doctrine, policy, procedures, and TTPs exist and provide general guidance and requirements for the sourcing of potable water and food supplies and replacement of suspected or confirmed contaminated or unsafe supplies.</p> <p>R: Doctrine, policy, procedures, and TTPs are nonexistent or inadequate to provide guidance and/or requirements for sourcing of food and/or water supplies, and/or the replacement of suspected or confirmed contaminated or unsafe supplies.</p>

M5	Units possess plans and procedures to protect food and water supplies from CBRN/TIM contamination and restore safe food and water supplies following an attack/incident.	<p>G: Doctrine, policies, procedures, and TTPs exist and provide clear guidance and requirements for the protection of food and water supplies from contamination, inspection and testing of suspected food and water supplies, and actions to ensure the continued safe provisioning of the force.</p> <p>Y: Doctrine, policies, procedures, and TTPs exist and provide general guidance and requirements for the protection of food and water supplies from contamination, and actions to enable the safe provisioning/reprovisioning of the force.</p> <p>R: Doctrine, policies, procedures, and TTPs are nonexistent or inadequate for the protection of food and/or water supplies from contamination, and/or actions supporting the safe reprovisioning of the force.</p>
M6	Required materials and equipment are available to implement protective and restoration measures for food and water supplies.	<p>G: Doctrine, policies, procedures, and TTPs exist and provide clear guidance and requirements for the protection of food and water supplies from contamination, inspection and testing of suspected food and water supplies, and actions to ensure the continued safe provisioning of the force.</p> <p>Y: Doctrine, policies, procedures, and TTPs exist and provide general guidance and requirements for the protection of food and water supplies from contamination, and actions to enable the safe provisioning/reprovisioning of the force.</p> <p>R: Doctrine, policies, procedures, and TTPs are nonexistent or inadequate for the protection of food and/or water supplies from contamination, and/or actions supporting the safe reprovisioning of the force.</p>
M7	Forces are trained in procedures to protect and restore food and water supplies.	<p>G: Doctrine, policies, procedures, and TTPs exist and provide clear guidance and requirements for the protection of food and water supplies from contamination, inspection and testing of suspected food and water supplies, and actions to ensure the continued safe provisioning of the force.</p> <p>Y: Doctrine, policies, procedures, and TTPs exist and provide general guidance and requirements for the protection of food and water supplies from contamination, and actions to enable the safe provisioning/reprovisioning of the force.</p> <p>R: Doctrine, policies, procedures, and TTPs are nonexistent or inadequate for the protection of food and/or water supplies from contamination, and/or actions supporting the safe reprovisioning of the force.</p>

¹ Adequate doctrine, policy, and procedures exist to conduct this task.

² Adequate doctrine, policy, and procedures exist for performing and reporting food, water, and vector CBRN/TIM vulnerability assessments.

³ Adequate doctrine, policy, and procedures exist for the formulation and dissemination of health risk assessments.

⁴ Veterinary/Bio-Environmental/Public Health personnel are trained in the conduct of food and water vulnerability assessments to include CBRN/TIM threats.

⁵ Approved sourcing for potable water and food supplies are used to supply the force. Replacement of contaminated food and water supplies is addressed in existing doctrine, policy, and procedures. The availability and time to perform replacement is a function of the type of unit, location, and logistical requirements.

⁶ Adequate doctrine, policy, and procedures exist for the protection of food and water supplies from contamination and the restoration or replacement of these supplies following a CBRN/TIM attack/incident. Encapsulated field meals (e.g., meals ready to eat [MREs], etc.) and appropriately sealed containers of potable water are decontaminated and used pending restoration/replacement of contaminated edibles and potable water.

⁷ Protection of food and water supplies are dependent upon containering, location, type of contamination, and a number of other factors. Adequate doctrine, policy, and procedures exist for the protection of these supplies from contamination when possible.

⁸ Adequate doctrine, policy, and procedures exist addressing measures and requirements for the appropriate protection and restoration of food and water supplies. Encapsulated field meals (e.g., MREs, etc.) and appropriately sealed containers of potable water are decontaminated and used pending restoration/replacement of contaminated edibles and potable water.

12.9.3 Functional Solution Analysis

12.9.3.1 DOTLPF Assessment Summary

No deficiencies were noted for this task.

12.9.3.2 IMA Assessment Summary

N/A

12.10 Task OPSHLD 10: Protect equipment and supplies through coatings, coverings, and packaging to reduce contamination of contents and to contain contamination

12.10.1 Functional Area Analysis

12.10.1.1 Definition

To protect equipment and supplies against CBRN/TIM agents through the use of protective coatings such as conformal coatings for electronics, chemical agent-resistant paints for equipment, and chemical-resistant packaging for supplies. Most equipment and supplies will not be permanently protected; therefore, staging and field units will be required to employ battlespace methods to prevent contamination. Coating materials (e.g., sprays, dips), coverings (e.g., tarps, overhead cover), and packaging (e.g., boxes, bags, cans, plastic bottles) can be used to protect mission-essential items and/or prevent/reduce contamination. Unit plans and procedures should include provisions for protecting equipment and supplies from contamination. Equipment and supplies should be placed in a structure or moved from the threatened or contaminated area if possible. Exposed equipment and supplies are covered and protected upon notification of an attack. Contaminated equipment and supplies are identified and marked for decontamination.

Containment of contamination and movement and/or storage of contaminated material and samples are directed as necessary. Containment assets provide and support the ability to perform safe storage, movement, and handling of contaminated materiel. Coatings and packaging designed to preclude exfiltration of contained contaminants prevent subsequent secondary exposure of personnel and equipment.

12.10.1.2 Derivation

Joint Enabling Concept for CBRN/TIM Operations, Protection Joint Functional Concept, UJTL (OP 5.3, OP 5.3.9, OP 5.4, OP 5.4.6, OP 5.5.9, OP 7, OP 7.2, OP 7.3, OP 7.4).

12.10.1.2.1 Supported Task: N/A

12.10.1.2.2 Lateral Task: OPSHA 4

12.10.1.2.3 Supporting Task: TASHLD 9

12.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)

4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Normal personnel experience. (C2.2.4.5)
4. Negligible staff expertise. (C2.3.1.3)
5. Limited deployed supplies. (C2.8.2)
6. Sufficient CONUS resupply. (C2.8.3)
7. Limited prepositioned materiel. (C2.8.4)
8. Limited host nation support. (C2.8.5)
9. Limited commercial procurement. (C2.8.6)

Civil. N/A

12.10.2 Functional Needs Analysis

12.10.2.1 Capability and Deficiency Assessment Summary

Table 12.10-1 discusses the only capability that exists to perform the task to the designated standard. Protection policies, standards, and criteria exist for CBRND protection of equipment and supplies but are generally limited to the housing of materiel in structures, two protective coatings designed for combat vehicles, the application of layers of plastic wrap for cargo in transit, and limited specific-purpose packagings. Deficiencies include inadequate or nonexistent interoperable standards, criteria, and procedures for the protection of all classes of supply.

Current Capability and Deficiency

JTF HQ staffs identify CBRND requirements for protection of supplies and equipment and develop plans and procedures to protect these resources from CBRN/TIM contamination. They also identify materiel and actions to afford resource protection and identify requirements, materiel, resources, and taskings to accomplish the containment of contaminated resources for storage, handling, and movement. The only identified capabilities are policies, standards, and criteria addressing the housing of materiel in structures, two protective coatings (volatile and nonvolatile chemical agent-resistant coating [CARC]), the application of layers of plastic wrap for in-transit cargo, and limited specific-purpose packagings. Deficiencies include knowledge of the protective capabilities of commonly available materials, capabilities and procedures for handling exposed/contaminated equipment/supplies other than decontamination, protection of open stored materiel, and training to preclude contamination of assets. There is an absence of doctrine, policy, and procedures establishing protective pack, containerization, packaging, coverings, and coatings for equipment and supplies that conceivably may encounter contamination within a CBRN/TIM environment and address protection of all classes of supply within a CBRN/TIM environment. Further, there is a finite and limited ability to perform

containment of contaminated material for storage, handling, and movement. The overall current assessment is “red.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.10-1. OPSHLD 10.: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	R ²	R ³	R ⁴	R ³	Y ⁵	G ⁶	R ⁷	R ³	R ⁸	Y ⁹
Near/Mid-Term Overall Capability	R	R	R	R	Y	G	R	R	R	Y
Far-Term Overall Capability	R	R	R	R	Y	G	R	R	R	Y

	FAA Measure	Scale
M1	Equipment and supplies are inherently protected against CBRN/TIM contamination.	<p>G: All supplies and equipment possess inherent protection or are protected against contamination and/or the effects of CBRN/TIM agents.</p> <p>Y: Doctrine, policy, procedures, and TTPs adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, and TTPs are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>
M2	Equipment and supplies can be protected against all forms of contamination upon warning of a CBRN/TIM attack.	<p>G: All supplies and equipment possess inherent protection or are protected upon warning against contamination and/or the effects of CBRN/TIM agents</p> <p>Y: Doctrine, policy, procedures, and TTPs adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, and TTPs are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>
M3	Units possess plans and procedures for protecting supplies and equipment against CBRN/TIM contamination.	<p>G: Unit plans and procedures address the protection of all supplies and equipment against contamination and/or the effects of CBRN/TIM agents.</p> <p>Y: Doctrine, policy, procedures, and TTPs adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, and TTPs are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>
M4	Materials and facilities are available to implement supply and equipment protective measures.	<p>G: All supplies and equipment possess inherent protection or are protected upon warning against contamination and/or the effects of CBRN/TIM agents.</p> <p>Y: Doctrine, policy, procedures, and TTPs adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, and TTPs are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>
M5	Units are trained to protect equipment and supplies against CBRN/TIM contamination.	<p>G: Unit training addresses the protection of all supplies and equipment against contamination and/or the effects of CBRN/TIM agents.</p> <p>Y: Doctrine, policy, procedures, TTPs, and unit training adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, TTPs, and unit training are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>

M6	Units are trained to identify, mark, and segregate CBRN/TIM contaminated equipment and supplies.	<p>G: Doctrine, policy, procedures, TTPs, and unit training addresses the field identification, marking, and segregation of CBRN/TIM contaminated and/or exposed equipment and supplies.</p> <p>Y: Doctrine, policy, procedures, TTPs, and unit training adequately address the field identification, marking, and segregation of selected CBRN/TIM contaminated and/or exposed equipment and supplies.</p> <p>R: Doctrine, policy, procedures, TTPS, and unit training are inadequate or nonexistent for the field identification, marking, and segregation of CBRN/TIM contaminated and/or exposed equipment and supplies.</p>
M7	Equipment and supplies are protected from CBRN/TIM contamination.	<p>G: All supplies and equipment possess inherent protection or are protected upon warning against contamination and/or the effects of CBRN/TIM agents.</p> <p>Y: Doctrine, policy, procedures, and TTPs adequately address the application of commonly available materials for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p> <p>R: Doctrine, policy, procedures, and TTPS are inadequate or nonexistent for the protection of all classes of supplies and equipment from contamination and/or the effects of CBRN/TIM agents.</p>
M8	Appropriate CBRN/TIM contaminated materiel containment resources are available.	<p>G: Adequate types and quantities of CBRN/TIM contaminated material containment resources are readily available to the force for the containment of requiring CBRN/TIM contaminated and/or exposed equipment and supplies.</p> <p>Y: CBRN/TIM contaminated material containment resources are readily available to the force and doctrine, policies, procedures, and TTPs exist for the containment of selected CBRN/TIM contaminated and/or exposed equipment and supplies.</p> <p>R: Doctrine, policy, procedures, TTPS, and CBRN/TIM contaminated material containment resources are inadequate or nonexistent for application by the force to CBRN/TIM contaminated and/or exposed equipment and supplies.</p>
M9	Units process plans and procedures to apply CBRN/TIM contaminated materiel containment resources.	<p>G: Plans and procedures address the conduct of containment activities and application of readily available CBRN/TIM contaminated material containment resources to all classes of supplies and equipment contaminated and/or exposed to CBRN/TIM agents for their safe handling, storage, and transport.</p> <p>Y: Plans and procedures address the conduct of containment activities and application of commonly available containment resources to selected classes of supplies and equipment contaminated and/or exposed to CBRN/TIM agents for their safe handling, storage, and transport.</p> <p>R: Doctrine, policy, procedures, and TTPS are inadequate or nonexistent for the conduct of containment activities and/or application of containment resources to contaminated supplies and/or equipment for their safe handling, storage, and/or transport.</p>
M10	Resources are protected against secondary contamination/exposure by contained CBRN/TIM contaminated material.	<p>G: Doctrine, policy, procedures, and TTPs address the safe identification, handling, storage, and transport of contained CBRN/TIM contaminated/exposed material and measures for the prevention of secondary exposure/contamination of resources.</p> <p>Y: Doctrine, policy, procedures, and TTPs provide limited guidance and requirements for the safe identification, handling, storage, and transport of contained CBRN/TIM contaminated/exposed material and measures for the prevention of secondary exposure/contamination of resources.</p> <p>R: Doctrine, policy, procedures, and TTPS are inadequate or nonexistent for the safe identification, handling, storage, and/or transport of contained CBRN/TIM contaminated/exposed material and/or measures for the prevention of secondary exposure/contamination of resources.</p>

¹ There is inadequate DOTMLPF to protect equipment and supplies from CBRN/TIM contamination.

² Not all supplies and equipment are inherently protected or packaged to protect against CBRN/TIM contamination. Specific assets may include CBRN/TIM protection through deliberate requirements for acquisition or the nature of the enclosing packaging. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

³ Protection of equipment and supplies is generally viewed as placement under coverings (e.g., buildings, tents, tarps, etc.) Open stored material is not adequately addressed. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two. CBRN/TIM protective packagings are limited or not identified. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

⁴ Unit-level protection of equipment and supplies is generally viewed as placement under coverings (e.g., buildings, tents, tarps, etc.) Open stored material is not adequately addressed. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two. CBRN/TIM protective packagings are limited or not identified. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

⁵ Equipment and supplies protection is generally seen as placement under coverings (e.g., buildings, tents, tarps, etc.). Unit-level training for protection of equipment and supplies is generally a short briefing on covering, and not adequate to preclude unnecessary loss of assets.

⁶ Doctrine, policy, and procedures exist for the identification, marking, and segregation of contaminated material.

⁷ Protection of equipment and supplies is generally viewed as placement under coverings (e.g., buildings, tents, tarps, etc.) . Potential quantities may exceed available coverings. Open stored material is not adequately addressed. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two. CBRN/TIM protective packagings are limited or not identified. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

⁸ Segregation of contaminated material until decontamination or remediation disposal action is currently performed by the force. Protective packing, containers, and packaging for hazardous or contaminated material is generally available to those whose primary function includes the preparation and storage of this material. CBRN/TIM protective packagings are limited or not identified for other than specialized functions. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

⁹ Segregation of contaminated material until decontamination or remediation disposal action is currently performed by the force. Doctrine, policy, and procedures exist for the identification, marking, and segregation of contaminated material. Existing standards and procedures provide adequate protection of personnel against secondary exposure/contamination. Standards and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. Protective packing, containers, and packaging for hazardous or contaminated material is generally available to those whose primary function includes the preparation and storage of this material. CBRN/TIM protective packagings are limited or not identified for other than specialized functions. Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent. Protection of support equipment is inadequate. Movement of CBRN/TIM contaminated material is generally limited initially to tactical transport. The availability of air transport (tactical rotary and intratheater fixed-wing) may be restricted due to concerns about asset contamination. Intertheater (strategic) fixed-wing air transport will likely be severely restricted unless/until TRANSCOM has implemented transload operations to the theater and even then may remain very limited. The predominant means of protecting transportation assets is by decontaminating the cargo prior to loading and wrapping or containing the cargo to eliminate (if possible) or limit the contact hazard and the impact of off-gassing while on board the transporter.

12.10.3 Functional Solution Analysis

12.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Inherent protection or packaging to protect supplies and equipment against CBRN/TIM contaminations is limited.
Non-Materiel Solutions: *Doctrine:* Integrate protective measures, assets, and activities for CBRND of all classes of supplies into doctrine, policy, and procedures. *Leadership:* Implement, manage, and enforce the application of CBRND protective measures, assets, and activities for all classes of supplies. Also, awareness of need for materiel protection is critical.
- 2. Deficiency:** Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.
Non-Materiel Solutions: *Doctrine:* Include the application of commonly available materials with CBRN/TIM protective capabilities into doctrine, policy, and procedures. *Training:* Include the application of commonly available materials with CBRN/TIM protective capabilities in institutional and unit-level training, exercises, and evaluations.
- 3. Deficiency:** Doctrine addressing protection of open stored materiel is limited.
Non-Materiel Solutions: *Doctrine:* Establish and enforce doctrine, policies, procedures, and standards for CBRND protection of open stored materiel.
- 4. Deficiency:** CBRN/TIM protective coatings are limited to two.
Non-Materiel Solutions: *Doctrine:* Develop research, development, test, evaluation and acquisition (RDTE&A) plan for protection of equipment and supplies against CBRN/TIM contamination.
- 5. Deficiency:** CBRN/TIM protective coverings are limited in coverage and quantities.
Non-Materiel Solutions: *Doctrine:* Develop RDTE&A plan for protection of equipment and supplies against CBRN/TIM contamination.
- 6. Deficiency:** Potential quantities of supplies and equipment may exceed available coverings.
Non-Materiel Solutions: *Doctrine:* Establish and enforce doctrine, policies, procedures, and standards for CBRND protection of open stored materiel.
- 7. Deficiency:** Unit-level training for protection of equipment and supplies is generally a short briefing on coverings, and is limited or inadequate to preclude unnecessary loss of assets.
Non-Materiel Solutions: *Training:* Train, exercise, and evaluate the force against the standards (see Footnotes 1, 2, and 5 above) for protection of materiel, identification of contaminated materiel, and the handling of CBRN/TIM contaminated resources. *Leadership:*

Enforce compliance with established standards (see Footnote 6 above) for CBRN/TIM protective measures and activities for all classes of materiel.

- 8. Deficiency:** CBRN/TIM protective packagings are limited or not identified for other than specialized functions.
Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed to contain contamination and prevent secondary exposure/contamination during handling, storage, and transport. *Training:* Identify organizational resources and support requirements for the application of CBRN/TIM containment packaging/systems. *Organization:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems.
- 9. Deficiency:** Protection of support equipment is inadequate or limited.
Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternative methods to preclude secondary exposure/contamination in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives precluding secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives to contain contamination and preclude secondary exposure/contamination.
- 10. Deficiency:** Movement of CBRN/TIM contaminated material is generally limited initially to tactical transport. The availability of air transport (tactical rotary and intratheater fixed-wing) may be restricted due to concerns about asset contamination. Intertheater (strategic) fixed-wing air transport will likely be severely restricted unless/until Transporation Command has implemented transload operations to the theater and even then may remain very limited.
Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternative methods to preclude secondary exposure/contamination in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives precluding secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives to contain contamination and preclude secondary exposure/contamination.
- 11. Deficiency:** The predominant means of protection of supporting assets is generally limited to decontamination of the assets following secondary exposure/contamination.
Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternative methods to preclude secondary exposure/contamination of resources in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives precluding secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of

CBRN/TIM containment packaging/systems and other alternatives to contain contamination and preclude secondary exposure/contamination.

12. Deficiency: CBRN/TIM protective packagings are limited or not identified for other than specialized functions.

Non-Materiel Solutions: *Doctrine:* Integrate protective measures, assets, and activities for CBRND of all classes of supplies into doctrine, policy, and procedures. *Leadership:* Implement, manage, and enforce the application of CBRND protective measures, assets, and activities for all classes of supplies. Also, includes awareness of need for materiel protection.

13. Deficiency: There is inadequate or limited DOTMLPF to protect equipment and supplies from CBRN/TIM contamination.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing protection of materiel and supplies from CBRN/TIM contamination and the operational application of contaminated resources. *Organization:* Establish CBRND training, exercise, and evaluation criteria and programs for protection of all classes of supply; and conduct CBRND training, exercises, and evaluations. *Training:* Identify organization services and activities necessary to provide CBRND protection of equipment and supplies. *Leadership:* Implement and manage CBRND training, equipping, protective measures, and exercising.

12.10.3.2 IMA Assessment Summary

N/A

12.11 Task OPSHLD 11: Provide protective measures for forced-entry forces operating in antiaccess and area-denial CBRN/TIM environments

12.11.1 Functional Area Analysis

12.11.1.1 Definition

To provide CBRN/TIM protection for forced-entry operations consisting of airborne, air assault, and amphibious operations. All Services will be involved. Forces may be deployed by fixed-/rotary-/tilt-wing aircraft or by amphibious assault vehicles and landing craft. CBRN/TIM protection must be provided throughout the entire operation: surveillance/reconnaissance throughout the actual assault and then resupply and refit. From the adversary's position, contaminating landing/drop zones and beach landing areas with CBRN/TIM agents or weapons is a combat multiplier. Forces must be provided total FP during these operations, with CBRND readiness being an integral part. Protection includes

- CBRN/TIM sensors and detectors and warning and predictive systems,
- IPE,
- COLPRO equipment (when available and required), and
- medical protection and treatments.

The mix and types of protective resources balance operational requirements with optimal CBRN/TIM protection. The mix seeks to minimize hazards, physical encumbrances, performance limitations, and adverse impacts on force mission capabilities. Commanders must establish MOPP levels. Forces must be protected and trained to counter antiaccess and area-denial efforts by the adversary, including rapid mitigation of TIM releases.

12.11.1.4 Derivation

Joint Enabling Concept for CBRN/TIM Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.2.1, OP 2.2.3, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 5, OP 5.2.2, OP 5.4, OP 5.4.4, OP 6.2.1, OP 7, OP 7.1, OP 7.2, OP 7.3).

12.11.1.2.1 Supported Task: N/A

12.11.1.2.2 Lateral Task: N/A

12.11.1.2.3 Supporting Task: TASHLD 10

12.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)

2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Weak to marginal forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Some interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)
6. Limited staff expertise. (C2.3.1.3)
7. Limited deployed supplies. (C2.8.2)
8. No prepositioned materiel. (C2.8.4)
9. No host nation support. (C2.8.5)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Negligible to few language translators. (C3.2.1.2)
4. TIMs present in the civilian sector. (C3.3.7.5)

12.11.2 Functional Needs Analysis

12.11.2.1 Capability and Deficiency Assessment Summary

Table 12.11-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures address operational planning, training, equipping, and assessment of the force. Protective Posture Protocols are addressed during the planning and retain flexibility for adjustment by the subordinate commanders. Deficiencies include the lack of CBRND systems designed for and supporting forced-entry forces, particularly in area-denial CBRN/TIM environments.

Current Capability and Deficiency

JTF HQ staffs conduct planning, coordination, and allocation of CBRND resources and taskings for protection and support of forced-entry force operations, activities, and functions within a CBRN/TIM environment resulting from adversary antiaccess and area-denial activities. They prioritize requirements for allocation of available resources based upon assessments of the threat, risk, and vulnerabilities of tasked forces; criticality of associated activities and functions, mission requirements; and the appropriateness, encumbrances, and limitations associated with alternative measures. They also direct and manage CBRND resource allocation and preparedness for conduct of CBRND supporting mission accomplishment and force survival. Doctrine, policy, and procedures provide for the development of Protective Posture Protocols, their inclusion in

JTF plans, and subsequent implementation for the protection of the force. The allocation, placement, and reallocation of protective CBRND assets are also addressed by the JTF Commander and staff. The JTF staff reviews the identified forces and the potential threat to allocate CBRND assets appropriately to support operations. Equipping the tasked forces is an integral part of the JTF planning and preparation. Deficiencies include inadequate quantities and types of COLPRO, insufficient DOTMLPF for sustained operations within a CBRN/TIM environment for forces with reduced logistical footprint, individual combat loads restricting available weight and space for CBRND materiel, the absence of CBRND for MWDs, and the potential for forced-entry forces to be exposed to CBRN/TIM agents without warning, particularly during insertion by air or sea. The overall current capability is “yellow.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.11-1. OPSHLD 11: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	G ²	G ³	Y ⁴	R ⁵	R ⁶	Y ⁷	Y ⁸
Near/Mid-Term Overall Capability	G	G	Y	R	R	Y	Y
Far-Term Overall Capability	G	G	Y	R	R	Y	Y

	FAA Measure	Scale
M1	Operational plans establish CBRN/TIM protective measures and operating procedures.	<p>G: Threat-based, specific, flexible Protective Posture Protocols (including measures and procedures) are incorporated into plans and disseminated to all units in the force. All personnel are trained and ready to perform the associated protective actions.</p> <p>Y: General Protective Posture Protocols are incorporated into plans and disseminated to force units. Unit personnel are trained and ready to perform protective actions.</p> <p>R: Protective Posture Protocols are inadequate, not widely disseminated, and/or force personnel are not trained and/or ready to perform protective actions.</p>
M2	Protective measures account for specific potential threats.	<p>G: Threat-based, specific, flexible Protective Posture Protocols (including measures and procedures) are incorporated into plans and disseminated to all units in the force. All personnel are trained and ready to perform the associated protective actions.</p> <p>Y: General Protective Posture Protocols are incorporated into plans and disseminated to force units. Unit personnel are trained and ready to perform protective actions.</p> <p>R: Protective Posture Protocols are inadequate, not widely disseminated, and/or force personnel are not trained and/or ready to perform protective actions.</p>
M3	Adequate resources are available to implement the required protective measures.	<p>G: CBRND systems and resources are available in plan-identified quantities and types to implement identified protective actions.</p> <p>Y: CBRND systems and resources are available in sufficient quantities and types to support protective measures. Adjustments are made to adjust to limitations in quantities and types of specific CBRND systems.</p> <p>R: CBRND systems and/or resources are inadequate or not available to implement protective measures.</p>
M4	Forces trained and equipped to operate in a CBRN/TIM environment under expeditionary/forced-entry conditions.	<p>G: Forces are fully trained, exercised, evaluated, and equipped to conduct sustained operations within a CBRN/TIM environment under expeditionary/forced-entry conditions.</p> <p>Y: Forces are trained, exercised, evaluated, and equipped to conduct operations within a CBRN/TIM environment under expeditionary/forced-entry conditions.</p> <p>R: Training, exercising, evaluation, and/or equipping of forces to conduct operations within a CBRN/TIM environment under expeditionary and/or forced-entry conditions is inadequate or nonexistent.</p>

M5	Operations in CBRN/TIM environment can be sustained based upon organic and issued CBRN/TIM protective assets.	<p>G: JTF expeditionary/forced-entry forces (including military, eligible civilians, and MWAs) are adequately equipped and possess ready access to sufficient CBRND resources to support sustained operations through multiple CBRN/TIM attacks across the spectrum of operations and without unplanned and unforecasted resupply.</p> <p>Y: JTF expeditionary/forced-entry forces (including military and eligible civilians) are equipped and possess ready access to sufficient CBRND to support sustained operations through multiple CBRN/TIM attacks involving major operations with planned and forecasted resupply.</p> <p>R: JTF expeditionary/forced-entry forces are inadequately equipped and/or possess limited access to CBRND resources to sustain operations through multiple CBRN/TIM attacks and/or are reliant upon resupply.</p>
M6	COLPRO is established and operational for forces.	<p>G: Operational CPSs are available in required quantities and types to support the full range of envisioned and planned operations.</p> <p>Y: Operational CPSs are available in sufficient types and quantities to support major operations.</p> <p>R: Operational CPSs are inadequate or nonexistent to support operations.</p>
M7	Forces are trained to rapidly mitigate CBRN/TIM releases in or near areas that could adversely affect forced-entry operations.	<p>G: Doctrine, policy, procedures, TTPs, and training adequately address the rapid mitigation of CBRN/TIM releases affecting the force. Detection and warning of a release are sufficient to permit attainment of appropriate Protective Posture Protocol.</p> <p>Y: Doctrine, policy, procedures, TTPs, and training address the mitigation of CBRN/TIM releases affecting the force. Protective Posture Protocol is performed upon detection and warning.</p> <p>R: Doctrine, policy, procedures, TTPs, and/or training for mitigation of CBRN/TIM releases and/or detection and/or warning of a release is inadequate or nonexistent.</p>

¹ DOTMLPF exists for the planning, movement, and positioning of CBRND materiel in support of operations. However, DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and forced-entry operations with reduced logistical footprints. DOTMLPF is also inadequate or nonexistent addressing CBRND of MWAs.

² The JTF staff planning incorporates Protective Posture Protocols developed and disseminated by the COCOM. The protocols are adjusted based upon the potential threat and the JTF staff's assessment of force vulnerabilities, risks, mission, and the CBRN/TIM threat. Flexibility for JTF elements to further adjust the protocols for their conditions, functions, missions, and local threats are incorporated into the plan. However, the DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

³ The JTF staff planning incorporates Protective Posture Protocols developed and disseminated by the COCOM. The protocols are adjusted based upon the potential threat and the JTF staff's assessment of force vulnerabilities, risks, mission and the CBRN/TIM threat. Flexibility for JTF elements to further adjust the protocols for their conditions, functions, missions, and local threats are incorporated into the plan. However, the DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

⁴ The allocation, placement and reallocation of protective assets is a function of the planning and operational control of the JTF Commander and JTF staff. Quantities, types, and availability of CPSs are limited. Current CPSs are inadequate to support expeditionary and forced-entry operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprints. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

⁵ The JTF staff reviews identified forces and the potential threat for planned operations. Specified forces, time permitting, train and prepare for operations involving the potential threat. Equipping the tasked force is an integral part of planning and preparation. The JTF staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff to prepare and support deploying forces as outlined by the appropriate plan.

Expeditionary and forced-entry operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR. Additionally, deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

⁶ The JTF staff plans for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Systems are reallocated, when necessary, from prepositioned and dispersed stocks of units deploying or operating within an JOA. Expeditionary and forced-entry operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the JOA. Additionally, deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

⁷ The JTF staff allocates COLPRO resources based upon the threat, risk, and vulnerability assessments. Planning for CBRND includes allocation of supporting services, materiel, and consumables. Manning, operation, and maintenance of the COLPRO resource is the responsibility of the allocated unit. JTF planning includes preparation of the force for CBRND. COLPRO is integral to CBRND and included in the plan. Expeditionary operations are a particular concern. Existing COLPRO systems are not generally designed for a highly mobile/expeditionary force, with a reduced logistical footprint, and the initial period of operations until the theater matures (usually the first 30–90 days). The combination of individual protection, contamination avoidance, and available COLPRO provides a level of capability. However, the encumbrances and limitations associated with these measures are considerations in the planning and conduct of operations to assure mission success. Identification, development and/or acquisition of assets for JECP include ECP assets for adaptation of tentage and structures to support expeditionary operations. The JECP effort is currently proceeding through the JCIDS process.

⁸ Doctrine, policy, and procedures address mitigation of CBRN/TIM releases against the force. However, mitigation requires knowledge of the release in time to assume the appropriate Protective Posture Protocol. Forced-entry forces, particularly forces performing insertion by air and sea, may not be aware of the release until exposed to the CBRN/TIM agent.

12.11.3. Functional Solution Analysis

12.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The DOTMLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 2. Deficiency:** Quantities, types, and availability of CPSs are limited.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of operational plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of strategic tactical plans and taskings.
- 3. Deficiency:** Current CPSs are inadequate to support expeditionary and forced-entry operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprints.

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of operations plans to identify CBRND resources necessary and available to support expeditionary and forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary/forced-entry capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary/forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary/forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

4. **Deficiency:** The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

Non-Materiel Solutions: *Leadership:* Implement development of plans and taskings consistent with stockpile and repositioning support capabilities.

5. **Deficiency:** Expeditionary and forced-entry operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of operations plans to identify CBRND resources necessary and available to support expeditionary and forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary/forced-entry capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary/forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary/forced-entry operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

6. **Deficiency:** Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

- 7. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, training, etc.).
- 8. Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, training, etc.).
- 9. Deficiency:** Mitigation requires knowledge of the release in time to assume the appropriate Protective Posture Protocol. Forced-entry forces, particularly forces performing insertion by air and sea, may not be aware of the release until exposed to the CBRN/TIM agent.
Non-Materiel Solutions: *Doctrine:* Complete JCIDS and incorporate into doctrine, policy, and procedures detection of CBRN/TIM agents upon release by adversary and subsequent presence on ground for expeditionary/forced-entry operations. *Organization:* Ensure resources, taskings, and staff are available to perform detection and warning of force. *Training:* Train, exercise, and evaluate the force for force entry and expeditionary operations involving area-denial activities and CBRND releases by an adversary. *Leadership:* Recognize criticality of readiness of the force for potential operations involving CBRND releases and area-denial activities by an adversary, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 10. Deficiency:** DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and forced-entry operations with reduced logistical footprints.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations (medical and nonmedical) for expeditionary/forced-entry operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations (medical and nonmedical) for expeditionary/forced-entry operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force (military and eligible civilians) for sustained operations (medical and nonmedical) for expeditionary/forced-entry operations within a CBRN/TIM environment.

Leadership: Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) for expeditionary/forced-entry operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

11. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.

12.11.3.2 IMA Assessment Summary

N/A

12.12 Task OPSHLD 12: Employ protective measures to minimize effects of adversary use of CBRN weapons and TIM exposure

12.12.1 Functional Area Analysis

To protect resources (with an emphasis on people) from the effects of CBRN/TIM weapons/exposure and permit friendly forces to continue operations with minimum performance degradation. Staffs normally direct planned general protective actions and adjust actions to the situation and circumstances based upon the instructions or intent of the commander.

Commanders must balance protection against the need to perform the mission and maintain personnel in a fit-to-fight status. The results of not performing protective tasks adequately are degradation of mission or task performance as well as casualties/fatalities from CBRN/TIM exposure or contamination.

12.12.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.4.1.1, OP 2.4.1.2, OP 2.4.2.1, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.7, OP 5.4, OP 5.4.2, OP 5.4.4, OP 5.4.5, OP 5.5.8, OP 5.7.5, OP 5.7.6, OP 6.1.6, OP 6.2.1, OP 6.2.10, OP 7, OP 7.1, OP 7.2, OP 7.3, OP 7.4).

12.12.1.2.1 Supported Task: STSHLD 10

12.12.1.2.2 Lateral Task: N/A

12.12.1.2.3 Supporting Task: TASHLD 9

12.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Low personnel capability. (C2.2.4)
4. Some interoperability. (C2.2.6)
5. Partial Joint Staff integration. (C2.3.1.1)

6. Limited staff expertise. (C2.3.1.3)
7. Limited deployed supplies. (C2.8.2)
8. Limited CONUS resupply. (C2.8.3)
9. Limited prepositioned materiel. (C2.8.4)
10. No host nation support. (C2.8.5)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

12.12.2 Functional Needs Analysis

12.12.2.1 Capability and Deficiency Assessment Summary

Table 12.12-1 discusses the only capability that exists to perform the task to the designated standard. Doctrine, policy, and procedures exist for the implementation, adjustment, and direction of planned CBRND measures for the protection of deploying military forces against the effects of adversary employment of CBRN/TIM. Deficiencies include the lack of prophylaxis against all threat CBRN/TIM agents, lack of CBRND systems in sufficient quantities and types to support envisioned and published plans, CBRND of highly mobile and/or expeditionary forces with reduced logistical footprints, eligible civilian and MWA readiness for CBRND, and sustained operations within a CBRN/TIM environment.

Current Capability and Deficiency

JTF HQ staffs develop, plan, disseminate, and direct actions and activities to prepare and manage the force for CBRND operations minimizing the effects of adversary use of CBRN/TIM agents. Predeployment planning and preparation includes the vaccination of the force to an adequate level of acquired immunity against threat CBRN/TIM agents. JMETLs are developed based upon the *UJTL*, COCOM JMETLs, and identified essential tasks for mission accomplishment. Plan-identified forces are trained and assessed against the JMETLs for readiness to perform the outlined tasks. The combination of established force organic assets, materiel acquisitions, prepositioned materiel, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and relocation activities are performed as outlined in the plan and adjusted as necessary. Planning and plan execution seeks to balance mission requirements with CBRND protection of the force. DOTMLPF is adequate for planning, training, equipping, and deploying military forces. The combination of individual protection, contamination avoidance, and available COLPRO provides critical activities and functions with a level of capability. Allocation of limited COLPRO resources is made based upon the threat, mission, criticality of performed activity, and availability of COLPRO for the function. Planning and prioritization of COLPRO resources is performed during operational planning. Deficiencies include inadequate quantities and types of COLPRO, insufficient DOTMLPF for sustained operations within a CBRN/TIM environment, individual combat loads restricting available weight and space for CBRND materiel, the absence of CBRND for MWDs, lack of medical prophylaxis against all threat CBRN/TIM agents, and the efficacy of existing prophylaxis (particularly vaccines) widely varies. Current prophylaxis and supporting CBRND doctrine,

policy, and procedures fail to adequately address the application of prophylactic protection by eligible civilians and MWDs. Expeditionary and highly mobile force operations, both with reduced and limited logistical support, are not adequately addressed in DOTMLPF and the design of most CBRND systems and associated logistics do not adequately support these type of operations. Further, eligible civilians and MWDs are not adequately equipped, trained, and prepared to survive a CBRN/TIM environment; nor does the JTF staff possess clear guidance for planning and providing CBRND of these personnel and JTF elements. Current doctrine, policy, *UJTL*, procedures, and TTPs fail to address sustained operations within a CBRN/TIM environment and exercises/evaluations fail to emphasize and assess task performance (including JMETLs) in these conditions.

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.12-1. OPSHLD 12: Capability and Deficiency Assessment

Capability: JTF HQ Staff	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R²	R³	Y⁴	Y⁵	Y⁶	G⁷
Near/Mid-Term Overall Capability	R	R	Y	Y	Y	G
Far-Term Overall Capability	R	R	Y	Y	Y	G

	FAA Measure	Scale
M1	Forces are protected by medical prophylaxes.	<p>G: Medical CBRND countermeasures exist for all theat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasures exist for selected high-threat CBRN and high-risk TIM agents for U.S. military and eligible civilian members.</p> <p>R: Medical CBRND countermeasures are inadequate or do not exist for high-threat CBRN and/or high-risk TIM agents and/or application by U.S. military and/or eligible civilian members.</p>
M2	Forces are trained and equipped to operate in a CBRN/TIM environment.	<p>G: All JTF forces (military, eligible civilians, and MWAs) are adequately trained, exercised, evaluated, equipped, and prepared to perform their functions and conduct sustained operations within a CBRN/TIM environment.</p> <p>Y: JTF forces (military and eligible civilians) are trained, equipped, and prepared to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: Training, equipping, and/or preparation of the JTF forces(including military, eligible civilians, and/or MWAs) to perform their functions and/or conduct operations within a CBRN/TIM environment are inadequate or nonexistent.</p>
M3	All units that perform JMETs are fully capable of successfully performing the tasks in a CBRN/TIM environment.	<p>G: All units performing JMETLs are fully prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>Y: Units performing JMETLs are generally prepared and ready to successfully conduct their tasks within a CBRN/TIM environment.</p> <p>R: Units performing JMETLs are inadequately prepared and/or ready to successfully conduct their tasks within a CBRN/TIM environment.</p>
M4	Deploying forces meet CBRN/TIM protection standards.	<p>G: All JTF (military, eligible civilians, and MWAs) meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>Y: Military personnel and eligible civilians supporting the mission meet CBRN/TIM protection requirements to perform their functions and conduct operations within a CBRN/TIM environment.</p> <p>R: JTF forces (including military, eligible civilians, and/or MWAs) meeting CBRN/TIM protection requirements to perform functions and/or conduct operations within a CBRN/TIM environment are inadequate or nonexistent.</p>
M5	Warfighting capability is not degraded as result of enemy CBRN/TIM attacks.	<p>G: Warfighting capabilities are protected and are not degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>Y: Warfighting activities and functions are afforded protection and are not seriously degraded and/or unavailable as a result of CBRN/TIM attacks.</p> <p>R: Protection of warfighting capabilities is inadequate or nonexistent and may result in serious degradation or nonavailability resulting from CBRN/TIM attacks.</p>

M6	Adequate resources are available to implement the required protective measures.	<p>G: CBRND systems and resources are available in plan-identified quantities and types to implement identified protective measures.</p> <p>Y: CBRND systems and resources are available in sufficient quantities and types to support protective measures. Adjustments are made to adjust to limitations in quantities and types of specific CBRND systems.</p> <p>R: CBRND systems and/or resources are inadequate or not available to implement protective measures.</p>
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¹ DOTMLPF is adequate for the planning, movement, management, and positioning of CBRND materiel in support of operations. DOTMLPF is also adequate for planning, training, equipping, and deploying forces. However, DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and highly mobile force operations with reduced logistical footprints. Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment. DOTMLPF is also inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

² Medical prophylaxes are developed for the military force. Medical prophylaxis, if available, is issued/administered for identified CBRN/TIM threats to the military force. The availability of medical prophylaxis to military force members is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), and the available quantity of sufficient medical prophylaxis to meet requirements. Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat. Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR. However, the administration of many vaccines requires multiple administrations over a period of time for acquired immunity. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the JTF Commander and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis. The JTF staff, in coordination with coalition/non-U.S. forces partner staff, develop and address requirements and commitments by each partner. Although the provision of CBRND resources to national forces ultimately resides with their nations, mutual support among partners is planned to complement partners' capabilities and to minimize weaknesses. ACSAs between partners enable acquisition and cross-servicing support between the partners. The IA provides for a wide range of support exchange, including sheltering, medical care, and other support activities. The administration and issuance of prophylaxis is addressed by the JTF staff during the planning and support for operations. Indigenous forces supporting operations may not be equipped or have access to medical prophylaxis. The JTF staff, in coordination with partners, determines the need for medical prophylaxis based upon the threat. A determination is made on the provision of medical prophylaxis to these forces.

³ The JTF staff reviews identified forces and the potential threat for planned operations. Specified forces, time permitting, train and prepare for operations involving the potential threat. Equipping the tasked force is an integral part of planning and preparation. The JTF staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF staff to prepare and support deploying forces as outlined by the appropriate plan. Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁴ The JTF staff adjusts the COCOM-developed JMETLs to reflect the tasks essential to the accomplishment of the planned mission(s). The JMETLs provides the ability to develop joint training requirements, planning and executing joint training, and assessing joint proficiency. Plan-identified forces are trained and assessed against the JMETLs for readiness to perform the tasks successfully. Assessment is performed through a variety of means including inspections, exercises, and reporting. However, current doctrine the UJTL, and operational planning do not adequately address sustained operations within a CBRN/TIM environment. JMETL development generally does not specify these circumstances as an execution condition. Exercises and training do not emphasize task performance and operations in these conditions.

⁵ The JTF staff, in coordination with coalition partner staff, develops plans supporting and implementing the COCOM comprehensive campaign plan for successful achievement of the desired end states. Coordination for the planned operations conducted between partners ensures the capabilities of each partner within the full spectrum of support. Force

requirements and commitments are confirmed with each coalition participant. The COCOM and partner established minimum capability standards for participation and certification process covering areas of concern (e.g., training level competence, logistics capabilities, deployment, sustainment, and redeployment readiness, etc.) are applied by all participants. The JTF Commander, JTF staff, and the combined staff monitor, track, and assess the readiness of the joint coalition force. However, deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁶ The JTF staff planning and plan execution seeks to balance mission requirements with protection of the force against CBRN/TIM threat(s). Planning considers the impact of operations within CBRN/TIM environments and provide for adjustments to ensure successful retention of warfighting capabilities. Operations within a CBRN/TIM environment will degrade individual and unit capabilities. The combination of training, readiness, and flexibility to adjust and maintain operational capabilities provides the basis for maintenance of mission capability. However, current DOTMLPF and operational planning do not adequately address sustained operations within a CBRN/TIM environment. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs.

⁷ The allocation, placement, and reallocation of protective assets is a function of the planning and operational control of the JTF Commander, JTF staff, and combined staff. ACSAs between coalition partners and/or host-nation enables acquisition and cross-servicing support between the partners. IAs provides for a wide range of support exchange including consumables, sheltering, medical care, and other support activities. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning. Quantities, types, and availability of CPSs are limited. Current CPSs is inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprints. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

12.12.3 Functional Solution Analysis

12.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Forces are not protected against all identified threat CBRN/TIM capabilities.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 17 above) for prophylactic CBRND protection.
- 2. Deficiency:** Medical prophylaxis does not exist for all threat CBRN and TIM agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 3. Deficiency:** Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards for prophylactic CBRND protection.
- 4. Deficiency:** Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR.
Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

- 5. Deficiency:** The administration of many vaccines requires multiple administrations over a period of time for acquired immunity.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures requirement for CBRN/TIM protective prophylaxis protecting the force through the deployment cycle. *Organization:* Establish organizational incentives to address CBRN/TIM protective prophylaxis providing protection of the force throughout the deployment cycle. *Leadership:* Ensure standards, criteria, and metrics for CBRN/TIM medical prophylaxis R&D are concise and adequately protect the force throughout the deployment cycle with a minimum of administrations, preferably one.
- 6. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs and eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs and eligible civilians.
- 7. Deficiency:** Prophylaxis for MWAs is virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).
- 8. Deficiency:** Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.
- 9. Deficiency:** Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians

addressing the variation within a potential protected population. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilians.

- 10. Deficiency:** The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

- 11. Deficiency:** Prophylaxis against most high-threat TIMs are not currently available.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training*: Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership*: Enforce compliance with established metrics (see Footnote 7 above) for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

- 12. Deficiency:** The efficacy of existing prophylaxis, particularly vaccines, widely varies.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.

- 13. Deficiency:** Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine*: Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage

operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 14. Deficiency:** Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AOR.

Non-Materiel Solutions: *Doctrine*: Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during throughout deployment, redeployment, relocation, and en route phases of movement. *Organization*: Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training*: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership*: Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities*: Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

- 15. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training*: Provide institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for eligible civilians survivability. *Personnel*: Ensure that eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 16. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Provide institutional and unit training of MWA handlers and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting

infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 17. Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:*

Implement and manage CBRND training, equipping, and protection of eligible civilians.

Personnel: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g.,

logistics, medical, training, communications, etc.).

- 18. Deficiency:** The JTF staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization:* Identify

organizational services and activities supporting survivability of MWAs and MWA mission operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and

programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:*

Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 19. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL*

sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a

CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness

of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

- 20. Deficiency:** JMETL development generally does not specify sustained operations within a CBRN/TIM environment as an execution condition.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL*

sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a

CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness

of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

21. Deficiency: Exercises and training do not emphasize sustained task performance and operations in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, *UJTL*, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

22. Deficiency: Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTMLPF and, subsequently, in planning.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.

23. Deficiency: Quantities, types, and availability of CPSs are limited.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of operational plans and taskings to identify CBRND support requirements for two or more concurrent operations with CBRN/TIM threat with comparison to existing and programmed quantities and types of CBRND systems and resources. *Leadership:* Implement development of plans and taskings consistent with available CBRND capabilities as determined by central correlation and comparison of strategic tactical plans and taskings.

24. Deficiency: Current CPS is inadequate to support expeditionary operations, particularly in austere environments by highly mobile forces and possessing reduced logistical footprints.

Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures standards for expeditionary forces possessing reduced logistical footprint during the first 30–90 days of operations following commencement of hostilities. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities

and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

25. Deficiency: The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

Non-Materiel Solutions: *Leadership*: Implement development of plans and taskings consistent with stockpile and repositioning support capabilities.

26. Deficiency: DOTMLPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and highly mobile force operations with reduced logistical footprints.

Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures CBRND standards for expeditionary and highly mobile forces possessing reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary and highly mobile force operations while possessing reduced logistical footprint. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operation using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary and highly mobile force operations with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary and highly mobile force operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary and highly mobile force operations with a reduced logistical footprint.

27. Deficiency: Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Organization*: Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training*: Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership*: Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Personnel*: Ensure that eligible civilian personnel and operations supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

28. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

29. Deficiency: DOTMLPF is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.

12.12.3.2 IMA Assessment Summary

N/A

12.13 Task OPSHLD 13: Establish large-scale medical CBRND operations

12.13.1 Functional Area Analysis

12.13.1.1 Definition

To establish and implement the timely, efficient, and consistent application of medical care and measures preparing and protecting the force against the debilitating effects of CBRN/TIM hazards (threat or actual). This task includes the identification, movement, application, and management of resources to perform immunizations of the force and eligible civilians, isolate infected or contaminated personnel and/or MWAs until risk is resolved, and conduct quarantine to prevent the spread of infectious disease. The task addresses the full range of necessary resources required to attend to and resolve the circumstances.

12.13.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 1.3.1, OP 2.4.1.2, OP 2.4.1.1, OP 5.1.1, OP 5.2, OP 5.2.1, OP 5.2.2, OP 5.3, OP 5.3.9, OP 5.4, OP 5.5.9, OP 5.7, OP 5.7.4, OP 5.7.5, OP 5.7.6, OP 6.2.10, OP 5.4.4, OP 7, OP 7.3, OP 7.4).

12.13.1.2.1 Supported Task: N/A

12.13.1.2.2 Lateral Task: OPSHA 7

12.13.1.2.3 Supporting Task: TASHLD 12

12.13.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal to strong forces assigned. (C2.2.1)
3. Multiple competing apportionments. (C2.2.2)
4. Marginal forces allocated. (C2.2.3)
5. Fair personnel nutrition and health. (C2.2.4.1)
6. Good personnel physical conditioning. (C2.2.4.3)

7. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
8. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
9. Limited personnel experience. (C2.2.4.5)
10. Severe personnel fatigue. (C2.2.4.6)
11. Some interoperability. (C2.2.6)
12. Partial Joint Staff integration. (C2.3.1.1)
13. Limited staff expertise. (C2.3.1.3)
14. Limited deployed supplies. (C2.8.2)
15. Limited CONUS resupply. (C2.8.3)
16. Limited prepositioned materiel. (C2.8.4)
17. Limited host nation support. (C2.8.5)
18. Limited commercial procurement. (C2.8.6)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Uncertain international organization support. (C3.1.2.5)
3. Severe restraints on action. (C3.1.3.4)
4. Poor civil health. (C3.3.1.4)
5. High health risk. (C3.3.1.5)
6. Severe refugee impact. (C3.3.2)

12.13.2 Functional Needs Analysis

12.13.2.1 Capability and Deficiency Assessment Summary

Table 12.13-1 discusses the two capabilities existing to perform the task to the designated standard. The JTF Commander and staff identify the required capabilities and conduct planning and coordination to identify CBRND resources, requirements, and taskings for CBRND. This task includes the integration of medical operations and support requirements for CBRND as well as the direction for development of supporting medical plans and procedures. Doctrine, policy, and procedures exist for the planning, equipping, and deployment of forces and coordination of Medical Services support for CBRND operations. Deficiencies include inadequacies in DOTMLPF addressing eligible civilians and MWDs for CBRND and sustained medical operations within a CBRN/TIM environment. The second capability is within Medical Services and the Medical Services staffs. They coordinate with the JTF and COCOM staff to address medical aspects and support requirements for JTF planning and operations. The Medical Services staff(s) prepares medical plans to support JTF plans and include CBRND considerations and requirements in the plans. The staff further identifies required capabilities, conducts planning and coordination to identify medical and support resources to ensure medical care and measures to prepare and protect the force, including the identification, movement, application, and management of Medical Service and medical CBRND resources. Adequate DOTMLPF exists for planning, equipping, and deploying of forces, and for coordination of Medical Services support. Deficiencies include inadequacies in DOTMLPF for preparing and equipping deploying eligible civilians and MWDs; sustained operations in CBRN/TIM environments; and addressing large-

scale medical operations, especially quarantine operations potentially involving non-U.S. personnel.

Current Capability and Deficiency

The JTF and Medical Services staff planning includes predeployment medical screening and the repositioning, allocation, and distribution of medical prophylaxis. JTF plans generally address medical measures in generic terms and refer to implementing or topic medical plans. The Medical Services staff planning addresses the specifics to perform medical activities and procedures in support of the COCOM plans. The invocation of quarantine and enforcement of medical isolation are Medical Services decisions, coordinated with the JTF Commander and JTF staff, and supported by the JTF. The prevention of the need for stringent mass medical activity includes predeployment screening, the provision of medical prophylaxis, and medical surveillance. Coordination between the JTF and Medical Services staffs provides for an integrated and rapid response to an event. Should large-scale medical operations be required (e.g., mass immunizations, quarantine, etc.), both staffs respond applying their resources as appropriate. However, plans and policies addressing the tracking and/or reporting of implementation and/or conduct of large-scale medical operations within the JOA are inadequate, nonexistent, and/or are not coordinated between the JTF and Medical Services staffs. Deficiencies also include inadequate DOTMLPF to address large-scale medical CBRN/TIM operations, particularly sustained medical operations within a CBRN/TIM environment. JTF and Medical Services actions associated with large-scale medical operations (especially those involving non-U.S. personnel such as indigenous civilians, third-party nations, and others) is not adequately discussed and outlined in DOTMLPF. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Efficacy of the medical prophylaxis that does exist widely varies. Their application to eligible civilians and MWAs is inadequately addressed in existing DOTMLPF. DOTMLPF is also inadequate for large-scale medical quarantine and/or enforcement of medical isolation by both Medical Services and the JTF.

Projected Near/Mid-Term Capability and Deficiency

Standards for CBRND medical training of deployable medical personnel will continue to provide a basis for improved medical capabilities. However, these standards are not established in joint doctrine and provide basic capabilities. The IOC fielding of JOEF and JEM provide capabilities for planning and CBRND needs determination. The potential does exist for assistance with planning and response determination for mass-CBRN casualties. Otherwise, no change projected for this task.

Projected Far-Term Capability and Deficiency

JOEF and JEM are fully fielded. Otherwise, no change is projected from the mid term.

Table 12.13-1. OPSHLD 13: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14
Current														
JTF HQ Staff	R ¹	R ²	R ³	R ⁴	Y ⁵	G ⁶	R ⁷	Y ⁸	Y ⁹	R ¹⁰	R ¹	R ¹¹	R ¹¹	Y ¹¹
JTF Medical Services (Medical Services Staff)	Y ¹²	R ¹³	R ¹⁴	R ⁴	Y ¹⁵	G ¹⁶	R ¹⁷	Y ¹⁸	Y ¹⁹	R ¹⁹	R ²⁰	R ²⁰	R ²¹	Y ²²
Near/Mid														
JTF HQ Staff	R	Y	R	R	Y	G	R	Y	Y	Y	Y	Y	R	Y
JTF Medical Services (Medical Services Staff)	Y	Y	R	R	Y	G	R	Y	Y	Y	Y	Y	R	Y
Far														
JTF HQ Staff	R	G	Y	R	Y	G	R	Y	Y	Y	Y	G	R	Y
JTF Medical Services (Medical Services Staff)	Y	G	Y	R	Y	G	R	Y	Y	Y	Y	G	R	Y
Current Overall Capability²³	R ²⁴	R ²⁵	R ²⁶	R ²⁷	Y ²⁸	G ²⁹	R ³⁰	Y ³¹	Y ³²	R ³²	R ³³	R ³⁴	R ³⁵	Y ³⁶
Near/Mid-Term Overall Capability	Y	Y	R	R	Y	G	R	Y	Y	Y	Y	Y	R	Y
Far-Term Overall Capability	R	G	Y	R	Y	G	R	Y	Y	Y	Y	G	R	Y

	FAA Measure	Scale
M1	Plans are modified for the area to address large-scale medical operations resulting from CBRN/TIM exposure/contamination.	<p>G: Detailed plans exist and are coordinated between JTF and Medical Services staffs for large-scale CBRN/TIM medical operations within the JOA involving the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Plans exist and are coordinated between JTF and Medical Services staffs for Medical Services support of operations within the JOA involving CBRN/TIM threat and address large-scale medical operations the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>R: Plans addressing large-scale medical operations within the JOA are inadequate, nonexistent, not coordinated between the COCOM and Medical Services staffs, and/or do not address the forces and/or non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).</p>

M2	Plans are prepared for implementation of the establishment and operation of mass quarantine, including conditions and authorities required to invoke quarantine and/or enforce medical isolation.	<p>G: Detailed policies and plans exist and are coordinated between JTF and Medical Services staffs specifying the conditions and appropriate authorities and actions/activities to invoke quarantine and/or enforce medical isolation for large-scale CBRN/TIM medical operations within the JOA involving forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Policies and plans exist and are coordinated between JTF and Medical Services staffs for large-scale Medical Services operations within the JOA involving quarantine and/or enforcement of medical isolation.</p> <p>R: Plans and policies addressing large-scale medical quarantine and/or medical isolation operations within the JOA are inadequate, nonexistent, and/or are not coordinated between the JTF and Medical Services staffs.</p>
M3	All JOA medical facilities are able to treat and isolate contaminated/infectious casualties.	<p>G: All JOA medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. All assigned medical practitioners and medical support personnel (including EMS, medical aides, etc.) are formally trained, and receive recurring training, for the evaluation and care of contaminated/exposed casualties. Medical provider-based medical treatment is provided, when needed, throughout the process from reception to post-decontamination.</p> <p>Y: JOA medical facilities are equipped and exercised for the reception, decontamination, and treatment of contaminated/exposed casualties. Formal training is available to for the evaluation and treatment of contaminated/exposed casualties. Medical support personnel (including EMS, medical aides, etc.) are trained, on the evaluation, decontamination, and care of contaminated/exposed casualties.</p> <p>R: The ability of JOA medical facilities to treat contaminated/exposed casualties is inadequate or nonexistent.</p>
M4	Forces are immunized for biological threats.	<p>G: Medical CBRND countermeasures exist and are administered for all threat biological agents and encompass all eligible at-risk populations.</p> <p>Y: Medical CBRND countermeasures exist and are administered to U.S. military and eligible civilian members for threat biological agents.</p> <p>R: Medical CBRND countermeasures are inadequate or do not exist for threat biological agents.</p>
M5	Preventive medicine policy and countermeasures are implemented for identified medical threats for the JOA (after deployment).	<p>G: Detailed plans and policies exist and are coordinated between JTF and Medical Services staffs for the effective application of preventative medicine activities and countermeasures addressing the health and well-being of the entire force and includes large-scale medical activities addressing both the force and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Plans exist and are coordinated between JTF and Medical Services staffs for preventative medicine activities and countermeasures for support of operations and the general health and well-being of the force.</p> <p>R: Preventative medicine activities and/or countermeasures plans and/or policies are inadequate or nonexistent for support of operations and/or the general health and well-being of the force.</p>
M6	Force has completed deployment medical preparation.	<p>G: JTF forces are medically prepared for operations with threat.</p> <p>Y: Selected JTF forces generally are generally medically prepared for operations with threat.</p> <p>R: JTF forces medical preparedness for operations with threat is inadequate or nonexistent.</p>
M7	JOA-wide system is in-place and operational for tracking status of U.S. personnel and MWA vaccines, antidotes, and medical treatment provided.	<p>G: JOA medical information systems incorporate automated tracking of the status and administration of vaccines, antidotes, and medical treatment for U.S. personnel and MWAs.</p> <p>Y: JOA medical information systems incorporate automated tracking of the status and administration of vaccines, antidotes, and medical treatment for U.S. personnel.</p> <p>R: JOA medical information systems incorporating automated tracking of the status and/or administration of vaccines, antidotes, and medical treatment is inadequate or nonexistent.</p>

M8	Disease and CBRN/TIM medical protective countermeasures are issued.	<p>G: Medical disease preventatives and CBRN/TIM countermeasures are available for issue and administration to all at-risk populations, including military members, eligible civilians, and MWAs.</p> <p>Y: Medical disease preventatives and CBRN/TIM countermeasures are issued and administered to military personnel.</p> <p>R: Medical disease preventatives and CBRN/TIM issuance and/or administration is inadequate or nonexistent.</p>
M9	Procedures are implemented to track and follow up on CBRN/TIM infectious/contaminated personnel and MWAs.	<p>G: Medical information systems incorporate automated tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure from system entry until release from service. Systems incorporate ability to identify potential related issues and problems with medical treatment and care for tracked personnel.</p> <p>Y: Tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure is performed by a combination of manual and automated processes and systems.</p> <p>R: Tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure is inadequate or nonexistent.</p>
M10	Potentially exposed personnel are identified and in treatment or treated and released.	<p>G: Medical information systems incorporate automated tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure from system entry until release from service. Systems incorporate ability to identify potential related issues and problems with medical treatment and care for tracked personnel.</p> <p>Y: Tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure is performed by a combination of manual and automated processes and systems.</p> <p>R: Tracking of personnel exposed to, affected by, and/or treated for CBRN/TIM exposure is inadequate or nonexistent.</p>
M11	Large-scale quarantine sheltering and treatment operations are established and operating in accordance with medical plans.	<p>G: Detailed policies and plans exist and are coordinated between JTF and Medical Services staffs to track and report the implementation and conduct of large-scale CBRN/TIM medical operations within the JOA involving forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Policies and plans exist and are coordinated between JTF and Medical Services staffs for the tracking and reporting of implementation and conduct of large-scale Medical Services operations within the JOA.</p> <p>R: Plans and policies addressing the tracking and/or reporting of implementation and/or conduct of large-scale medical operations within the JOA are inadequate, nonexistent, and/or are not coordinated between the JTF and Medical Services staffs.</p>
M12	Large-scale quarantine sheltering and treatment operations meeting actual needs.	<p>G: The JTF and Medical Services staffs maintain ongoing relationship to track and coordinate adjustments to plans, policies, and resource taskings to ensure large-scale quarantine sheltering and treatment operations within the JOA meet actual needs.</p> <p>Y: The JTF and Medical Services staffs coordinate adjustments to plans and taskings to address large-scale quarantine sheltering and treatment operations needs.</p> <p>R: JTF and Medical Service coordination is inadequate or nonexistent to address large-scale quarantine sheltering and/or treatment operations needs.</p>

M13	Contaminated/infectious casualties (US, host nation), both human and MWA, are safely transported to large-scale quarantine sheltering and treatment operations.	<p>G: Doctrine, policy, procedures, TTPs, training, and plans address the application of protective assets and the safe handling and transport of exposed or contaminated casualties/MWAs, including those medically unable to wear IPE, and specify requirements and measures for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>Y: Doctrine, policy, procedures, TTPs, training, and plans address the safe handling and transport of exposed or contaminated casualties and identify general measures for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>R: Doctrine, policy, procedures, TTPs, training, and/or plans are nonexistent or inadequate to address the safe handling and/or transport of exposed or contaminated casualties and/or identification of general measures for the protection of personnel, activities, and/or resources performing the handling and/or transport.</p>
M14	Required resources are available to perform mass medical operations.	<p>G: Detailed policies and plans exist and are coordinated between JTF and Medical Services staffs identifying and tasking resources for the implementation and support of large-scale CBRN/TIM medical operations within the JOA involving forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>Y: Policies and plans exist and are coordinated between JTF and Medical Services staffs for the identification and tasking of resources to implement and support large-scale Medical Services operations within the JOA.</p> <p>R: Plans and policies addressing the identification and/or tasking of resources implementing and/or supporting large-scale medical operations within the JOA are inadequate, nonexistent, and/or are not coordinated between the JTF and Medical Services staffs.</p>

¹ JTF staff plans include predeployment medical screening and the stockpiling, allocation, and distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is address in medical support plans. Planning for large-scale medical operations are based upon COCOM and Strategic Theater Medical Services plans and coordinated by the Medical Services staffs with the JTF staff for JTF support and appropriate resourcing. However, DOTMLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or JTF actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

² JTF plans address medical activities by referring to appropriate medical plans, policies, and procedures. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The JTF staff provides support as defined in the coordinated and appropriate medical plans. However, DOTMLPF is inadequate to address JTF actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³ Existing medical facilities within a HTA exercise the reception of contaminated/exposed casualties. Training for the treatment of contaminated/exposed casualties is available through AMEDD but is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the JTF staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners. Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTMLPF and current medical operations are limited in their isolation abilities.

⁴ Medical prophylaxis does not exist for all threat biological agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Force protection using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), on-going operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary biological agent employment is a function of the preplanning and deployment operations. The JTF staff directs the implementation of these measures when and as appropriate based upon established plans and Medical Services guidance. However, the application of medical prophylaxis is not adequately addressed for eligible civilians and MWA within the force.

⁵ The Medical Services staff plans and associated policies address medical activities and procedures, including Preventative Medicine. Medical surveillance and the implementation of medical countermeasures are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Preventive Medicine support requirements, associated taskings, and their inclusion in JTF staff planning. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

⁶ COCOM and JTF plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. However, predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat. The routine rotation and movement of personnel to and from units. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. The JTF staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment.

⁷ Current medical systems are stovepiped and require manual intervention to share information. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported. Unit reporting includes CBRND readiness but is not linked to medical information systems. Reliance is placed upon the individual's vaccination record and health record (both manual records) to reflect the most recent status of the individual. However, these records are not always available or complete.

⁸ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the JTF and Medical Services staff during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

⁹ Doctrine, policy, and procedures exist to identify potentially exposed units and personnel for treatment and medical surveillance. Potentially affected units are identified to the JTF staff and appropriate medical actions are taken. However, current medical systems are stovepiped and require manual intervention to share information. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported.

¹⁰ Doctrine, policy, and procedures exist to identify potentially exposed units and personnel for treatment and medical surveillance. Potentially affected units are identified to the JTF staff and appropriate medical actions are taken. However, current medical systems are stovepiped and require manual intervention to share information. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported.

¹¹ JTF plans address medical activities by referring to appropriate medical plans, policies, and procedures. The implementation and operation of large-scale quarantine sheltering and treatment operations are with purview of medical authorities. The JTF staff provides support and resources as defined in the coordinated and appropriate medical plans and as adjusted to meet specific circumstances and as requested by appropriate medical authorities. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹² JTF plan support planning by Medical Services staff includes predeployment medical screening and the stockpiling, allocation, and administration/ distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is addressed in the Medical Services plans. Planning for large-scale medical operations are based upon COCOM and Strategic Theater Medical Services plans and coordinated by the Medical Services staffs with the JTF staff for JTF support and appropriate resourcing. However, DOTMLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹³ The Medical Services staff plans and develops associated policies addressing medical activities and procedures to support JTF operations. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Medical Services support requirements and associated taskings and their inclusion in JTF staff planning. However, DOTMLPF is inadequate to address Medical Services actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹⁴ Existing medical facilities within an HTA exercise the reception of contaminated/exposed casualties. Training for the treatment of contaminated/exposed casualties is available through AMEDD but is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the Medical Services staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners. Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTMLPF and current medical operations are limited in their isolation abilities.

¹⁵ The Medical Services staff plans and associated policies address medical activities and procedures, including Preventative Medicine. Medical surveillance and the implementation of medical countermeasures are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Preventive Medicine support requirements, associated taskings, and their inclusion in JTF staff planning. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹⁶ COCOM and JTF plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. However, predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat. The routine rotation and movement of personnel to and from units. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. The Medical Services staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment.

¹⁷ Current medical systems are stovepiped and require manual intervention to share information. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported. Unit reporting includes CBRND readiness but is not linked to medical information systems. Reliance is placed upon the individual's vaccination record and health record (both manual records) to reflect the most recent status of the individual. However, these records are not always available or complete.

¹⁸ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the JTF and Medical Services staff during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

¹⁹ Doctrine, policy, and procedures exist to identify potentially exposed units and personnel for treatment and medical surveillance. Potentially affected units are identified by Medical Services to the JTF staff and appropriate medical actions are taken. However, current medical systems are stovepiped and require manual intervention to share information. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported.

²⁰ The Medical Services staff plans and associated policies address medical activities and procedures. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Medical Services support requirements and associated taskings and their inclusion in JTF staff planning. However, DOTMLPF is inadequate to address Medical Services actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²¹ Existing standards and procedures provide adequate protection of handling and transporting personnel against secondary exposure/contamination and require the application of protective equipment and measures if the potential exists for contamination/exposure. Unit-level training is limited to the movement of casualties to the medical facility and is predominantly reliant upon tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties. Exposed and contaminated casualties (human and MWA) unable to wear IPE are not adequately addressed in doctrine, policy, and standards. Protective equipment is not available for these casualties. Casualties able to wear standard IPE are required to apply the equipment outside of CPSs. However, medical units are not provided stocks of standard IPE for use by patients. Medical policy is the patient's unit is responsible for providing the equipment to the medical unit for use by the patient.

Operationally involved units may be delayed, at best, in providing the equipment. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²² The JTF and Medical Services staff conduct coordinated planning for operations using the COCOM-identified forces for the potential threat. Equipping the tasked Medical Services elements is an integral part of planning and preparation. The combination of established element organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the Medical Services staff with the JTF staff and COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Medical resources and systems are reallocated, when necessary and in coordination with the JTF staff, from prepositioned and dispersed stocks of Medical Services elements deploying or operating within an JOA. Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the JTF. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF Medical Services staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²³ DOTLPF is adequate for planning, equipping, deployment of forces, and coordination of Medical Services support. DOTLPF is inadequate to support sustained operations within a CBRN/TIM environment, particularly expeditionary operations, during the first 30–60 days. Current DOTLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment. Current DOTLPF is inadequate for preparing and equipping deploying eligible civilians and MWAs. DOTLPF is also inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or COCOM actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.). DOTLPF is, further, inadequate for medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).

²⁴ JTF staff plans and supporting JTF Medical Services plans include predeployment medical screening and the stockpiling, allocation, and distribution of medical prophylaxis. Specific implementation for the application of prophylactic immunizations is addressed in Medical Services support plans. Planning for large-scale medical operations are based upon COCOM and Strategic Theater Medical Services plans and coordinated by the Medical Services staffs with the JTF staff for JTF support and appropriate resourcing. DOTLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or JTF staff and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²⁵ JTF plans address medical activities by referring to appropriate medical plans, policies, and procedures. The Medical Services staff plans and develops associated policies addressing medical activities and procedures to support JTF operations. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The JTF staff provides support as defined in the coordinated and appropriate medical plans. The Medical Services staff coordinates with the JTF staff for Medical Services support requirements and associated taskings and their inclusion in JTF staff planning. DOTLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or JTF staff and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²⁶ Existing medical facilities within an HTA exercise the reception of contaminated/exposed casualties. Voluntary institutional training for the treatment of contaminated/exposed casualties is available through AMEDD. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. AMEDD institutional training for the treatment of contaminated/exposed casualties is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the JTF staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners. Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTLPF and current medical operations are limited in their isolation abilities.

²⁷ Force protection using medical prophylaxis is dependent upon identification of the threat, preplanning for a threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary biological agent employment is a function of the preplanning and deployment operations. The JTF staff directs the implementation of these measures when and as appropriate based upon established plans and Medical Services guidance. Medical prophylaxis does not exist for all threat biological agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding

MWAs and eligible civilians. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. The application of medical prophylaxis is not adequately addressed for eligible civilians and MWAs within the force.

²⁸ The Medical Services staff plans and associated policies address medical activities and procedures, including Preventative Medicine. Medical surveillance and the implementation of medical countermeasures are within the purview of medical authorities and are a consideration for medical planning for operations with a CBRN/TIM threat. The Medical Services staff coordinates with the JTF staff for Preventive Medicine support requirements, associated taskings, and their inclusion in JTF staff planning. DOTLPP is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or JTF staff and Medical Services actions associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²⁹ COCOM and JTF plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. The routine rotation and movement of personnel to and from units. The JTF and Medical Services staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of tasked forces. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment. Predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment.

³⁰ Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Unit reporting includes CBRND readiness. Reliance is placed upon the individual's vaccination record and health record (both manual records) to reflect the most recent status of the individual. Current medical systems are stovepiped and require manual intervention to share information. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported. Unit reporting is not linked to medical information systems. Individual manual vaccination and health records are not always available or complete.

³¹ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the JTF and Medical Services staffs during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

³² Doctrine, policy, and procedures exist to identify potentially exposed units and personnel for treatment and medical surveillance. Potentially affected units are identified by Medical Services to the JTF staff and appropriate medical actions are taken. Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Current medical systems are stovepiped and require manual intervention to share information. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported.

³³ JTF plans address medical activities by referring to appropriate medical plans, policies, and procedures. The Medical Services staff plans and develops associated policies addressing medical activities and procedures to support JTF operations. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The JTF staff provides support as defined in the coordinated and appropriate medical plans. The Medical Services staff coordinates with the JTF staff for Medical Services support requirements and associated taskings and their inclusion in JTF staff planning. DOTLPP is inadequate to address JTF actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³⁴ JTF plans address medical activities by referring to appropriate medical plans, policies, and procedures. The Medical Services staff plans and develops associated policies addressing medical activities and procedures to support JTF operations. The implementation and operation of large-scale quarantine sheltering and treatment operations are within the purview of medical authorities. The JTF staff provides support and resources as defined in the coordinated and appropriate medical plans and as adjusted as requested by appropriate medical authorities to meet specific circumstances. Large-scale medical activities and actions are not adequately addressed in DOTLPP; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³⁵ Existing standards and procedures provide adequate protection of handling and transporting personnel against secondary exposure/contamination and require the application of protective equipment and measures if the potential exists for contamination/exposure. Casualties able to wear standard IPE are required to apply the equipment outside of CPSS. Medical policy is the patient's unit is responsible for providing the equipment to the medical unit for use by the patient. Unit-level training is limited to the movement of casualties to the medical facility and is predominantly reliant upon tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties. Exposed and contaminated casualties (human and MWA) unable to wear IPE are not adequately addressed in

doctrine, policy, and standards. Protective equipment is not available for these casualties. However, medical units are not provided stocks of standard IPE for use by patients. Operationally involved units may be delayed, at best, in providing the equipment. Large-scale medical activities and actions are not adequately addressed in DOTLPPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³⁶ The JTF and Medical Services staff conduct coordinated planning for operations using the COCOM-identified forces for the potential threat. Equipping the tasked force and Medical Services elements are an integral part of planning and preparation. The combination of established force and Medical Services elements organic assets, material acquisitions, prepositioned material, available host-nation/coalition contributions, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by the JTF and Medical Services staffs with the COCOM staff to prepare and support deploying forces as outlined by the appropriate plan. Medical and CBRND resources and systems are reallocated, when necessary, from prepositioned and dispersed stocks of units/Medical Services elements deploying or operating within an JOA. Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the JTF. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. JTF and Medical Services staffs do not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTLPPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

12.13.3 Functional Solution Analysis

12.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** DOTLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment. Include COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for sustained operations within a CBRN/TIM environment and operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).
- 2. Deficiency:** Joint medical training for the treatment of contaminated/exposed casualties is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated casualties. *Training:* Establish training, exercise, and evaluation standards for

the safe handling of exposed and contaminated casualties. *Leadership*: Implement and manage training and equipping of functions and activities handling exposed and contaminated casualties.

- 3. Deficiency:** Joint medical training for the treatment of contaminated/exposed MWA casualties is not mandatory for medical/veterinary practitioners identified for deployment or assignment where there exists a CBRN/TIM threat.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated MWA casualties. *Training*: Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated MWA casualties. *Leadership*: Implement and manage training and equipping of functions and activities handling exposed and contaminated MWA casualties.

- 4. Deficiency:** The ability of the JTF and Medical Services staffs to ensure medical capabilities for CBRND is limited by routine medical operations and requirements.

Non-Materiel Solutions: *Doctrine*: Develop doctrine, policy, and procedures requiring comprehensive participation and integration of all potentially affected personnel and activities in CBRND exercises. *Organization*: All affected entities are aware of and participate in comprehensive exercises. *Training*: All personnel (military and nonmilitary) are trained in appropriate CBRND protective measures. *Leadership*: Recognize importance of medical services and balance with criticality for readiness to rapidly and accurately perform CBRND and conduct medical operations associated with CBRN/TIM environments and hazards. Recognition of the value of comprehensive exercises to enhance readiness, survival, and promote interaction between activities.

- 5. Deficiency:** Generally, casualty care until completion of decontamination is performed by medical corpsmen, not medical practitioners.

Non-Materiel Solutions: *Doctrine*: Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization*: Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training*: Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership*: Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 6. Deficiency:** Generally, MWA casualty care until completion of decontamination is performed by medical corpsmen, not medical/veterinary practitioners.
- Non-Materiel Solutions:** *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions.
- 7. Deficiency:** Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTMLPF and current medical operations are limited in their isolation abilities.
- Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for operations associated with large-scale medical operations involving non-U.S. personnel (e.g.,

indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

- 8. Deficiency:** Medical prophylaxis does not exist for all threat biological agents.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 1 above) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 9. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding eligible civilians.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 10. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs.
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 11. Deficiency:** The efficacy of existing prophylaxis, particularly vaccines, widely varies.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership:* Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.
- 12. Deficiency:** The application of medical prophylaxis is not adequately addressed for eligible civilians within the force.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by eligible civilians. *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of

increased dependence of military operations upon civilians. *Personnel*: Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources. *Facilities*: Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical services, veterinary surveillance, etc.).

13. Deficiency: The application of medical prophylaxis is not adequately addressed for MWAs within the force.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by MWAs, particularly MWDs. *Organization*: Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to MWAs. *Training*: Include MWAs in CBRND training, exercises, and evaluations. *Leadership*: Ensure leadership awareness of criticality of MWD resources. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical services, veterinary surveillance, etc.).

14. Deficiency: Predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings. *Leadership*: Enforce compliance with established doctrine, policy, and procedures (see Footnote 10 above) for low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings.

15. Deficiency: Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.

16. Deficiency: Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards for prophylactic CBRND protection.

17. Deficiency: Annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Footnote 5 above) for prophylactic CBRND protection.

18. Deficiency: Current medical systems are stovepiped and require manual intervention to share information.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

19. Deficiency: Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

20. Deficiency: Outpatient care is not generally recorded and aggregate information is reported.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems, application of data systems standards, and the timely and accurate reporting of medical treatment information.

21. Deficiency: Unit reporting is not linked to medical information systems.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

22. Deficiency: Individual manual vaccination and health records are not always available or complete.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems, application of data systems standards, and the timely and accurate reporting of medical treatment information.

23. Deficiency: Prophylaxis for MWAs is virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

24. Deficiency: DOTMLPF is inadequate to address JTF actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment. Include COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical

Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training*: Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership*: Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel*: Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for sustained operations within a CBRN/TIM environment and operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

- 25. Deficiency:** Large-scale medical activities and actions are not adequately addressed in DOTMLPF; especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, procedures, and *UJTL* COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization*: Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training*: Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership*: Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel*: Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in

a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

26. Deficiency: Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated casualties.

Non-Materiel Solutions: *Doctrine*: Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air and sea of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Organization*: Organizational resources, taskings, and trained personnel are in place or available to support the safe air and sea transport of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training*: Institutional and unit-level training for application of standards for the safe transport by air and sea of exposed and contaminated casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership*: Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air/sea transport of exposed and contaminated casualties. *Facilities*: Develop supporting infrastructure for the safe air transport of contaminated casualties, including the prevention of secondary exposure/contamination to airframe/vessel and crews.

27. Deficiency: Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated MWA casualties.

Non-Materiel Solutions: *Doctrine*: Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air and sea of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Organization*: Organizational resources, taskings, and trained personnel are in place or available to support the safe air and sea transport of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training*: Institutional and unit-level training for application of standards for the safe transport by air and sea of exposed and contaminated MWA casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated MWA casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership*: Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air/sea transport of exposed and contaminated MWA casualties. *Facilities*: Develop supporting infrastructure for the safe air transport of contaminated MWA casualties, including the prevention of secondary exposure/contamination to airframe/vessel and crews.

28. Deficiency: Exposed and contaminated casualties unable to wear IPE are not adequately addressed in doctrine, policy, and standards.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures for the application of CBRND standards for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination.

Organization: Ensure organizational considerations for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available.

Training: Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated casualties. *Leadership:* Recognize criticality for the protection of casualties who cannot be adequately protected by standard IPE, training

providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

29. Deficiency: Exposed and contaminated MWA casualties unable to wear IPE are not adequately addressed in doctrine, policy, and standards.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures for the application of CBRND standards for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination.

Organization: Ensure organizational considerations for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available.

Training: Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated MWA casualties. *Leadership:* Recognize criticality for the protection of MWA casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

30. Deficiency: Protective equipment is not available for exposed and contaminated casualties unable to wear IPE.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures for the application of CBRND standards for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination.

Organization: Ensure organizational considerations for the protection of casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available.

Training: Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated casualties. *Leadership:* Recognize criticality for the protection of casualties who cannot be adequately protected by standard IPE, training

providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

31. Deficiency: Protective equipment is not available for exposed and contaminated MWA casualties unable to wear IPE.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures for the application of CBRND standards for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. *Organization:* Ensure organizational considerations for the protection of MWA casualties who cannot be adequately protected by standard IPE, including prevention of secondary exposure/contamination. Includes ensuring resources, taskings, and trained personnel are in place or available. *Training:* Establish training, exercise, and evaluation standards/criteria involving exposed and contaminated MWA casualties. *Leadership:* Recognize criticality for the protection of MWA casualties who cannot be adequately protected by standard IPE, training providing skills to manage operations of these types, and willingness to implement necessary changes and activities to prepare to perform and support protective operations/activities.

- 32. Deficiency:** Medical units are not provided stocks of standard IPE for use by patients.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures for the provisioning of Medical Services elements with standard IPE for the protection of human and appropriate MWA casualties who can be adequately protected by standard IPE.

- 33. Deficiency:** Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the JTF.
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of operations plans to identify CBRND resources necessary and available to support expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary medical operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary medical operations. *Leadership:* Recognize differences and challenges associated with expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary medical operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 34. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and

planning for CBRND measures and requirements for eligible civilians survivability.

Facilities: Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).

- 35. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival.

Organization: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Provide institutional and unit training of eligible civilians, MWA handlers, and MWAs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 36. Deficiency:** JTF and Medical Services Staffs do not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

Personnel: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).

- 37. Deficiency:** JTF and Medical Services Staffs do not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing MWAs, particularly MWDs, and MWA operations for CBRND. *Organization:* Identify organizational services and activities supporting CBRN/TIM survival by MWAs and mission operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:*

Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 38. Deficiency:** Current DOTMLPF does not fully address the unique aspects of CBRND and the impact upon operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment.

Organization: Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Personnel:* Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment.

39. Deficiency: Current DOTMLPF is inadequate for preparing and equipping deploying eligible civilians and MWAs.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing eligible civilian personnel and MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWD and eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel and MWDs.

40. Deficiency: DOTMLPF is inadequate for medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* COCOM and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Ensure that eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for operations

associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

12.13.3.2 IMA Assessment Summary

N/A

12.14 Task OPSHLD 14: Establish mortuary process to handle contaminated remains**12.14.1 Functional Area Analysis****12.14.1.1 Definition**

To establish the mortuary process to ensure the safe handling, storage, and transport of contaminated remains. Contaminated human and MWA remains may require storage and transport to another location. The safe handling, storage, and transport of contaminated human and MWA remains may require that they be fully and completely contained and sealed to minimize the potential for release of contaminants. Contaminated remains IPE must be impermeable and not permit release of contaminants. The design must be functional and easy to transport, store, support, and dispose. Decontamination of the remains and container will be required. When operational conditions and mission requirements allow, remains' decontamination, handling processes, disposition, and containers should be compatible with the appropriate religious practices.

12.14.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (OP 2.4.1.1, OP 5.4.4, OP 5.3, OP 5.4, OP 5.4.6, OP 5.5.9, OP 5.7.2, OP 5.7.4, OP 5.7.5, OP 5.7.6, OP 6.2.10, OP 7, OP 7.3, OP 7.4).

12.14.1.2.1 Supported Task: N/A**12.14.1.2.2 Lateral Task: OPSHA 7****12.14.1.2.3 Supporting Task: TASHLD 13****12.14.1.3 Condition**

Perform this task under conditions of:

Physical

1. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Weak to marginal forces assigned. (C2.2.1)
3. Negligible personnel experience. (C2.2.4.5)
4. Limited staff expertise. (C2.3.1.3)
5. Limited deployed supplies. (C2.8.2)
6. Limited prepositioned materiel. (C2.8.4)

Civil

1. Opposed international politics. (C3.1.2)
2. Severe restraints on action. (C3.1.3.4)

12.14.2 Functional Needs Analysis

12.14.2.1 Capability and Deficiency Assessment Summary

Table 12.14-1 summarizes the capability and deficiencies that currently exist addressing standards, criteria, and procedures for the safe handling and transport of CBRN/TIM exposed or contaminated human and MWA remains.

Current Capability and Deficiency

Mortuary Affairs plans, equips, trains, and prepares for the conduct of Mortuary Affairs activities and processes of remains exposed to or contaminated by CBRN/TIM agents. This task includes actions, notices, and materials necessary to preclude potential for secondary exposure by handling, storing, and transporting resources from collection to interment. This also encompasses necessary coordination activities to transport contaminated/exposed remains. CBRN/TIM contaminated remains are handled as hazardous or infectious materials when crossing international borders and are under auspices of international treaties and standards. Nations conforming to United Nations treaties, regulations, and codes with impact upon international transport of remains are identified. However, these treaties and standards do not specifically address exposed and contaminated human and MWA remains resulting from a CBRN/TIM agent, nor do they address mortuary activities. Each nation establishes standards and requirements for mortuary activities as well as requirements for interment within their borders. U.S. national standards also exist for the movement of remains but do not extend to CBRN/TIM exposed and contaminated remains. Individual state regulations and requirements vary but are based upon U.S. national standards. However, these regulations and requirements may impact interment requirements. Centers for Disease Control (CDC) guidelines for movement of highly infectious remains exist and are applied to specific cases for epidemiological investigation and apply only to CDC activities. Deficiencies also include the lack of containment packaging for CBRN/TIM agent exposed and contaminated remains; adequate standards for the marking and safe transport of CBRN/TIM agent exposed and contaminated remains; and the provision of detection and monitoring capabilities for CBRN/TIM contamination/exposure of remains. The overall current capability is “green.”

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

Table 12.14-1. OPSHLD 14: Capability and Deficiency Assessment

Mortuary Affairs	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	G ²	Y ³	G ⁴	R ³	Y ⁵	G ⁶	R ⁷	G ⁸
Near/Mid-Term Overall Capability	G	Y	G	R	Y	G	R	G
Far-Term Overall Capability	G	Y	G	R	Y	G	R	G

	FAA Measure	Scale
M1	Coordination is performed with Mortuary Affairs for handling, decontaminating, and transporting human and MWA remains.	<p>G: Mortuary Affairs units/activities coordinate with the JTF and Medical Services staffs to facilitate the recovery, handling, decontamination, and interment of human remains.</p> <p>Y: Mortuary Affairs units/activities coordinate with the JTF and Medical Services staffs to facilitate the recovery and interment of human remains.</p> <p>R: Coordination with the JTF and/or Medical Services staffs is inadequate or nonexistent for the recovery and interment of human remains.</p>
M2	Mortuary Affairs plans and procedures address the receipt, handling, decontamination, identification, marking, and transportation of CBRN/TIM exposed/contaminated remains.	<p>G: Doctrine, policies, procedures, TTPs, and plans address the receipt, handling, decontamination, identification, marking, and transport of CBRN/TIM exposed/contaminated remains.</p> <p>Y: Doctrine, policies, procedures, TTPs, and plans address the receipt, handling, decontamination, and identification of CBRN/TIM exposed/contaminated remains.</p> <p>R: Doctrine, policies, procedures, TTPs, and/or plans are inadequate or nonexistent for the receipt, handling, decontamination, and/or identification of CBRN/TIM exposed/contaminated remains.</p>
M3	Mortuary Affairs personnel are trained to handle CBRN/TIM exposed/contaminated remains.	<p>G: Detailed doctrine, policy, procedures, and training exist for the safe handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel and activities.</p> <p>Y: General doctrine, policy, procedures, and training exist for the handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel.</p> <p>R: Doctrine, policy, procedures, and training are inadequate or nonexistent for the handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel.</p>
M4	Contaminated/infectious human and MWA remains are safely processed, transported, and disposition completed.	<p>G: Doctrine, policy, procedures, TTPs, training, and plans address the application of protective assets and the safe handling and transport of exposed or contaminated human/MWA remains and specify requirements and measures for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>Y: Doctrine, policy, procedures, TTPs, training, and plans address the safe handling and transport of exposed or contaminated remains and identify general measures for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>R: Doctrine, policy, procedures, TTPs, training, and/or plans are nonexistent or inadequate to address the safe handling and/or transport of exposed or contaminated remains and/or identification of general measures for the protection of personnel, activities, and/or resources performing the handling and/or transport.</p>

M5	Mortuary Affairs units/activities are trained and equipped to operate CBRN/TIM detection and monitoring devices.	<p>G: Mortuary Affairs units and activities are equipped and trained to operate CBRN/TIM detection devices and sensors for application to remains.</p> <p>Y: Mortuary Affairs units and activities are trained and equipped to apply standard individual CBRN detection and monitoring devices for application to remains.</p> <p>R: Training and/or equipping of Mortuary Affairs units and/or activities is inadequate or nonexistent detection and monitoring of CBRN/TIM in remains.</p>
M6	Mortuary Affairs personnel possess IPE and splash-protective coverings.	<p>G: Mortuary Affairs personnel are equipped with adequate splash and CBRN/TIM IPE protection.</p> <p>Y: Mortuary Affairs personnel are equipped with CBRN/TIM IPE protection and limited splash protection.</p> <p>R: Splash and/or IPE protection is inadequate or nonexistent.</p>
M7	Required remains CBRN/TIM containment, IPE, storage and transport containers for contaminated remains are on hand.	<p>G: Adequate types and quantities of CBRN/TIM containment IPE, storage, and transport containers for contaminated remains are readily available for the sealed containment of CBRN/TIM exposed/contaminated remains.</p> <p>Y: CBRN/TIM exposed/contaminated remains containment IPE, storage, and transport containers are readily available, and doctrine, policies, procedures, and TTPs exist for the containment and transport of CBRN/TIM contaminated/exposed remains.</p> <p>R: Doctrine, policy, procedures, TTPs, and/or CBRN/TIM exposed/contaminated remains containment IPE, storage, and/or transport containers are inadequate or nonexistent.</p>
M8	Required decontamination supplies and equipment are on hand.	<p>G: Detailed plans and procedures exist addressing the recovery, preparation, and interment of remains include the identification and allocation of resources and consumables for the effective conduct of remains decontamination.</p> <p>Y: Plans and procedures addressing remains recovery, preparation, and interment identify general requirements for resources and consumables for adequate decontamination of remains.</p> <p>R: Plans and procedures addressing remains recovery, preparation, and/or interment are nonexistent or inadequately identify types and quantities of resources and materials necessary to decontaminate remains.</p>

¹ Existing DOTMLPF is adequate for the reception, processing, and temporary interment of contaminated remains within the JOA. However, DOTMLPF is inadequate for the containment and transport of contaminated remains for final interment outside the JOA.

² Mortuary Affairs units/activities coordinate with the JTF staff to facilitate the recovery, preparation, and final interment of human remains. MWA remains are not processed by these units; rather they are managed by the respective Service’s veterinary support elements. However, DOTMLPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.)

³ Primary duty mortuary personnel possess adequate doctrine, policy, and procedures to reduce the potential for secondary exposure/contamination. Existing doctrine, policy, and procedures provide adequate protection of personnel against secondary exposure/contamination. Doctrine, policy, and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure. Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination. The predominant means is decontamination of the asset following secondary exposure/contamination. Protection of support equipment is inadequate. Movement of remains is generally limited initially to tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Decontaminated and contained remains may not be considered a secondary risk by air asset managers. Contaminated remains are handled as hazardous or infectious materials when crossing international borders and are under the treaty auspices of the U.N. The primary applicable codes are under the World Health Organization (WHO) and promulgated under the International Health Regulations of 1969 (as amended). Transport requirements are also governed by the international Civil Aviation Organization Technical Instructions on the Safe Transport of Dangerous Goods By Air (ICAO TI); International Maritime Dangerous Goods (IDMG) Code, and the International Atomic Energy Agency (IAEA) Internal Atomic Energy Regulations for the Safe Transport of Radioactive Materials. However, these standards do not specifically address exposed or contaminated human and MWA remains as the result of a CBRN/TIM agent. National standards and procedures for the movement of human and MWA remains do exist. The extension of these standards and procedures to exposed and contaminated remains does not currently exist. CDC guidelines for movement of highly infectious remains do exist and are applied for specific cases of epidemiological investigation. It is also noted each state

possess unique requirements for the movement and interment of remains. However, DOTMLPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.). Standardized international markings for contaminated/exposed remains do not exist.

⁴ Primary duty mortuary personnel possess adequate doctrine, policy, procedures, and training to reduce the potential for secondary exposure/contamination. Existing doctrine, policy, and procedures provide adequate protection of personnel against secondary exposure/contamination. Doctrine, policy, and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure.

⁵ Mortuary Affairs units/activities are not equipped and trained to operate and apply CBRN/TIM detection and monitoring devices other than standard individual warfighter detection devices (e.g., M9 paper, etc.).

⁶ Existing protective equipment provides adequate protection of personnel against secondary exposure/contamination. The application of protective equipment and measures if the potential exists for contamination/ exposure is a standard practice. Mortuary personnel performing decontamination and remains preparation additionally require splash protection against decontaminants and body fluids.

⁷ Protective containment systems are inadequate or nonexistent.

⁸ Mortuary Affairs develops plans to support JTF operations and to facilitate the recovery, preparation, and final interment of human remains. Included in the planning is the identification of decontamination supplies and equipment to process contaminated remains. These plans are coordinated with the JTF staff and required support requirements are identified for inclusion in the JTF plans.

12.14.3 Functional Solution Analysis

12.14.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** DOTMLPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.)

Non-Materiel Solutions: *Doctrine:* Address in doctrine, policy, and procedures Mortuary Affairs operations and activities involving CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available for Mortuary Affairs operations and activities addressing CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate Mortuary Affairs activities and supporting force elements addressing CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Ensure awareness of international and national implications of transport of contaminated or exposed remains and the public desire for final interment in homeland. *Facilities:* Develop supporting infrastructure for operations associated with Mortuary Affairs involving CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).
- 2. Deficiency:** Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains.
- 3. Deficiency:** Air transport is limited to tactical rotary-wing as a last resort. Tactical and strategic fixed-wing is generally not considered an acceptable means of transport. These are due to concerns about asset contamination.

Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to

preclude secondary exposure/contamination of airframes and aircrew. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to preclude secondary exposure/contamination of airframe and aircrew.

- 4. Deficiency:** International standards do not specifically address exposed or contaminated remains as the result of a CBRN/TIM agent.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of identified international standards and requirements for mortuary activities as applied to exposed and contaminated remains resulting from a CBRN/TIM agent. *Training:* Include identified international standards and requirements for mortuary activities as applied to exposed/contaminated remains resulting from a CBRN/TIM agent as an essential element of formal and unit training, as well as exercise and evaluation standards and criteria. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent.
- 5. Deficiency:** The extension of national standards and procedures to exposed and contaminated remains do not currently exist.
Non-Materiel Solutions: *Doctrine:* Coordinate with appropriate national agencies and authorities to establish in doctrine, policy, and procedures national standards and requirements for the movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Training:* Establish and implement training, exercise, and evaluation standards and criteria for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe movement of exposed/contaminated remains resulting from a CBRN/TIM agent. *Facilities:* Develop supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.
- 6. Deficiency:** Mortuary Affairs units/activities are not equipped and trained to operate and apply CBRN/TIM detection and monitoring devices other than standard individual warfighter detection devices (e.g., M9 paper, etc.)
Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing CBRN/TIM detection and monitoring of human remains. *Training:* Establish CBRN/TIM detection/monitoring training, exercise, and evaluation criteria and programs for Mortuary Affairs and conduct training, exercises, and evaluations. *Leadership:* Implement and manage CBRN/TIM detection/monitoring training, equipping, and protection of Mortuary Affairs personnel.
- 7. Deficiency:** Protective containment systems are inadequate or nonexistent.
Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternatives designed for exposed/contaminated remains in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and

exercising for the safe application of CBRN/TIM containment packaging/systems for exposed/contaminated remains.

8. Deficiency: Containment marking standards do not exist.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of identified international and national standards and marking requirements exposed and contaminated remains resulting from a CBRN/TIM agent. *Training:* Include identified international and national standards and marking requirements as applied to exposed/contaminated remains resulting from a CBRN/TIM agent as an essential element of formal and unit training, as well as exercise and evaluation standards and criteria.

Leadership: Implement and manage training, equipping, protective measures, and exercising for the marking of exposed/contaminated remains resulting from a CBRN/TIM agent.

9. Deficiency: DOTMLPF is inadequate for the containment and transport of contaminated remains for final interment outside the JOA.

Non-Materiel Solutions: *Doctrine:* Develop doctrine, policy, and procedures addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Organization:*

Organization structures, resources, taskings, and trained staff availability to enable and support the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Training:* Institutional and unit-level training for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Leadership:* Recognize important of the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties and ensure personnel are properly equipped, adequately trained, fully comply with requirements, and are prepared and ready to perform the necessary tasks and activities. *Facilities:* Develop supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.

12.14.3.2 IMA Assessment Summary

N/A

CHAPTER 13. TACTICAL SHIELD TASKS

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13.0 Tactical Shield

13.0.1 Introduction

At the Tactical (TA) level of war, battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. Fourteen Tactical Shield (SHLD) tasks were identified in the chemical, biological, radiological, and nuclear defense (CBRND) Functional Area Analysis (FAA).

This chapter, detailing the TASHLD area, restates relevant information from the CBRND FAA including a description of each of the 14 TASHLD tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and evaluated in the Ideas for Material Approaches (IMA) section. The IMAs provide a possible near- to far-term resolution to identified deficiencies within the individual capabilities.

The TASHLD tasks are separated into individual protection, including military working animals (MWAs), specifically military working dogs (MWDs), collective protection (COLPRO), and medical intervention/prevention. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel.

13.0.2 FNA Summary

Table 13.0-1 summarizes the overall current and projected capability to perform TASHLD tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow,” while the MWD, enemy prisoner of war (EPW), detainee, and civilian situation is assessed as “red.” There are key deficiencies in our ability to provide individual protective equipment (IPE) (medical and nonmedical) and collective protection equipment (CPE) for nonwarfighter requirements and shortage in CPE to meet all requirements. Additional procurements of CPE, along with using current CPE for other than stated purpose, and IPE will significantly improve the MWD, EPW, detainee, and civilian situation if additional procurement is possible. Improvements and advancements in technology to reduce the impact of IPE constraints on mission capabilities and CPE on mission performance. However, although improvements are identified for specific capabilities supporting the TASHLD tasks and are reflected in the assessment, the improved capabilities are not sufficient to change the overall assessed color ratings for Shield for the current, near/mid, and far terms.

Table 13.0-1. Tactical Shield Summary FNA Findings

CBRN Tactical Shield Task Number	CBRN Tactical Shield Task Title	Capability		
		Current	Near/Mid Term	Far Term
TASHLD 1	Ensure proper MOPP level to minimize casualties and maximize mission performance.	●	●	●
TASHLD 2	Initiate medical prophylactic measures to counter CBRN/TIM effects.	●	●	●
TASHLD 3	Protect casualties unable to wear standard IPE.	●	●	●
TASHLD 4	Protect MWDs against CBRN/TIM contamination/exposure.	●	●	●
TASHLD 5	Protect evacuees, detainees, civilians and other identified groups from CBRN/TIM effects.	●	●	●
TASHLD 6	Provide safe collectively protected environment for critical and essential mission tasks and activities, and rest and relief.	●	●	●
TASHLD 7	Provide COLPRO for repairing critical assets.	●	●	●
TASHLD 8	Prelocate consumables to COLPRO and units.	●	●	●
TASHLD 9.	Perform protective measures to prevent or mitigate CBRN/TIM contamination of supplies and equipment.	●	●	●
TASHLD 10	Employ expedient or improvised CBRN/TIM protective resources and measures.	●	●	●
TASHLD 11	Protect decontaminating personnel from decontamination, contamination and off-gassing	●	●	●
TASHLD 12	Implement large-scale medical CBRN operations.	●	●	●
TASHLD 13	Perform mortuary activities for CBRN/TIM contaminated remains.	●	●	●
TASHLD 14	Ensure containment of samples and residues to prevent spread of contamination.	●	●	●
OVERALL		●	●	●

Metrics are applied to the identified measures within each task and are value scaled. Capabilities are evaluated against the metric scale and assigned an appropriate value for the appropriate defined time period. The value “0,” the lowest value of the scale, generally means the measure is nonexistent or absent and is “red” on the color scale. Inadequate or insufficient, depending upon the metric, is usually assigned a value ranging 1–3 for the measure and also is “red.” Partially capable, as defined by the metric, is 4–7 and “yellow” on the scale; while fully capable ranges 8–10 and “green.” Where separate components make up an area of inquiry (e.g., COLPRO comprises mobile and fixed-site COLPRO, etc.), the separate component scores are totaled and divided by the number of components. The averaged score is displayed as appropriate in the table, but is not color-coded. The score is applied in calculations for the overall valuation rather than the individual component scores. The values for each capability within the determined time period (current, near/mid term, and far term) are averaged for the number of measures assessed. The values are rounded off with half a point or higher rounded to the next higher number, and less than half a point rounded down. Colors are then applied using “red” for 0–3, “yellow” for 4–7, and “green” for 8–10. This process is reapplied for each task in the current and far term to determine the overall task capability in Table 3.0-1. The overall TA-level SHLD capability is determined by assigning 0 to “red,” 1 to “yellow,” and 2 to “green” codes. The values for each of the tasks, by time period, are summed and divided by the total number of tasks. The values are rounded off with half a point or higher rounded to the next higher number, and less than half a point rounded down.

13.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, leadership and education, personnel, and facilities (DOTMLPF) (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The materiel approaches address both current and nondeveloped technologies for possible material solutions.

13.0.3.1 DOTMLPF

DOTMLPF solutions identified in this chapter are focused primarily with individual (medical and nonmedical) and collective protection, not only for the warfighter, but also for MWDs, EPW, detainees, and civilians. Some of the deficiencies can be partially solved with non-materiel solutions, while others require a materiel solution. Non-materiel solutions include the need for personnel to be trained and recognize the hazard and take appropriate actions. Commanders must also ensure necessary protective systems/equipment and resources are available and prepared for rapid operation. In addition, commanders must look at available resources and determine how they can be best utilized to meet operational requirements. Existing doctrine needs to be implemented and updated where applicable. Leaders need to train force elements on observation and reporting indicators to include the training of staff to ensure information is relayed. Doctrine, policy and, in turn, future leaders need to be trained on assets and capabilities. Changes may impact on the structure of military units (organizations) and personnel qualifications.

13.0.3.2 IMA

Materiel solutions include the development of pre- and post-exposure prophylaxis for threat agents, to include high-threat toxic industrial materials (TIMs). Establish minimum standards for all immunizations and prophylaxis to include efficacy, number of administrations to acquire immunity, booster period, and a period of acquired immunity that covers a minimum operational period from predeployment to redeployment. Nonmedical solutions include additional procurement of current CPE to meet not only their stated mission but also additional missions. The potential for the force to be exposed to concentrations of toxic TIM agents, whether deliberately released by an adversary or release other than attack (ROTA), is a recognized battlefield hazard that must be addressed to ensure survivability and mission success. CPE also needs to be modular and employed rapidly. Additional quantities of IPE need to be procured to address EPW, detainee and civilian requirements.

Table 13.0-2 summarizes possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment. These approaches are in various stages of development; therefore, some are more readily applicable than others. There are 38 IMAs in the TASHLD area. In the area of COLPRO, the focus varies from increasing procurements and using for other than intended missions, to developing a modular and inflatable system. For individual protection (medical) the emphasis is on vaccines to address future agents and TIMs, plus ways to improve patient handling and care. Individual protection (nonmedical) is focused on development and procurements to address civilians, EPW, detainee, and MWDs. Though a number of the IMAs focus procurements and modifications to current mission of some systems, this will have major impact on program objective memorandum (POM) decisions and require setting priorities as they relate to military personnel, versus MWAs, EPW, detainees, and civilians, in these programs and others.

The following are the Key Attributes for Shield. Near- to mid-term chemical, biological, radiological, and nuclear (CBRN) IPE and contaminated IPE removal tactics, techniques, and procedures (TTPs) will be designed to allow the wearer to safely remove the equipment without assistance or processing through slow, logistically intense operational and thorough decontamination procedures. The far-term goal is to develop a combat uniform that possesses CBRN protective capabilities and IPE tailored towards specific user communities that require additional protection. Near- to mid-term tactical COLPRO will provide an option for a complete transportable collective protection capability without the reliance upon other shelters or equipment to provide power, climate, and filtered air. Far-term COLPRO will become a standard capability of all tactical shelters and climate control systems.

Table 13.0-2. Tactical Shield Ideas for Materiel Approaches

Materiel Approach	Description
Assess CBRND materiel	Test and assess all CBRND materiel for protective abilities against future threat agents, including TIMs. If existing data are incomplete, test materiel to characterize efficacy.
Broad-application, above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Casualty protective system with integrated pseudomask	Develop a new-generation patient protective wrap (PPW) with an integrated mask area that is contact-free of the face area and applies positive air flow.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop a treatment for existing Mission-Oriented Protective Posture (MOPP) suit and warfighter clothing textiles that enhance protective capability.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Contaminated casualty transport system	Develop/adapt clear, head-to-toe view of casualty, medical systems supporting, airtight and self-flushing system with positive/negative pressure capabilities and access ports for medical treatment.
Contaminated material/equipment protective packaging and containment systems	Investigate and develop CBRN/TIM protective packaging and containment systems for contamination/exposed material and equipment which must be stored, handled, and/or transported in a contaminated/exposed state.
Contaminated remains containment systems	Investigate and develop sealable containment system for CBRN/TIM remains permitting their safe handling, storage, transport, and internment by unprotected personnel and equipment.
COTS CBRND IPE materiel for MWD protection	Adapt commercial off-the-shelf (COTS) protective equipment, where necessary and desirable, for CBRND of MWDs.
COTS sample containers and equipment	Adapt/modify (as necessary) COTS sample containers and equipment for the containment of CBRN/TIM samples and material for their safe handling, storage, and transport.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. Food and Drug Administration (FDA) testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.

Materiel Approach	Description
Develop CBRN/TIM samples and material containment packaging/systems	Investigate and develop CBRN/TIM containment packaging and systems for the safe containment, handling, storage, and transport of CBRN/TIM samples and material.
Develop COLPRO kits	Develop COLPRO kits that contain all necessary supplies to construct field-expedient COLPRO and are easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and that support COLPRO requirements.
Develop MWD COLPRO	Develop or adapt joint-level MWD transport and field kenneling systems for COLPRO function as transporter, field shelter, and COLPRO.
Develop/adapt MWA transport system with pressure/filtration	Develop or adapt MWA transport systems to provide COLPRO protection from CBRN/TIM agents.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Disposable IPE	Develop low-cost, disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.
Equipment and supplies protective packaging and containment systems	Investigate and develop standardized CBRN/TIM protective packaging and containment systems (includes sprays, boxes, envelopes, drapes, etc.) for the protection of equipment and supplies from contact with CBRN/TIM agents
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.

Materiel Approach	Description
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA-approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
GOTS CBRND IPE materiel for MWD protection	Adapt existing government off-the-shelf (GOTS) CBRND materiel (e.g., PPW, etc.) for application to CBRND of MWDs.
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protective against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPW, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.
MWA prophylaxes	Develop or adapt CBRND medical countermeasures and veterinary medicine for preexposure and post-exposure/presymptomatic protection of MWD from CBRN/TIM. Develop topical that is easy to apply and provides shielding from CBRN/TIM, preventing agent absorption through hair or skin.
Prepositioned/reserve CBRN medical resources	Establish and maintain sufficient stocks of prepositioned and reserve CBRND medical resources identified in plans and required to support multiple operations with threat and ensure availability for expeditious movement to the and within the area of operations in the event of a CBRN event.

Materiel Approach	Description
Procure additional COLPRO	Procure additional COLPRO of required types and in needed quantities to meet the increased operational requirements.
Procure/develop field-expedient COLPRO kits	Procure COLPRO kits similar to those used for the Chemical Stockpile Emergency Preparedness Program for appropriate activities and requirements. This protective measure is currently provided to populations located in the vicinity of chemical demilitarization sites. Other materials may be adaptable and procured to establish COLPRO in existing structures. Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Prophylactic administration to diverse groups	Prophylaxes address dosage range for eligible civilians (e.g., children, elderly, overweight, underweight subjects, etc.). Stabilize prophylactic effects over a wide range of dosages to address diverse applications of targeted populations.
Rebreathing	Closed-circuit mechanism to permit an individual's exhaled air to be filtered, CO ₂ removed, and recirculated for breathing, allowing user to make use of all available oxygen in a closed environment.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Respiratory protection for MWAs	Modify existing technology for application by MWAs to provide some protection from CBRN/TIM.
Topical	Develop topical barrier that is easily applied (i.e., sprayed), acts as a contact hazard barrier, affords protection from CBRN/TIM, and does not create a health hazard for the user.

13.1 Task TASHLD 1: Ensure proper MOPP level to minimize casualties and maximize mission performance

13.1.1 Functional Area Analysis

13.1.1.1 Definition

To ensure the proper MOPP level (determined by the commander) providing IPE to protect the individual against chemical, biological, and radiological warfare agents and many TIMs in various forms (vapor, liquid/solid aerosols, and liquid/solid surface contamination) and reducing performance degradation. Performance degradation resulting from wearing IPE will be at its maximum during an actual contamination situation. Upon actual attacks, the individual's IPE is brought to full protective posture.

The handler of an MWA, upon donning his or her protective mask, places the animal's protective respirator (if one is available) on the MWA. The MWA is evacuated from the contamination hazard area if possible. If evacuation is not feasible, the MWA is placed within a collective protection shelter (CPS). The individual protection level is adjusted based upon the environment and mission. Degradation in the performance of most tasks is inherent because of the physical properties of the protective gear—the lower the MOPP level, the less the degradation and the higher the risk from contamination exposure. The commander must consider all friendly and enemy factors to ensure that he protects the fighting force while continuing the mission with minimum performance degradation. Degradation will be at its peak during actual enemy CBRN/TIM attacks/ROTA when IPE is brought to full protective posture. The protection level will be modified by the commander as soon as possible while balancing risk with mission performance.

13.1.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 2.4, TA 7, TA 7.1).

13.1.1.2.1 Supported Task: N/A

13.1.1.2.2 Lateral Task: TASHA 24

13.1.1.2.3 Supporting Task: N/A

13.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)

4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Good personnel physical conditioning. (C2.2.4.3)
5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
7. Negligible personnel experience. (2.2.4.5)
8. Limited staff expertise. (C2.3.1.3)
9. Limited deployed supplies. (C2.8.2)
10. Limited prepositioned materiel. (C2.8.4)
11. No host-nation support. (C2.8.5)

Civil

1. TIMs present in the civilian sector. (C3.3.7.5)

13.1.2 Functional Needs Analysis

13.1.2.1 Capability and Deficiency Assessment Summary

Table 13.1-1 discusses current and projected capabilities used to accomplish this task. The capabilities include all aspects of CBRND equipment and measures, including individual protection, collective protection, and non-materiel aspects of CBRND. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Current IPE provides limited protection against TIMs. Physiological and psychological encumbrances increase with prolonged wear and workload. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities is necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM

environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Mission capability would be greatly improved by integrating COLPRO into specific land, sea and air platforms. However, most mobile platforms do not have COLPRO, and this reality requires prioritization of available IPE assets for CBRND applications. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, emergency medical services [EMS], etc. However, eligible civilians (in general) and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the CBRND provisioning and training of eligible civilians is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE. Further, the largely manual current nature of command operations inherently delays protective actions versus automation, further complicated by the current stovepipe reporting and information flow as information flows vertically without a corresponding horizontal flow for alerting/warning of CBRN/TIM agents.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The Joint Protective Aircrew Ensemble (JPACE), Joint Service Lightweight Integrated Suit Technology (JSLIST), Joint Service Aircrew Mask (JSAM), and Joint Service General Purpose Mask (JSGPM) are projected to be initially fielded during the mid term. The JSLIST is under review for National Institute for Occupational Safety and Health (NIOSH) certification for compliance with Occupational Safety and Health Administration (OSHA) protective standards. The certification will permit application of the garment for antiterrorism/force protection (AT/FP) installation activities within the continental United States (CONUS) and selected facilities outside the Continental United States (OCONUS). The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Joint Expeditionary Collective Protection (JECOP) is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. The P3I upgraded Chemically and Biologically Protected Shelter (CBPS), Joint Transportable Collective Protection System (JTCOPS), Chemically Protected Deployable Medical System (CP-DEPMEDS), fielding of the Joint Services Lightweight NBC Reconnaissance System (JSLNBCRS) variants, and backfit of LHA/LHD vessels are projected to include COLPRO in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in research and development (R&D) and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. The potential for COLPRO in the Future Tactical Lift Option builds upon the mid-term COLPRO capabilities. Additional changes in capabilities from the mid term are not projected.

13.1.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected high-threat areas (HTA) for noncombatant evacuation operations (NEO) application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): U.S. Air Force (USAF) combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: U.S. Navy (USN)/U.S. Marine Corps (USMC) system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes chemical and biological (CB) filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, self-contained breathing apparatus [SCBA] or powered air-purifying respirator [PAPR]). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaced M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2/P: USAF and USN chemical protective mask for ground operations and aircrew personnel not performing flight operations. Uses a single C-2 series filter canister.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Reduces wear encumbrances associated with existing systems. The JSGPM will be OSHA-approved for use by U.S. Department of Defense (DoD) civilians and military personnel in nonmilitary unique operations.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

Chemical Protective Over-Garment (CPOG): Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Medical Barrier Assets: Standard barrier assets applied by Medical Services personnel against contact with biohazards. May provide a degree of additional barrier protection against CBRN hazards when applied with IPE.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Available in two configurations, one flame resistant for use by aviators and combat vehicle crewmen, and one not flame resistant for ground applications. The JB1GU is currently fielded and the JB2GU is to be fielded in FY2006.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

Collective Protection

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose Shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. The first supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCRS is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system either until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR), medical, and rest and recuperation (R2).

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering,

facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.1-1. TASHLD 1: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Current													
Individual Protection	6	4	5	0	4	8	8	5	6	6	6	7	7
Respiratory/Ocular Protection	6 ¹	4 ²	5 ³	0 ⁴	4 ⁵	8 ⁶	8 ⁷	5 ⁸	6 ⁵	6 ⁵	6 ^{1,9}	7 ^{1,9,10}	7 ¹¹
Percutaneous Protection	6 ¹²	4 ¹³	5 ¹⁴	0 ¹⁵	4 ¹⁶	8 ¹⁷	8 ⁷	5 ⁸	6 ¹⁶	6 ¹⁶	6 ^{9,12}	7 ^{9,10,12}	7 ¹¹
Collective Protection	6	N/A	N/A	0.5	5	N/A	8	5	6	N/A	6	7	7
Mobile COLPRO	6 ¹⁸	N/A	N/A	0 ¹⁹	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18}	7 ^{9,10,18}	7 ¹¹
Fixed-Site COLPRO	6 ¹⁸	N/A	N/A	1 ²¹	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18}	7 ^{9,10,18}	7 ¹¹
MOPP Methodology	7 ²²	3 ²³	7 ²⁴	3 ²⁵	5 ²⁶	7 ²⁷	8 ⁷	N/A	6 ²⁶	6 ²⁶	7 ^{9,22}	7 ^{9,10,22}	7 ¹¹
Unit Staff	7 ²⁸	3 ²⁹	7 ³⁰	2 ³¹	7 ³²	4 ³³	8 ⁷	7 ³⁴	8 ^{32,35}	8 ³²	8 ^{9,28,35}	7 ^{9,10,28,35}	7 ¹¹
Near/Mid													
Individual Protection	6	4	5	0	6	8	8	5	6	6	6	7	7
Respiratory/Ocular Protection	6 ¹	4 ^{2,36}	5 ³	0 ⁴	6 ⁵	8 ⁶	8 ⁷	5 ⁸	6 ⁵	6 ⁵	6 ^{1,9}	7 ^{1,9,10}	7 ¹¹
Percutaneous Protection	6 ¹²	4 ^{13,37}	5 ¹⁴	0 ¹⁵	6 ¹⁶	8 ¹⁷	8 ⁷	5 ⁸	6 ¹⁶	6 ¹⁶	6 ^{9,12}	7 ^{9,10,12}	7 ¹¹
Collective Protection	6	N/A	N/A	0.5	5	N/A	8	5	6	N/A	6	7	7
Mobile COLPRO	6 ¹⁸	N/A	N/A	0 ^{19,38}	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18}	7 ^{9,10,18}	7 ¹¹
Fixed-Site COLPRO	6 ¹⁸	N/A	N/A	1 ^{21,39}	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18,39}	7 ^{9,10,18}	7 ¹¹
MOPP Methodology	7 ²²	3 ²³	7 ²⁴	3 ²⁵	5 ²⁶	7 ²⁷	8 ⁷	N/A	6 ²⁶	6 ²⁶	7 ^{9,22}	7 ^{9,10,22}	7 ¹¹
Unit Staff	7 ²⁸	3 ²⁹	7 ³⁰	2 ³¹	7 ³²	8 ^{33,40}	8 ⁷	7 ³⁴	8 ^{32,35}	8 ³²	8 ^{9,28,35}	7 ^{9,10,28,35}	7 ¹¹
Far													
Individual Protection	6	4	5	0	6	8	8	5	6	6	6	7	7
Respiratory/Ocular Protection	6 ¹	4 ^{2,36,41}	5 ³	0 ⁴	6 ⁵	8 ⁶	8 ⁷	5 ⁸	6 ⁵	6 ⁵	6 ^{1,9}	7 ^{1,9,10}	7 ¹¹
Percutaneous Protection	6 ¹²	4 ^{13,37,42}	5 ¹⁴	0 ¹⁵	6 ¹⁶	8 ¹⁷	8 ⁷	5 ⁸	6 ¹⁶	6 ¹⁶	6 ^{9,12}	7 ^{9,10,12}	7 ¹¹

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13
Far													
<i>Collective Protection</i>	6	N/A	N/A	0.5	5	N/A	8	5	6	N/A	6	7	7
Mobile COLPRO	6 ¹⁸	N/A	N/A	0 ^{19,38,43}	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18}	7 ^{9,10,18}	7 ¹¹
Fixed-Site COLPRO	6 ¹⁸	N/A	N/A	1 ^{21,39,44}	5 ²⁰	N/A	8 ⁷	5 ⁸	6 ²⁰	N/A	6 ^{9,18,39}	7 ^{9,10,18}	7 ¹¹
<i>MOPP Methodology</i>	7 ²²	3 ²³	7 ²⁴	3 ²⁵	5 ²⁶	7 ²⁷	8 ⁷	N/A	6 ²⁶	6 ²⁶	7 ^{9,22}	7 ^{9,10,22}	7 ¹¹
<i>Unit Staff</i>	7 ²⁸	3 ²⁹	7 ³⁰	2 ³¹	7 ³²	8 ^{33,40}	8 ⁷	7 ³⁴	8 ^{32,35}	8 ³²	8 ^{9,28,35}	7 ^{9,10,28,35}	7 ¹¹
Overall													
Current Overall Capability	7	3	6	1	6	6	8	6	7	7	7	7	7
Near/Mid-Term Overall Capability	7	3	6	1	6	8	8	6	7	7	7	7	7
Far-Term Overall Capability	7	3	6	1	6	8	8	6	7	7	7	7	7

	FAA Measure	Scale
M1	Plans exist for determining proper MOPP level based upon function/activity and threat.	<p>8–10: Plans incorporate specific, flexible, protective posture protocols that are adjustable to address requirements and needs such as mission, function, conditions, and threat. All personnel are trained and ready to perform the associated protective actions.</p> <p>4–7: General protective posture protocols are incorporated into plans and disseminated to subordinate units. Unit personnel are trained and ready to perform protective actions.</p> <p>1–3: General protective posture protocols are referenced by plans disseminated to subordinate units. Unit personnel are trained to perform protective actions.</p> <p>0: General protective posture protocols are not identified in plans and disseminated to subordinate units for implementation and training of unit personnel.</p>
M2	Individuals and MWAs are equipped with IPE.	<p>8–10: All force personnel (military and eligible civilians supporting the mission) and MWAs are adequately equipped with IPE to perform their functions and survive a CBRN/TIM environment.</p> <p>4–7: Military personnel and eligible civilians supporting the mission are equipped with IPE to perform their functions and survive a CBRN/TIM environment.</p> <p>1–3: Military personnel are equipped with IPE to perform their functions and survive a CBRN/TIM environment.</p> <p>0: Force personnel and MWAs are not equipped to perform their functions and survive a CBRN/TIM environment.</p>
M3	Protection is afforded by IPE against employed CBRN/TIM agent.	<p>8–10: Issued IPE affords protection against all CBRN agents and high-risk TIM agents.</p> <p>4–7: Issued IPE affords protection against all CBRN warfare agents and selected TIM agents.</p> <p>1–3: Issued IPE affords protection against all CBRN warfare agents.</p> <p>0: Issued IPE does not afford protection against all CBRN warfare agents.</p>

M4	Plans exist for evacuating MWA or providing CPSs for them.	<p>8–10: Plans identify and allocate resources for the provision of dedicated COLPRO for sheltering and survival of MWAs.</p> <p>4–7: Plans identify and task resources for the evacuation of MWA from impending CBRN/TIM hazard zones or the provision of COLPRO for MWA sheltering and survival.</p> <p>1–3: Plans identify and task resources for the evacuation of MWA from impending CBRN/TIM hazard zones.</p> <p>0: Plans do not address the evacuation and provision of COLPRO sheltering for MWAs.</p>
M5	Force operational capabilities are not degraded by encumbrances of IPE.	<p>8–10: IPE possesses little or no encumbrances impacting the operational effectiveness and safety of the wearer nor the wearer’s psychological and physiological health and well-being when worn for extended periods.</p> <p>4–7: IPE imposes encumbrances upon the wearer and require acclimation and training to perform necessary tasks and operations. Encumbrances impact psychological and physiological well-being of wearer over time and varies with individual, activity, and conditioning.</p> <p>1–3: IPE imposes encumbrances upon the wearer and impact the psychological and physiological well-being of wearer impacting performance of operational requirements. Acclimation, training, and conditioning have minimal impact upon effective wear time.</p> <p>0: IPE encumbrances seriously impair or preclude operational performance and place strenuous impacts upon the psychological and physiological safety and well-being of the wearer.</p>
M6	Warning and alerting is sufficient to permit timely notification of personnel to don IPE.	<p>8–10: Plans provide for the rapid and effective notification of all units in the force to increase or don individual protective equipment. Means are available and applied at all levels to disseminate warning and alerting in near-real time. All personnel are trained, equipped, and ready to perform required protective measures.</p> <p>4–7: Plans provide for the notification of all units in the force to increase or don individual protective equipment. Means are available to disseminate warning and alerting. Personnel are prepared to perform necessary protective measures.</p> <p>1–3: Plans do not adequately address notification of all units in the force to increase or don individual protective equipment, or means are inadequate to disseminate warning and alerting to the force.</p> <p>0: Plans do not address warning and alerting of the force.</p>
M7	Procedures exist for reducing MOPP level.	<p>8–10: Plans, procedures, and protocols address reduction of required MOPP levels addressing changes in requirements and needs such as mission, function, conditions, and threat. All personnel are trained and ready to perform the associated protective actions.</p> <p>4–7: General procedures and protocols for the reduction of MOPP levels are disseminated to subordinate units. Unit personnel are trained and ready to perform protective actions.</p> <p>1–3: MOPP level reduction protocols are referenced by procedures disseminated to subordinate units. Unit personnel are trained to perform protective actions.</p> <p>0: MOPP level reduction procedures and protocols are not identified and disseminated to subordinate units for implementation and training of unit personnel.</p>
M8	Required CBRN consumables are available to support forces.	<p>8–10: CBRND systems, components, and consumables are positioned and available in plan identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>4–7: CBRND systems, components, and consumables identified in plans are adjusted to limitations in quantities and types, and positioned and available to support operations involving CBRN/TIM threat.</p> <p>1–3: CBRND systems, components, and consumables are adjusted to limitations in quantities and types and are distributed to support operations involving CBRN/TIM threat.</p> <p>0: CBRND systems, components, and consumables are not available to support operations.</p>

M9	Unit is operationally capable in a CBRN/TIM environment using collective and individual protection.	<p>8–10: Unit operational capabilities are maintained within a CBRN/TIM environment through the application of COLPRO and individual protection.</p> <p>4–7: Unit operational capabilities are degraded or limited within a CBRN/TIM environment but are supported by the application of COLPRO and individual protection.</p> <p>1–3: Unit operational capabilities are seriously degraded and limited within a CBRN/TIM environment and are not mitigated by the application of COLPRO and individual protection.</p> <p>0: Unit operational capability is not supported by COLPRO and individual protection.</p>
M10	Function/activity is operationally capable in a CBRN/TIM environment while encumbered by individual protection.	<p>8–10: Operational capability and performance of force functions and activities are not degraded or impacted by IPE encumbrances within a CBRN/TIM environment.</p> <p>4–7: Operational capability and performance of force functions and activities are degraded or limited by IPE encumbrances within a CBRN/TIM environment.</p> <p>1–3: IPE encumbrances impose serious impacts and limitations upon operational capabilities and performance of force functions and activities within a CBRN/TIM environment.</p> <p>0: IPE encumbrances preclude operational capability and performance within a CBRN/TIM environment.</p>
M11	Plan provides the commander with guidance on trade-off analysis to determine the appropriate MOPP level.	<p>8–10: Plans include clear guidance on the conduct of trade-off analysis for adjustment of plan-specific, flexible protective posture protocols disseminated to the units of the force. The guidance outlines foundational requirements and provides detailed information critical to the effective performance of trade-off analysis by the unit staff for the adjustment of the protocols.</p> <p>4–7: General protective posture protocol trade-off analysis guidance is incorporated into plans or references doctrinal materials. Unit staff expertise, training, knowledge, and access to doctrinal materials are applied, and will vary between staffs, to the determination of trade-off analysis for adjustment of the protocols.</p> <p>1–3: Protective posture protocol adjustment trade-off analysis guidance is inadequate to perform the task.</p> <p>0: Protective posture protocol adjustment trade-off analysis guidance does not exist.</p>
M12	Plan requires the commander to constantly reevaluate MOPP level.	<p>8–10: Plans include clear guidance on the continuing conduct of staff review of current and projected operations, activities, functions, conditions, and threat for recommendations to the commander for adjustment of MOPP levels disseminated to subordinate units of the force.</p> <p>4–7: General guidance is incorporated into plans or plan referenced doctrinal materials for the conduct of staff review of current and projected operations, activities, functions, conditions, and threat for recommendations to the commander for adjustment of MOPP levels disseminated to the force. Unit staff expertise, training, knowledge, and access to doctrinal materials are applied, and will vary between staffs, to the determination of recommendations for adjustment of the disseminated MOPP levels.</p> <p>1–3: MOPP level continuing evaluation and adjustment guidance for current and projected operations, activities, functions, conditions, and threat is inadequate to perform the task.</p> <p>0: MOPP level reevaluation and adjustment planning and guidance does not exist.</p>
M13	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>

¹ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP levels address respiratory/ocular protection presence and wear.

² CBRND IPE is currently Service-specific. Respiratory/ocular protection is diverse across the Services and performed functions. USAF combat aircrews conduction operations within a CBRN environment are equipped with the MBU-19/P Chemical-Biological AERP that includes protective hood, MBU-12/P mask, C-2 filter canister, an intercom for ground communications, and a blower assembly. The AERP provides protection whether or not supplemental oxygen is present. USN and USMC aviators use the A/P22P-14(V) Respirator Assembly that is a self-contained protective system deployed for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN and USMC) aircrews. The system incorporates a CB filter, dual air/oxygen supply, and a crossover manifold with dual protective capabilities for flight and ground protection. The A/P 22P-14(V) 1 is not compatible with aircraft with oxygen delivery systems and supports helicopter crew use. Version 2 is used for the EA-6B and F-18A, Version 3 for AV-8B and F-18C/D, and Version 4 is applied for C-130 aircrews. The M17 series mask is obsolete and is relegated to NEO support in selected HTAs. The mask is designed for the military standard profile (ground) and does not adequately protect all potential nonmilitary populace members for which is retained. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M43 CB Aircraft Mask is applied by U.S. Army aircrew members and applies a motor blower unit with C-2 canister for filtration. The system is a stand-alone system that accompanies the user. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The M48 CB Apache Aviator Mask protects AH-64 Apache helicopter aviators and flight support personnel. The blower assembly uses the C-2 filter canister to provide filtered, breathable air. The M48 replaces the M43 Type 1 mask. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and National Fire Protection Association [NFPA] for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection.

³ Military CBRND respiratory/ocular protective equipment provides protection to the wearer from all known chemical warfare agents, radioactive particulates, and biological agents. The equipment also affords protection against selected TIM agents. However, the equipment does not protect against all high-threat TIM agents and does not support survival in oxygen deficient atmospheres. Further, certain agents cause current filtration to break down or saturate rapidly decreasing the time period of protection.

⁴ Approved CBRND respiratory/ocular protection for MWAs does not exist.

⁵ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection.

However, the encumbrances associated with ocular/respiratory protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

⁶ Operations with threat apply MOPP levels detailing the ready availability of respiratory/ocular protection. Generally, the requirement is nine seconds to don, clear, and seal respiratory/ocular protection upon warning or alerting of a CBRN/TIM agent. Selected systems require the fitting and preparation within COLPRO, such as the AERP and similar systems. Personnel outside COLPRO are required to maintain ready availability of respiratory/ocular protection capable of rapid attainment of protection.

⁷ Plans for operations with threat identify adjustable MOPP levels, methodologies, and requirements that are flexible to meet local operational needs and threat. Protocols and processes are identified for determination of appropriate MOPP levels and allowable changes. These are included in unit standard operating procedure (SOPs) and guidelines.

⁸ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified CBRN/TIM threat. The allocation and dissemination of CBRND materiel is managed by the staff based upon plans, operational requirements, anticipated or experienced threat, and available resources. Expeditionary operations are a particular concern. Availability of spares and resupply will be limited during the period until the theater matures (usually the first 30–90 days). Maneuvering highly mobile forces operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPF and, subsequently, in planning.

⁹ Trade-off analysis for MOPP is generally addressed in plans and processes. Staff applies doctrinal materials as foundational guidance for advising the commander and developing instructions to subordinate units. Unit staff expertise, training, knowledge, and access to doctrinal materials are applied, and will vary between staffs, for the determination of trade-off analysis to adjust the protocols.

¹⁰ The commander implements and adjusts MOPP levels and protocols based upon staff-developed information and personal experience, knowledge, training, and operational requirements. Plans provide for the continuing evaluation of MOPP and CBRND measures by the commander and supporting staff. Decisions and instructions are disseminated based upon the commander's evaluation, assessment, and action determination by the supporting staff.

¹¹ DOTLPP exists for the conduct of this task for military personnel. However, DOTLPP for this task as applies to non-U.S. military personnel and MWAs is inadequate for the protection and survival of these personnel in a CBRN/TIM environment.

¹² Plans incorporate MOPP levels and methodologies and are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP levels address percutaneous protection presence and wear.

¹³ Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn; ripped; splashed with petroleum, oil, or lubricant (POL); or saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The USN, USAF, and USMC use the disposable aircrew protective cape to protect aircrew between sheltering and the combat aircraft. The cape drapes over the wearer and is removed during entry into the aircraft to prevent transfer of contamination into the aircraft interior. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. The disposable aircrew boot cover is worn by USAF, USN, and USMC aviators over aircrew footwear while en route and mounting combat aircraft. The covers are removed during aircraft entry and are designed to prevent contamination transfer into the aircraft. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. Disposable aircrew hand protection is applied by the USAF, USMC, and USN for aviators over their gloves (and may be worn between glove layers for additional protection) during movement between shelter and aircraft. When used as an overglove, the gloves are removed during aircraft mounting during aircraft entry to preclude the potential for transfer of contamination into the aircraft interior. Medical Services practitioners performing treatment The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and explosive ordnance disposal (EOD) personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) are applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

¹⁴ Military CBRND percutaneous protective equipment provides protection to the wearer from all known chemical warfare agents, radioactive particulates, and biological agents. The equipment also affords protection against selected TIM agents. However, the equipment does not protect against all high-threat TIM agents. Further, certain agents cause rapid saturation rapidly decreasing the time period of protection. High winds, such as rotor wind or propeller/jet wash, may cause penetration of the protective equipment by agent. The protective garments are vulnerable to saturation to saturation by rain, sea spray, and high humidity. The CBRND protective capabilities of COTS equipment will vary. COTS equipment manufactured within the United States or to U.S. specifications for toxic environments must comply with OSHA standards. However, COTS equipment must be compared against the threat, if applied, and for the level of required protection identified in OSHA standards. COTS equipment not manufactured within the United States and not for U.S. sale may or may not meet equivalent standards, if mandatory standards exist. OSHA-standard equipment may not be applicable for non-U.S. personnel at locations outside the United States. Existing national standards for the host or originating country may be applicable and may not provide equivalent protection to OSHA.

¹⁵ Approved percutaneous protection for MWAs does not exist.

¹⁶ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets). Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

¹⁷ Operations with threat apply MOPP levels detailing the ready availability of percutaneous protection. Depending upon the MOPP level, the individual will wear portions or all components of percutaneous protection including gloves, jacket, pants, and boot covers. Respiratory/ocular protection is donned first to protect the individual followed by the remaining components of percutaneous protection upon warning or alerting of a CBRN/TIM agent. Selected systems require the fitting and preparation within COLPRO, such as the high-performance aircrew ensembles and similar systems. Personnel outside COLPRO are required to maintain ready availability of percutaneous protection capable of rapid attainment of protection.

¹⁸ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND COLPRO to mitigate or prevent the effects of CBRN/TIM agents upon critical functions, activities, and operations.

¹⁹ Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels and do not support the protection of MWDs. The only currently fielded land-based mobile group COLPRO is CBPS. The CBPS system is available on a mobile platform and can provide a limited number of people protection. The CBPS consists of a dedicated M1113 HMMWV with an LMS mounted on the back and provides a highly mobile, contamination-free, environmentally controlled work area for forward deployed medical units. The CBPS has been fielded to treatment squads, forward surgical teams, and medical companies. Four personnel are required to operate the CBPS. However, these systems are limited in supply and are generally dedicated to medical and C4ISR operations. None are allocated for the protection of MWDs or MWD teams.

²⁰ Limited COLPRO is available in type and quantity to support operations, particularly multiple operations with threat. Limitations are considered during planning and alternatives are developed by the staff. The combination of IPE and available COLPRO provides flexibility to meet and maintain operational capability.

²¹ The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support MWDs, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available during operations against an adversary. Current plans generally do not address the application of COLPRO to MWDs and do not allocate the limited COLPRO resources to this resource. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these facilities are dedicated to critical operational requirements and restricted to assigned and designated personnel. MWD handlers may possess access to COLPRO, depending upon performed activity and location, against the effects of CBRN/TIM agents. However, MWDs are not permitted into COLPRO unless specified by the commander and/or senior ranking person within the shelter.

²² Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND actions, activities, and requirements to mitigate or prevent the effects of CBRN/TIM agents.

²³ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND IPE to mitigate or prevent the effects of CBRN/TIM agents.

²⁴ Plan-identified forces are trained on MOPP level requirements and associated actions. Each level identifies the protective equipment forces are to don and maintain. However, although MOPP levels are generally considered to apply to equipped nonmilitary personnel, DOTLRF does not adequately address MOPP application to these personnel.

²⁵ MWDs are not CBRND trained, equipped, and fully integrated into CBRND exercises and evaluations requiring the use of IPE at the appropriate MOPP levels. MOPP does not address MWDs. MWD handlers are trained and equipped with IPE to achieve required MOPP levels upon notification or warning and to evacuate MWDs as best possible.

²⁶ MOPP levels and methodologies provide flexibility for the adjustment of IPE to meet local operational and threat requirements. The intent is to achieve and maintain the lowest level necessary for survival of the force and operational accomplishment. Adjustments are made as dictated by local circumstances. However, prolonged wear of IPE will degrade performance.

²⁷ Personnel are instructed and trained to adopt full MOPP protection upon alerting or warning of a CBRN/TIM agent attack or presence. Reduction in MOPP level is performed upon receipt of guidance and as outlined.

²⁸ Unit staff conducts planning and coordination activities for operations with threat to mitigate or preclude operational and survival impacts upon operations and personnel by CBRN/TIM agents. These plans include the integration and dissemination of MOPP levels and methodologies. The MOPP levels are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel).

²⁹ Unit staff planning and operational activities address the identification, allocation, and application of IPE by the force for operations with threat. Detailed guidance and instructions are provided to participating units for effective preparation and post-event activities and actions for CBRN/TIM agents. Unit staff personnel planning is guided by current doctrine, policy, procedures, and TTPs. Select HTA doctrine does provide limited guidance on the provisioning of protection to in-place, known, eligible civilians not supporting the mission (e.g., military dependents, etc.). However, the emphasis within HTAs is upon short-term protection until evacuation. Planning for the provision of CBRND to nonmilitary personnel is a combination of known available assets not otherwise committed to operations, threat, number of persons involved, ability to protect the target population, available relocation resources, expected time to move the population, and expected operational demands. DOTLPP providing guidance for CBRND of detainees does not exist. The protection of non-force members within the United States and its territories is constrained by available protective resources and impacted by OSHA requirements for nonuniformed personnel. Staff training, processes, and planning/operating guidance do not adequately consider civilians supporting the mission and remaining within the AO, particularly non-U.S. personnel. The provisioning and standards for civilians performing mission support tasks, activities, and functions are not adequately addressed for the provision of military force equivalent CBRND IPE where and when appropriate. Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. Staff personnel representing selected activities such as fire department, EMS, and other similar standard response functions are aware and knowledgeable of OSHA requirements and are involved in staff planning and operational processes. However, equipage of these personnel is currently restricted to selected activities and functions. Further, host-nation standards and requirements similar to OSHA may exist and apply to non-U.S. personnel, activities, and functions supporting the mission and are not generally known to the staff. Most civilian personnel, both those performing mission support and not, are not addressed in planning for survival and operations within a CBRN/TIM environment.

³⁰ Equipping the force is an integral part of staff planning and preparation for operations with threat. Allocation and issuance of individual protective assets are detailed in plans and tracked for accomplishment and operational readiness. However, the provisioning of individual protective equipment and measures to nonmilitary members of the force is not adequately addressed in DOTLPP.

³¹ DOTLPP does not address and require the allocation of CBRND resources for the protection of MWDs. Plans call for the evacuation of MWAs upon notification of an impending CBRN/TIM release.

³² Unit staff planning and preparations include preparing the force for operations within a CBRN/TIM environment. Degradation is considered in the development of taskings, R2 requirements, and force application. MOPP levels are developed, implemented, and adjusted to meet local operational needs and threat. Constant evaluation of force activities is performed for necessary changes and modifications to maintain force operational capabilities.

³³ Currently, the transmission and reception of CBRN/TIM hazard alarm, warning, and report information is performed manually predominantly using ATP-45 formats and processes. Each unit is responsible for ensuring potentially or indirectly affected subordinate units are notified of the hazard. This is generally performed using nondedicated existing and available communication systems. All personnel are trained during military basic training and periodic CBRND training on alerting nearby personnel, warning those in their area, and reporting the event as outlined in their unit procedures. This training is reinforced during deployment preparation for operations with a threat. CBRND specialists are fully trained and receive recurring training on the conduct of performing CBRN warning and reporting. Units not possessing primary duty CBRND specialist do assign selected staff personnel with CBRN responsibilities and provide access to the necessary training. CBRN warning and reporting competencies of these later personnel will vary, but sufficient capability exists. Selected staff personnel are also trained using these warnings and reports to assess and recommend courses of action (COAs) to the commander for maintenance of operations tempo (OPTEMPO) while providing for the safety and well-being of the force. Exercises and evaluations do not generally challenge all areas of unit capabilities for alerting, warning, and reporting. Adjacent units, particularly non-U.S. and often other U.S. Services, may not receive alerts, warnings, and reports until after these have been processed up through channels and then disseminated back down channels, creating unnecessary delays with potential ramifications for OPTEMPO and unit survivability.

³⁴ Equipping and supply the force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, and movement of identified CBRND resources from stockpiles and reallocation activities are pursued by units staff with the Joint Task Force (JTF) staff to prepare and support forces as outlined by the appropriate plan and adjusted to meet local operational requirements.

³⁵ Unit staff provides for R2 of personnel operating outside COLPRO at least once every 24 hours within COLPRO. Staff also manages COLPRO allocation and operations for support of operational requirements and critical activities/functions.

³⁶ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. Reduces wear encumbrances associated with existing systems. The JSGPM will be OSHA-approved for use by DoD civilians and military personnel in nonmilitary unique operations. The JSGPM is designed to interface with current and co-developmental chemical protective garments and to be compatible with mission-essential equipment. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address the provision of CBRND protective assets for general base populace, as well as eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

³⁷ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JB1GU is expected to meet most of the requirements within the JSLIST Operational Requirements Document (ORD) and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address the provision of CBRND protective assets for general base populace, as well as eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

³⁸ Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as are two variants of the JSLNBCRS, the M93A1 Fox NBCRS Block II, and backfit of LHA/LHDs to include CITADEL.

³⁹ The projected initial fielding of JECP within the mid term provides additional capabilities for the COLPRO protection of the force and critical activities/functions. JECP includes COLPRO adaptive inserts for building/rooms and legacy tentage and stand-alone COLPRO sheltering for small units. The projected mid-term fielding of JECP may alleviate COLPRO shortages but will likely be insufficient to satisfy all COLPRO requirements. Quantities to be fielded of these systems have not been determined. JTCOPS Block I is also projected for initial fielding during the mid term. Prior planning and prioritization of COLPRO allocation is critical.

⁴⁰ The projected fielding of JWARN will decrease the time taken to disseminate alerting and warning information to the force. Additionally, JWARN will enable the notification of adjacent units connected to the network. Manual notification methods and means will remain foundational for many units during the transition period and for elements of units.

⁴¹ The next-generation series of aviator and nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

⁴² The next-generation series of aviator and nonaviator percutaneous protective assets are in R&D. The capabilities and fielding of these assets are not as yet determined.

⁴³ The projected Future Tactical Lift Option is under evaluation for the potential addition of COLPRO in the design and production specifications. A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

⁴⁴ JTCOPS Block II is projected for the far term. Continued fielding of JECP.

13.1.3 Functional Solution Analysis

13.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all CBRND protective equipment and measures protect against all CBRN/TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Ensure doctrine effectively describes the limitations of CBRND protective equipment to enable users to choose appropriate equipment for the threat encountered.
- 2. Deficiency:** Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.

Partial Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine addressing prolonged wear of IPE and MOPP gear exchange. *Organization:* Develop organizational structures, resources, staffing, and capabilities to support personnel exchange and R2 to preclude degradation of tasks and to promote the well-being of the force. *Training:* Ensure training, exercises, and evaluations effectively promote acclimation and endurance of wear of IPE. *Leadership:* Ensure awareness of degradation effects.
- 3. Deficiency:** Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Partial Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 4. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
- 5. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 6. Deficiency:** Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures for CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilian survivability. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).
- 7. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of MWD handlers and MWDs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability.
- 8. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services

and activities supporting the mission performed by civilian personnel and operations.

Training: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians. Conduct CBRND training, exercises, and evaluations. *Leadership:*

Implement and manage CBRND training, equipping, and protection of eligible civilians.

Personnel: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g.,

logistics, medical, veterinary surveillance, training, communications, etc.).

- 9. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs. **Non-Materiel Solutions:** *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWA, particularly MWD, operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by MWA CBRN/TIM survivability and mission operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs. Conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 10. Deficiency:** Current doctrine, the *Universal Joint Task List (UJTL)*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 11. Deficiency:** Exercises and training do not emphasize task performance and operations in a CBRN/TIM environment. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, and procedures sustained operations within a CBRN/TIM environment. *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 12. Deficiency:** COTS equipment not manufactured within the United States and not for U.S. sale may or may not meet equivalent OSHA standards. **Non-Materiel Solutions:** *Doctrine:* Include in doctrine, policy, and TTPs guidance for the application of non-OSHA approved material for protection of eligible civilians. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, acquire,

disseminate, and manage the provision of non-OSHA/standard force IPE assets and measures to eligible civilians. *Leadership*: Ensure awareness of potential variances in requirements for protection of eligible civilians. Ensure planning and preparation activities adequately address this area. *Facilities*: Develop supporting infrastructure to support the provisioning of non-OSHA-standard force IPE assets and measures to eligible civilians.

- 13. Deficiency:** Inadequate COLPRO to support expeditionary and highly mobile forces
Partial Non-Materiel Solutions: *Doctrine*: Develop and disseminate appropriate doctrine, policy, and procedures for the application of common materials for COLPRO and for COLPRO kits and components. *Organization*: Develop organizational structures, resources, staffing, and capabilities to enable effective application of available COLPRO and implementation of expedient COLPRO capabilities. *Training*: Establish initial and recurring training of all members of the force on the conduct of expedient COLPRO. Exercises and evaluations incorporate criteria challenging this capability. *Leadership*: Recognize potential for expedient COLPRO to improve force capabilities and survivability. *Facilities*: Develop supporting infrastructure enabling expedient COLPRO and the effective application of available COLPRO.
- 14. Deficiency:** MWDs are not permitted into COLPRO unless specified by the command and/or senior ranking person within the shelter.
Partial Non-Materiel Solutions: *Doctrine*: Establish in doctrine requirement for the provision of COLPRO for MWDs in kenneling and field circumstances, as well as mandate provisioning of COLPRO space in circumstances when MWD COLPRO is unavailable. *Leadership*: Ensure awareness of value of force multiplying asset and criticality for operations. Enforce compliance with doctrine.
- 15. Deficiency:** CBRND of detainees is inadequate.
Partial Non-Materiel Solutions: *Doctrine*: Include in doctrine, policies, and TTPs requirements and guidance for the provision of CBRND to detainees. *Organization*: Ensure resources, taskings, and staff are in place or available to plan and conduct CBRND of detainees. *Training*: Train, exercise, and evaluate the force for effective CBRND of detainees. *Leadership*: Recognize criticality of protection of detainees within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force. *Facilities*: Develop infrastructure to support CBRND of detainees.
- 16. Deficiency:** Standard force individual protection does not meet OSHA standards.
Non-Materiel Solutions: *Doctrine*: Include requirement for standard force individual protection to meet the appropriate OSHA protection standard, if applicable.
- 17. Deficiency:** National standards and requirements similar to OSHA may exist and apply to non-U.S. personnel, activities, and functions supporting the mission and are not generally known to the staff.
Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, and TTPs guidance for the application of non-OSHA approved material for protection of eligible civilians.

Organization: Ensure resources, taskings, and staff are in place or available to plan, acquire, disseminate, and manage the provision of non-OSHA-standard force IPE assets and measures to eligible civilians. *Leadership:* Ensure awareness of potential variances in requirements for protection of eligible civilians. Ensure planning and preparation activities adequately address this area. *Facilities:* Develop supporting infrastructure to support the provisioning of non-OSHA-standard force IPE assets and measures to eligible civilians.

- 18. Deficiency:** Manual nature of current alerting and warning processes impact dissemination to subordinate and neighboring units and implementation of MOPP requirements for CBRND. **Non-Materiel Solutions:** *Doctrine:* Include requirement for cross-Service notification of adjacent force elements. *Training:* Include cross-Service notification of adjacent force elements in training criteria. Incorporate criteria into exercises and evaluations to challenge alerting and notification of adjacent force elements. *Leadership:* Ensure awareness of adjacent elements and criticality of time to protect the force. *Facilities:* Develop supporting infrastructure for cross-Service communications.

13.1.3.2 IMA Assessment Summary

Table 13.1-3 is a list of ideas for material approaches and a corresponding description of each idea. Approaches vary from modification of current IPE to developing new systems and conducting early technology assessments. Significant issues remain concerning MWAs, primarily establishing priorities concerning the need to develop IPE. Table 13.1-4 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.1-3. TASHLD 1: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
COTS CBRND IPE materiel for MWD protection	Adapt COTS protective equipment, where necessary and desirable, for CBRND of MWDs.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Develop MWD COLPRO	Develop or adapt joint level MWD transport and field kenneling systems for COLPRO function as transporter, field shelter, and COLPRO.
Develop/adapt MWA transport system with pressure/filtration	Develop or adapt MWA transport systems to provide COLPRO protection from CBRN/TIM agents.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Disposable IPE	Develop low-cost disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.

Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Rebreathing	Closed circuit mechanism to permit an individual's exhaled air to be filtered, CO ₂ removed and recirculated for breathing, allowing user to make use of all available oxygen in a closed environment.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Respiratory protection for MWAs	Modify existing technology for application by MWAs to provide some protection from CBRN/TIM. Specific masks would be desirable that are comparable to the human form factor.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.1-4. TASHLD 1: IMA Assessment

Ideas for Material Approaches (IMA)	Identified Gaps	Assess CBRND Material	Broad-Application above-the-Neck Respiratory Protection	Chemical Air Generation	Chemical Treatment	COTS CBRND IPE Material for MWD Protection	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Develop MWD COLPRO	Develop/Adapt MWA Transport System With Pressure/Filtration	Disposable COLPRO	Disposable IPE	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Filtration System Lowering Inhalation Pressure Requirement
	CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X				X									
	Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.		X	X	X							X			X
	Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).	X	X	X	X		X	X			X		X	X	X

Ideas for Material Approaches (IMA) Identified Gaps	Assess CBRND Material	Broad-Application above-the-Neck Respiratory Protection	Chemical Air Generation	Chemical Treatment	COTS CBRND IPE Material for MWD Protection	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Develop MWD COLPRO	Develop/Adapt MWA Transport System With Pressure/Filtration	Disposable COLPRO	Disposable IPE	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Filtration System Lowering Inhalation Pressure Requirement
Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.	X	X	X	X			X	X	X	X	X	X	X	X
Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Inadequate COLPRO to support expeditionary and highly mobile forces						X	X	X	X	X		X	X	
CBRND of detainees is inadequate.						X	X			X	X	X	X	

Table 13.1-39. TASHLD 1: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>	<p style="text-align: center;">Integrate CBRN/TIM Protective Features into Functional Garments</p>	<p style="text-align: center;">Integrated Mobile COLPRO</p>	<p style="text-align: center;">Rebreathing</p>	<p style="text-align: center;">Regenerative Filtration</p>	<p style="text-align: center;">Respiratory Protection for MWA</p>	<p style="text-align: center;">Topical</p>
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X			X	X	X	X
<p>Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks</p>	X	X	X	X	X		X
<p>Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).</p>	X	X	X		X	X	X
<p>Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.</p>	X			X	X		X
<p>Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.</p>	X		X	X	X	X	X
<p>Inadequate COLPRO to support expeditionary and highly mobile forces</p>			X				
<p>CBRND of detainees is inadequate.</p>					X		X

13.2 Task TASHLD 2: Initiate medical prophylactic measures to counter CBRN/TIM effects

13.2.1 Functional Area Analysis

13.2.1.1 Definition

Prophylaxis may be administered prior to actual exposure or following exposure but prior to presentation of signs and symptoms. Prophylaxis may be administered prior to, during, or post deployment. Prophylaxes exist for a number of chemical, biological, and radiological agents. Medical prophylaxes prevent or reduce the agent effects from exposures and/or increase the effectiveness of post exposure treatments. These preventive measures will reduce the number of casualties requiring medical services, as well as decrease the impact upon operations resulting from exposure to CBRN/TIM agents.

13.2.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.2.1.2.1 Supported Task: N/A

13.2.1.2.2 Lateral Task: TASHA 24

13.2.1.2.3 Supporting Task: N/A

13.2.1.3 Condition

Perform this task under conditions of:

Physical

- 1 Undeveloped to highly developed land. (C1.1.1)
- 2 Riverine to open sea. (C1.2)
- 3 Natural and induced air. (C1.3)
- 4 Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Severe health status. (NEW¹)
2. Partially completed mission preparation. (C2.1.3)

¹ Proposed New Condition—Personnel Health Status (applicable Section C2.2): *Degree to which personnel, due to contraindications or preexisting conditions/illness, can be effectively diagnosed or receive medical prophylaxis or treatment.* Descriptors: Normal—Contraindications or conditions/illness do not exist. Limited—Conditions/illness exist complicating diagnosis. Contraindication or condition/illness exists but alternate prophylaxis or treatment is available. Severe—Contraindication or condition/illness exists and alternate prophylaxis or treatment is not available.

3. Marginal to strong forces. (C2.2)
4. Good personnel physical conditioning. (C2.2.4.3)
5. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
6. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
7. Negligible personnel experience. (C2.2.4.5)
8. Limited staff expertise. (C2.3.1.3)
9. Limited deployed supplies. (C2.8.2)
10. Limited prepositioned materiel. (C2.8.4)

Civil

1. Poor civil health. (C3.3.1.4)
2. High health risk. (C3.3.1.5)
3. TIMs present in the civilian sector. (C3.3.7.5)

13.2.2 Functional Needs Analysis

13.2.2.1 Capability and Deficiency Assessment Summary

Tables 13.2-1 through 13.2-2 discuss medical prophylactic measures to provide protection of warfighters against the effects of CBR agents. These prophylactic measures include preexposure, post-exposure, and presymptomatic measures. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Medical prophylaxes do exist for the protection of the warfighter against specific biological and chemical agents. However, few are FDA approved. A number possess investigational new drug (IND) authorization for application. Medications are considered for their potential prophylactic value, but are not always FDA approved for this purpose. Not all threat CBRN agents and high-threat/high-risk TIMs (particularly toxic industrial chemical [TICs]) are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes. Eligible civilians and MWAs are not adequately addressed by DOTLPP for CBRND medical countermeasures. Clear DOTLPP addressing the CBRND provisioning and training of eligible civilians is inadequate. MWAs are not afforded prophylaxis against the effects of CBRN/TIM agents. MOPP DOTLPP is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPP does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be prepared for CBRND operations.

Projected Near/Mid-Term Capability and Deficiency

Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents and high-threat/high-risk TIM agents.

Projected Far-Term Capability and Deficiency

Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time.

13.2.2.2 Resource Systems

Individual Protection Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.2-1. TASHLD-2: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
Individual Protection—Medical Protection	1 ¹	8 ²	6 ³	4 ⁴	3 ^{1,5}	6 ⁶
Mission-Oriented Protective Posture (MOPP) Methodology	7 ⁷	8 ⁸	6 ⁹	N/A	N/A	6 ⁶
Unit Staff	5 ¹⁰	9 ¹¹	7 ¹²	4 ^{4,13}	7 ¹⁴	6 ⁶
Near/Mid						
Individual Protection—Medical Protection	1 ^{1,15}	8 ²	6 ³	4 ⁴	3 ^{1,5}	6 ⁶
MOPP	7 ⁷	8 ⁸	6 ⁹	N/A	N/A	6 ⁶
Unit Staff	5 ¹⁰	9 ¹¹	7 ¹²	4 ^{4,13}	7 ¹⁴	6 ⁶
Far						
Individual Protection—Medical Protection	1 ^{1,15,16}	8 ²	6 ³	4 ⁴	3 ^{1,5}	6 ⁶
MOPP	7 ⁷	8 ⁸	6 ⁹	N/A	N/A	6 ⁶
Unit Staff	5 ¹⁰	9 ¹¹	7 ¹²	4 ^{4,13}	7 ¹⁴	6 ⁶
Overall						
Current Overall Capability	4	8	6	4	5	6
Near/Mid-Term Overall Capability	4	8	6	4	5	6
Far-Term Overall Capability	4	8	6	4	5	6

	FAA Measure	Scale
M1	Forces can be protected by medical prophylaxis for all threat agents of concern in the Joint Operations Area (JOA).	<p>8–10: Medical CBRND countermeasures exist and are available for all threat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>4–7: Medical CBRND countermeasures exist and are available for high-threat CBRN and selected high-risk TIM agents for U.S. military and eligible civilian members supporting the mission/operations.</p> <p>1–3: Medical CBRND countermeasures do not adequately address high-threat CBRN agents.</p> <p>0: Medical CBRND countermeasures do not exist for CBRN agents.</p>
M2	Capability exists to rapidly and accurately initiate medical response and perform necessary medical measures upon identification of CBRN/TIM threat or hazard.	<p>8–10: Plans and tasked resources exist and are in place to rapidly and accurately implement and conduct effective medical response and focused medical measures upon notification of a CBRN/TIM threat or hazard within the AO.</p> <p>4–7: Plans exist and identify taskings and resources for the implementation and conduct of medical response and medical measures upon notification of a CBRN/TIM threat or hazard within the AO.</p> <p>1–3: Plans exist and generally identify taskings and resources for the implementation and conduct of medical response and medical measures upon notification of a CBRN/TIM threat or hazard within the AO.</p> <p>0: Plans for the implementation and conduct of medical response and medical measures upon notification of a CBRN/TIM threat or hazard within the AO are nonexistent.</p>

M3	Force are trained to appropriately apply medical prophylaxis.	<p>8–10: All force members (military, eligible civilians, and MWA) are trained on the appropriate application and use of medical prophylaxis against threat CBRN/TIM agents.</p> <p>4–7: Force members (military and eligible civilians support the mission) are trained on the appropriate application and use of medical prophylaxis against threat CBRN/TIM agents.</p> <p>1–3: Military force members are trained on the appropriate application and use of medical prophylaxis against threat CBRN/TIM agents.</p> <p>0: Training on the appropriate application and use of medical prophylaxis against threat CBRN/TIM agents is nonexistent.</p>
M4	Medical personnel are trained to appropriately administer prophylaxis.	<p>8–10: Medical personnel receive recurring training on the procedures, dosing, siting, application, identification and mitigation of potential adverse reactions, and documentation associated with administration of each medical prophylaxis.</p> <p>4–7: Medical personnel are trained on the procedures, dosing, siting, application, identification and mitigation of potential adverse reactions, and documentation associated with the administration of medical prophylaxis.</p> <p>1–3: Selected medical personnel are trained on the procedures, dosing, siting, application, identification and mitigation of potential adverse reactions, and documentation associated with the administration of specific medical prophylaxis associated with identified operational threat.</p> <p>0: Medical personnel are not trained on the procedures, dosing, siting, application, identification, and mitigation of potential adverse reactions, and documentation associated with the administration of medical prophylaxis.</p>
M5	Prophylaxes are FDA approved	<p>8–10: Available medical CBRND countermeasures are FDA approved.</p> <p>4–7: Available medical CBRND countermeasures are FDA approved or possess IND status.</p> <p>1–3: Available medical CBRND countermeasures include non-FDA approved/IND status CBRND medical countermeasures.</p> <p>0: Medical CBRND countermeasures are not FDA approved or possess IND status.</p>
M6	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>

¹ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Military personnel are administered and/or issued CBRND medical countermeasures for operations with threat. Vaccines for selected biological agents, topicals, and preexposure and/or post-exposure/presymptomatic medications are applied to mitigate or preclude the effects of specific CBRN/TIM agents. Currently, preexposure prophylaxis is available for nerve agents (G and V series), and vesicants (H, HD, HN, L, CX), topical only. SERPACWA is the preexposure countermeasure for vesicants and one nerve agent. TSP is approved by the FDA as a supplement for SERPACWA. Post-exposure prophylaxis is available for pulmonary (CG) agent, but is not FDA approved. Radioprotective steroids and neutraceuticals may be effective as pre- and post-exposure prophylactics. 5-androstenediol is an IND preexposure treatment for radiological exposure. Iodide/potassium iodide is FDA

approved for application against Iodine 131, 132, 134, and 135. Post-exposure radiological exposure prophylaxis consists of neutraceuticals, plant isoflavone genistein, and alpha tocopherol (Vitamin E) but are not approved by the FDA for prophylaxis against radiation. FDA-approved preexposure medical countermeasures are available for anthrax, cholera, HFRS (Haantan), Rift Valley fever, yellow fever, HFRS (Haantan), and smallpox. IND status vaccines are currently available for Q-fever, tularemia (although use has been placed on hold by the FDA), Botulinum, Junin hemorrhagic fever, and VEE/WEE/EEE. Antiviral/bacterial medications may be administered and/or issued to provide a level of protection against biological agents. Medical prophylaxes are developed for the military force. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as long-term health issues and legal implications.

² The force is equipped with prophylaxes for selected threat agents, trained in their application and identification of symptoms, and are instructed on the proper use of the material, whether preexposure or post-exposure/presymptomatic. The conduct of an accurate threat analysis drawing upon multiple correlated sources is critical to the identification of threats to the force and the appropriate prophylactic treatment. Rapid detection and characterization of the agent with dissemination of the information throughout the force is important to the accurate application of prophylaxes used for post-exposure/presymptomatic treatment.

³ Military members tasked to participate in operations with threat are briefed on the threat agents and associated CBRND measures, including medical prophylaxes. If preexposure and/or post-exposure/presymptomatic prophylaxes are issued, the force is trained on the use of the medication. However, CBRND prophylaxes for MWAs do not exist, and DOTLPP is inadequate for the training of non-U.S. military personnel for prophylactic treatment of CBRN/TIM agent exposure.

⁴ Medical practitioners and Medical Corps support personnel are formally trained on the administration of medications for standard medical treatment. The application of this training to prophylaxes is generally transparent. However, IND prophylaxes place increased requirements upon medical personnel to ensure the protocols for the particular prophylaxis are stringently followed and the recipients are fully briefed. DOTLPP requires documentation of the prophylaxis be placed within the recipient's medical records. Additional reporting and documentation requirements may be applied to a specific IND prophylaxis treatment. However, medical personnel are not generally trained on IND requirements and specifics for particular IND prophylaxis treatments. Generally, personnel tasked to perform the administration and documentation of the treatments are provided a short briefing with reading material to prepare to conduct the activity. The depth of the briefing varies between units.

⁵ Not all prophylaxes are FDA approved. Several are categorized and applied as IND medical measures. Although FDA approval is a criteria for medical material applied as prophylaxes, the limited quantities required by DoD and the lack of a commercial demand may dictate many prophylactic measures do not achieve full FDA approval. Further, selected medications may be applied prophylactically. While a number may possess FDA approval, they may not be not approved for prophylactic use by the FDA and therefore may not be considered FDA approved.

⁶ DOTLPP exists for the conduct of this task for military personnel. However, DOTLPP for this task as applies to non-U.S. military personnel and MWAs is inadequate for the protection and survival of these personnel in a CBRN/TIM environment.

⁷ Plans incorporate MOPP levels and methodologies and are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND medical countermeasures and IPE to mitigate or prevent the effects of CBRN/TIM agents.

⁸ Unit MOPP level guidance and planning includes prophylaxes. Materials are administered/issued according to the developed plans and guidance.

⁹ Forces are trained to perform the actions associated with the appropriate MOPP level, including the administration of prophylactic materials, as outlined in Unit plans and guidance.

¹⁰ Unit staff planning and operational activities address the identification, allocation, and application of CBRND medical countermeasures by the force for operations with threat. Detailed guidance and instructions are provided to participating units for effective preparation and post-event activities and actions for CBRN/TIM agents. Unit staff personnel planning is guided by current doctrine, policy, procedures, and TTPs. DOTLPP does not adequately address the administration and issue of prophylaxis to eligible civilians and other non-U.S. military personnel. Staff training, processes, and planning/operating guidance do not adequately consider civilians supporting the mission and remaining within the AO, particularly non-U.S. personnel. The provisioning and standards for civilians performing mission support tasks, activities, and functions are not adequately addressed for the provision of military force equivalent CBRND where and when appropriate. The administration and issuance of prophylaxis is addressed by the staff during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures. National policies of the coalition/non-U.S. forces regarding medical prophylaxis is a factor the commander and supporting staff must consider during planning and operations. Religious considerations may also impact the use of medical prophylaxis.

¹¹ Medical and operational unit plans identify taskings and resources for the preparation of the force for operations with threat, and support of the force throughout operations, including CBRND operations. Specific implementation measures for the application of prophylactic immunizations and treatments (not issued to the individual) are addressed in the medical unit plans. The combination of established element organic assets, prepositioned material, and movement of identified CBRND resources from stockpiles and reallocation activities pursued by the medical and operational unit staffs, in collaboration and coordination with each other and higher authorities, to prepare and support forces as outlined in plans and adjusted to the circumstances. Medical resources and systems are reallocated, when necessary and in coordination with higher authorities, by medical authorities from prepositioned and dispersed stocks of Medical Services elements deploying or operating within an OA to rapidly and accurately address CBRN/TIM hazard exposure of the force.

¹² Unit staff planning for operations with threat includes the preparation and equipping of the tasked forces for CBRN/TIM operations. Medical prophylactic protection is one component of CBRND. The threat is compared to available prophylactic treatments in coordination with Medical Services to identify and obtain the appropriate material. Prophylactic material self-administered periodically or applied upon exposure, but prior to symptomatic display, are issued and personnel are trained on the specific prophylaxes. The training is documented and incorporated into the unit's readiness determinations. Prophylactic material applied upon exposure, but prior to symptomatic display, are issued and personnel are trained on the specific prophylaxes.

¹³ Medical staff ensure medical practitioners and Medical Corps support personnel are trained and ready to brief, administer, and document administration of prophylaxes appropriately.

¹⁴ Unit and associated medical staff ensure personnel administered or issued IND medications and other non-FDA approved medical materials are fully informed and are briefed as outlined in doctrine, policies, and procedures related to this task and non-FDA-approved materials.

¹⁵ Cell Culture Derived Vaccinia is projected for production during the near-term. Clostridium Botulinum Toxin Medical Defense System is projected for availability during the mid term for Serotypes A, B, C, E, and F. The SERPACWA Active TSP is also projected for production during the late mid term.

¹⁶ Active TSPs are projected for replacement of SERPACWA TSP and SERPACWA Active TSP in the far term. The Chemical Agent Prophylaxis and Cyanide Pretreatment are also projected for the far term. The Multivalent VEE Vaccine is projected to begin production in FY2013. The Next-Generation Anthrax Vaccine, Tularemia Vaccine, and Plague Vaccine are projected for production beginning in FY2010. Serotypes A and B are addressed in the Recombinant Bivalent Botulinum Vaccine projected for production in FY2012. A number of R&D efforts are under way for the development of preexposure and post-exposure prophylaxes. Potentially, these efforts may produce viable prophylaxes within the mid and far term resulting in fielded material. However, possible resulting prophylaxes cannot be predicted at this time.

13.2.3 Functional Solution Analysis

13.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Forces are not protected against all identified threat CBRN/TIM capabilities.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents.
Leadership: Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 2. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents.
Leadership: Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 3. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures to not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding eligible civilians.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilians during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.
- 4. Deficiency:** Current prophylaxis and supporting doctrine, policy, and procedures to not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, during CBRND operations and the provision of CBRND protection, including prophylaxis. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 5. Deficiency:** Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on

the use of prophylactic CBRND protection against threat agents. *Leadership*: Enforce compliance with established metrics for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

- 6. Deficiency:** The efficacy of existing prophylaxis, particularly vaccines, widely varies.
Partial Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 7. Deficiency:** Short-notice operations and reallocated taskings impact the administration and issue of prophylaxis for the threat.
Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of baseline standards for prophylactic CBRND protection against all threat agents. *Leadership*: Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 8. Deficiency:** Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the area of responsibility (AOR).
Non-Materiel Solutions: *Doctrine*: Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during and throughout deployment, redeployment, relocation, and en route phases of movement. *Organization*: Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, redeploying, relocating, and en route forces. *Training*: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership*: Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities*: Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.
- 9. Deficiency:** The administration of many vaccines requires multiple administrations over a period of time for acquired immunity.
Partial Non-Materiel Solutions: *Doctrine*: Include in doctrine, policy, and procedures requirement for CBRN/TIM protective prophylaxis protecting the force through the deployment cycle. *Organization*: Establish organizational incentives to address CBRN/TIM protective prophylaxis providing protection of the force throughout the deployment cycle. *Leadership*: Ensure standards, criteria, and metrics for CBRN/TIM medical prophylaxis R&D are concise and adequately protect the force throughout the deployment cycle with a minimum of administrations, preferably one.
- 10. Deficiency:** Prophylaxis for MWA is virtually nonexistent.
Partial Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment

survival. *Organization*: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Establish institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

11. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization*: Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians and non-U.S. forces. *Training*: Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership*: Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel*: Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

12. Deficiency: Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilians.

13. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Partial Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

14. Deficiency: Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization*: Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians and non-U.S. forces. *Training*: Include eligible civilians in CBRND training,

exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership*: Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel*: Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

- 15. Deficiency:** MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Establish institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

- 16. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for eligible civilians.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 17. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for MWAs.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing eligible civilian personnel and MWAs, particularly MWDs, for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs.

- 18. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization*: Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel*: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM

environment. *Facilities*: Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 19. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs. **Non-Materiel Solutions:** *Doctrine*: Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization*: Identify organizational services and activities supporting the mission performed by MWA CBRN/TIM survivability and mission operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs. *Personnel*: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for MWD and eligible civilian CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 20. Deficiency:** Medical personnel are not generally trained on IND requirements and specifics for particular IND prophylaxis treatments. **Non-Materiel Solutions:** *Doctrine*: Enforce existing doctrine.
- 21. Deficiency:** Not all prophylaxes are FDA approved. **Non-Materiel Solutions:** *Doctrine*: Require FDA approval of all prophylaxes, including medications potentially applied as prophylaxes. The latter requires specific approval as prophylactic treatment. Develop DoD policies to provide required R&D to gain FDA approval of medical prophylaxis.
- 22. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. **Partial Non-Materiel Solutions:** *Doctrine*: Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Organization*: Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Training*: Train, potential eligible civilians on presymptomatic medical CBRND protective countermeasures. *Leadership*: Recognize criticality of protection of eligible civilians within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities*: Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of eligible civilians.
- 23. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for MWAs. **Partial Non-Materiel Solutions:** *Doctrine*: Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective

countermeasures for MWAs. *Organization*: Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for MWAs. *Training*: Train, non-U.S. forces on presymptomatic MWA medical CBRND protective countermeasures. *Leadership*: Recognize criticality of protection of MWAs within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities*: Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of MWAs.

- 24. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization*: Identify organization services and activities necessary to support survivability eligible civilian personnel within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 25. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization*: Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection for MWAs.

13.2.3.2 IMA Assessment Summary

Table 13.2-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on development of new / improved vaccines and antidotes that are: more affective; more efficiently introduced into the body; and address a broader range of threat agents (combination of agents). Table 13.2-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.2-2. TASHLD 2: Materiel Approaches

Idea for Materiel Approach	Description
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. FDA testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
MWA prophylaxes	Develop or adapt CBRND medical countermeasures and Veterinary Medicine for preexposure and post-exposure/presymptomatic protection of MWD from CBRN/TIM. Develop topical that is easy to apply and provides shielding from CBRN/TIM, preventing agent absorption through hair or skin.
Prepositioned/reserve CBRN medical resources	Establish and maintain sufficient stocks of prepositioned and reserve CBRND medical resources identified in plans and required to support multiple operations with threat and ensure availability for expeditious movement to the and within the AO in the event of a CBRN event.
Prophylactic administration to diverse groups	Prophylaxes address dosage range for eligible civilians (e.g., children, elderly, overweight, underweight subjects, etc.). Stabilize prophylactic effects over a wide range of dosages to address diverse applications of targeted populations.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.2-3. TASHLD 2: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Material Approaches (IMA)</p>	<p>Combinatorial Prophylaxes</p>	<p>Current Prophylaxes</p>	<p>Future Prophylaxes</p>	<p>MWA Prophylaxes</p>	<p>Prepositioned/Reserve CBRN Medical Resources</p>	<p>Prophylactic Administration to Diverse Groups</p>	<p>Topical</p>
<p>Forces are not protected against all identified threat CBRN/TIM capabilities.</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>	<p>X</p>
<p>Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>			<p>X</p>
<p>The efficacy of existing prophylaxis, particularly vaccines, widely varies.</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	
<p>The administration of many vaccines requires multiple administrations over a period of time for acquired immunity</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	
<p>Prophylaxis for MWA is virtually nonexistent</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>
<p>The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>
<p>MWAs are not equipped, trained, and prepared for survival in a CBRN/TIM environment</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>
<p>Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for eligible civilians, non-U.S. forces.</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>
<p>Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for MWAs.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>

13.3 Task TASHLD 3: Protect casualties unable to wear standard individual protection equipment

13.3.1 Functional Area Analysis

13.3.1.1 Definition

Casualties may include existing patients of a medical facility and the wounded and injured resulting from accidents or adversary attack. Treatment may require transport of exposed personnel for medical evaluation, continued care, or theater evacuation. CBRN protection must be available at all times for casualties and for personnel (medical and unit) charged with treatment and transport. Casualties may be medically unable to wear standard IPE. These casualties must be protected from contamination, if uncontaminated. Contaminated infectious casualties may require application of casualty IPE to prevent secondary contamination/exposure of personnel and equipment. Medical personnel must be able to render aid to the casualty inside the IPE without the risk of infiltration/exfiltration of contaminants. This task may include medical evaluation, treatment, and oversight. Removing contaminated casualties from the front reduces the amount of protection required by forces staying behind. Early reduction of MOPP will decrease mission degradation and increase mission performance.

13.3.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.3.1.2.1 Supported Task: N/A

13.3.1.2.2 Lateral Task: TASHA 24

13.3.1.2.3 Supporting Task: N/A

13.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)

3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. Limited CONUS resupply. (C2.8.3)
8. No prepositioned materiel. (C2.8.4)
9. No host-nation support. (C2.8.5)
10. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.3.2 Functional Needs Analysis

13.3.2.1 Capability and Deficiency Assessment Summary

Tables 13.3-1 discuss current capabilities used and future capabilities projected to accomplish this task. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Standard transport methods and means continue to be critical both in transporting contaminated casualties, as well as transporting uncontaminated casualties through contaminated areas. Two categories of casualty movement are considered: first, the movement of uncontaminated casualties through areas of contamination (e.g., movement of patients from COLPRO within a contaminated area, etc.) and second, the movement of contaminated casualties through clean areas or using clean transport (e.g., contaminated casualties evacuated from a contamination zone to a treatment facility within a clean area, contaminated casualties carried by uncontaminated transport, etc.). The wearing of standard IPE is still the preferred current solution that affords the patient maximum possible protection. However, training is required to protect the medical personnel from secondary contamination. Additionally, medical units are not equipped with CBRND respiratory/ocular and percutaneous protection in sufficient quantities to replace contaminated patient IPE. The PPW offers protection to transporters and medical care providers but prevents full access to the patient for treatment, limits the application of medical systems, and requires the use of respiratory/ocular protection in proximity to the patient. DOTLPF does not adequately address protection of casualties unable to wear ocular/respiratory protection during periods outside of COLPRO. The protection of the casualty, handlers, medical personnel and associated assets is critical and foundational to this task. Replacement IPE for patients and casualties is not adequately addressed in DOTLPF. Current DOTLPF requires the patient/casualty assigned unit provide the individual’s IPE to Medical Services. However, this procedure is not operationally feasible, and joint doctrine needs to address resupply of patient/casualty IPE. The movement of contaminated/exposed/infectious casualties is an issue involving potential survivability of the casualty and in the absence of negative pressure isolation systems. Standard land transport is the preferred method with strong reluctance to apply rotary-

wing craft for battlefield evacuation of these types of casualties. Tactical and strategic fixed-wing airlift of contaminated casualties is not considered feasible. In both cases, the concern is the potential loss of the airframe due to concerns about contamination. In short, rapid movement of contaminated casualties from the battlefield to medical attention is a continuing concern. Further, medical practitioners do not provide medical assistance until the casualty completes decontamination. Medical support staff and corpsmen perform triage, lifesaving, and decontamination activities on received casualties and pass the casualties through the contamination control area (CCA) to medical practitioners for attention. This procedure delays the provision of medical attention. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities is necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Most mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires prioritization of available assets and the application of IPE for CBRND. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians (in general) and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the CBRND provisioning and training of eligible civilians is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE. Further, the largely manual current nature of command operations inherently delays protective actions versus automation, further complicated by the current stovepipe reporting and information flow as information flows vertically without a corresponding horizontal flow for alerting/warning of CBRN/TIM agents.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST continues

fielding until full operational capable is complete. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. R&D by USAF for a Patient Isolation Unit is expected to provide a capability in the mid term to transport casualties unable to wear IPE. JECF is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. The P3I upgraded CBPS, JTCOPS, CP-DEPMEDS, and backfit of LHA/LHD vessels are projected for initial fielding or action in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. The potential for COLPRO in the Future Tactical Lift Option builds upon the mid-term COLPRO capabilities. Additional changes in capabilities from the mid term are not projected.

13.3.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): USAF combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: USN/USMC system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes CB filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaced M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Medical Barrier Assets: Standard barrier assets applied by Medical Services personnel against contact with biohazards. May provide a degree of additional barrier protection against CBRN hazards when applied with IPE.

Patient Protective Wrap (PPW): Enclosed casualty bag made of CBRN protective materials. Incorporates small flexible transparent window positioned over casualties face for viewing by medical practitioners. Uses cardboard stays to maintain separation of bag from casualty's face. Does not permit head-to-toe viewing of casualty. Supports limited medical assistance. Requires the wear of standard warfighter respiratory/ocular protection. Two wraps currently in stock. Legacy system provides protection up to 3 hours and newer system up to 6 hours.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

COLPRO

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCLR is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system either until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.3-1. TASHLD 3: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7
Current							
<i>Individual Protection</i>	6	5	6	7	6	7	6
Respiratory/Ocular Protection	6 ¹	5 ²	6 ^{2,3}	7 ⁴	6 ³	7 ¹	6 ⁵
Percutaneous Protection	6 ⁶	5 ⁷	6 ⁸	7 ⁹	6 ⁶	7 ⁶	6 ⁵
<i>Collective Protection</i>	0	3.5	N/A	3.5	N/A	0	3
Mobile COLPRO	0 ¹⁰	3 ¹¹	N/A	3 ¹¹	N/A	0 ¹²	0 ⁵
Fixed-Site COLPRO	N/A	4 ¹³	N/A	4 ¹³	N/A	N/A	6 ⁵
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴
<i>Unit Staff</i>	6 ¹⁵	6 ¹⁶	3 ¹⁷	7 ¹⁸	7 ^{15,16,17}	6 ¹⁹	5 ⁵
Near/Mid							
<i>Individual Protection</i>	6	5	6	7	6	7	6
Respiratory/Ocular Protection	6 ¹	5 ^{2, 20}	6 ^{2,3,20}	7 ^{4,20}	6 ³	7 ¹	6 ⁵
Percutaneous Protection	6 ⁶	5 ^{7, 21}	6 ^{7,8,21}	7 ^{9,21}	6 ⁶	7 ⁶	6 ⁵
<i>Collective Protection</i>	0	4	N/A	4	N/A	0	3
Mobile COLPRO	0 ¹⁰	3 ^{11,22}	N/A	3 ¹¹	N/A	0 ¹²	0 ⁵
Fixed-Site COLPRO	N/A	5 ^{13,23}	N/A	5 ^{13,23}	N/A	N/A	6 ⁵
<i>MOPP</i>	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴
<i>Unit Staff</i>	6 ¹⁵	6 ¹⁶	3 ¹⁷	7 ¹⁸	7 ^{15,16,17}	6 ¹⁹	5 ⁵
Far							
<i>Individual Protection</i>	6	5	6	7	6	7	6
Respiratory/Ocular Protection	6 ¹	5 ^{2,20}	6 ^{2,3,20}	7 ^{4,20}	6 ³	7 ¹	6 ²⁴
Percutaneous Protection	6 ⁶	5 ^{7,21}	6 ^{7,8,21}	7 ^{9,21}	6 ⁶	7 ⁶	6 ⁵
<i>Collective Protection</i>	0	4	N/A	4	N/A	0	3
Mobile COLPRO	0 ¹⁰	3 ^{11,22,25}	N/A	3 ¹¹	N/A	0 ¹²	0 ⁵
Fixed-Site COLPRO	N/A	5 ^{13,23,26}	N/A	5 ^{13,23}	N/A	N/A	6 ⁵
<i>MOPP</i>	7 ¹⁴	7 ¹⁴	7X ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴	7 ¹⁴
<i>Unit Staff</i>	6 ¹⁵	6 ¹⁶	3 ¹⁷	7 ¹⁸	7 ^{15,16,17}	6 ¹⁹	5 ⁵
Overall							
Current Overall Capability	5	5	5	6	7	5	5
Near/Mid-Term Overall Capability	5	6	5	6	7	5	5
Far-Term Overall Capability	5	6	5	6	7	5	5

	FAA Measure	Scale
M1	Casualties are safely transported.	<p>8–10: In-place doctrine, protective assets, and training provide for the safe handling and transport of exposed or contaminated casualties without potential for secondary exposure or contamination of personnel, activities, transport assets, and resources performing the handling and transport.</p> <p>4–7: Doctrine and training address the safe handling and transport of exposed or contaminated casualties and protective assets are applied to prevent secondary exposure or contamination of personnel and transport assets performing the handling and transport.</p> <p>1–3: Doctrine generally addresses the safe handling and transport of exposed or contaminated casualties and protective assets are applied to prevent secondary exposure or contamination of personnel performing the handling and transport.</p> <p>0: Doctrine and assets do not exist to safely transport casualties.</p>
M2	Potential for secondary contamination is prevented.	<p>8–10: Medical and transport operations, procedures, processes and the application of COLPRO, decontamination, and casualty and staff IPE preclude potential for secondary contamination of personnel and resources.</p> <p>4–7: Medical and transport operations, procedures, processes, and the application of COLPRO, decontamination, and casualty and staff IPE effectively mitigate potential for secondary contamination of personnel and resources.</p> <p>1–3: Medical and transport operations, procedures, processes, and the application of COLPRO, decontamination, casualty IPE, and/or staff IPE reduce potential for secondary contamination of personnel and/or resources.</p> <p>0: Medical and transport processes and material do not exist for the reduction of the potential for secondary contamination of personnel and/or resources.</p>
M3	Protective IPE for casualties is available.	<p>8–10: CBRN protective equipment for exposed and contaminated casualties, to include those medically unable to wear IPE, are readily available and provide protection for an extended period (8+ hours).</p> <p>4–7: CBRN protective equipment for exposed and contaminated casualties, to include those medically unable to wear IPE, is available.</p> <p>1–3: CBRN protective equipment for exposed and contaminated casualties is available.</p> <p>0: CBRN protective equipment for exposed and contaminated casualties is nonexistent.</p>
M4	Medical personnel are trained and equipped to handle contaminated casualties.	<p>8–10: All medical personnel are formally trained and receive recurring training on the handling of contaminated casualties and are appropriately equipped.</p> <p>4–7: Support medical personnel and designated medical providers are trained on the handling of contaminated casualties and are appropriately equipped.</p> <p>1–3: Designated support medical personnel are trained on the handling of contaminated casualties and are appropriately equipped.</p> <p>0: Training and equipping for the handling of contaminated casualties is nonexistent.</p>
M5	Casualties are protected by medical casualty IPE.	<p>8–10: Medical casualty IPE is readily available for the extended period (8+ hours) protection of casualties and medical/transport personnel. The IPE supports medical evaluation, treatment, and oversight without risk of infiltration/exfiltration of contaminants.</p> <p>4–7: Medical casualty IPE is available for the limited period (4–8 hours) protection of casualties and medical/transport personnel. The IPE provides limited support of medical evaluation, treatment, and oversight.</p> <p>1–3: Medical casualty IPE is available for short period (1–3 hours) protection of casualties and medical/transport personnel. The IPE provides limited support of medical evaluation, treatment, and oversight.</p> <p>0: Medical casualty IPE is nonexistent.</p>

M6	Contaminated casualties are removed safely and quickly from main battle area.	<p>8–10: In-place doctrine, protective assets, transport assets, and training provide for the safe handling and rapid transport of exposed or contaminated casualties from the main battle area to medical aid without potential for secondary exposure or contamination of personnel, activities, transport assets, and resources performing the handling and transport.</p> <p>4–7: Doctrine and training address the safe handling and transport of exposed or contaminated casualties from the main battle area to medical aide and the application of protective assets to prevent secondary exposure or contamination of personnel and transport assets performing the handling and transport.</p> <p>1–3: Doctrine generally addresses the safe handling and transport of exposed or contaminated casualties from the main battle area to medical aid and the application of protective assets to prevent secondary exposure or contamination of personnel performing the handling and transport.</p> <p>0: Doctrine and assets do not exist to safely transport casualties from the main battle area to medical aid.</p>
M7	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPPF does not exist for this task.</p>

¹ Doctrine, policy, procedures, and TTPs exist for the movement of contaminated casualties to medical treatment. Military personnel performing handling and transport are required to wear CBRND ocular/respiratory protection against the potential for secondary exposure/contamination. Casualties able to wear standard IPE are not placed into PPWs. Doctrine requires the individual’s unit of assignment provide individual protective assets when the individual is received. However, the ability of any unit to pull and transfer equipment with each casualty, especially during operations, is generally not considered. Medical units, however, are not equipped with additional protective material for existing patients and replacement assets for casualties. Uncontaminated casualties unable to wear standard IPE are placed into PPWs to protect against contamination when moving through a contaminated area. Contaminated casualties must be able to wear standard IPE to protect against secondary contamination by transporting and handling personnel, a requirement that may not be achievable for certain types of casualties. Standard warfighter respiratory/ocular protection is worn by the casualty and requires the ability to provide a seal and obtain a draw against filter resistance. Improved PPWs and PIUs are expected in the mid term. Further, military personnel handling and transporting casualties in PPWs, whether contaminated or not, are required to wear CBRND IPE. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving exposed/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed.

² Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source for handling and transporting personnel and resources. The application of standard warfighter IPE to exposed/contaminated casualties provides containment of the potential contamination within the IPE, a requirement that may not be achievable for certain types of casualties. Improved PPWs and PIUs are expected in the mid term. Respiratory/ocular protection is diverse across the Services and performed functions. USAF combat aircrews conduction operations within a CBRN environment are equipped with the MBU-19/P Chemical-Biological AERP that includes protective hood, MBU-12/P mask, C-2 filter canister, an intercom for ground communications, and a blower assembly. The AERP provides protection whether or not supplemental oxygen is present. USN and USMC aviators use the A/P22P-14(V) Respirator Assembly that is a self-contained protective system deployed for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN and USMC) aircrews. The system incorporates a CB filter, dual air/oxygen supply, and a crossover manifold with dual protective capabilities for flight and ground protection. The A/P 22P-14(V) 1 is not compatible with aircraft with oxygen delivery systems and supports helicopter crew use. Version 2 is used for the EA-6B and F-18A, Version 3 for AV-8B and F-18C/D, and Version 4 is applied for C-130 aircrews. The M17 series mask is obsolescent and is relegated to NEO support in selected HTAs. The mask is designed for the military standard profile (ground) and does not adequately protect all potential nonmilitary populace members, for which is retained. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M45 Aircrew Aviator

Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The M48 CB Apache Aviator Mask protects AH-64 Apache helicopter aviators and flight support personnel. The blower assembly uses the C-2 filter canister to provide filtered, breathable air. The M-48 replaced the M43 Type 1 mask. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection. Eligible civilians are inadequately addressed in DOTLPPF.

³ Doctrine, policies, procedures, TTPs, and plans require casualties able to wear standard respiratory/ocular protection be equipped and wear the protection when outside of COLPRO. Casualties unable to wear standard respiratory/ocular protection must remain within COLPRO until the hazard is no longer present or the casualty progresses sufficiently to wear respiratory/ocular protection. No provision is made for casualties requiring movement and unable to wear respiratory/ocular protection. Medical units are not provided stocks of protective respiratory/ocular equipment for use by patients. Medical policy in the patient's unit is responsible for providing the material to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the assets. The movement of large numbers of infectious, exposed, and/or contaminated casualties is not adequately addressed by existing doctrine, policy, procedures, and TTPs. However, improved PPWs and PIUs are expected in the mid term.

⁴ Medical personnel are trained on the proper wear of protective respiratory/ocular protection as outlined in doctrine, policy, procedures, and TTPs. Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source for handling and transporting personnel and resources. The application of standard warfighter IPE to exposed/contaminated casualties provides containment of the potential contamination within the IPE, a requirement that may not be achievable for certain types of casualties. Improved PPWs and PIUs are expected in the mid term. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection. Eligible civilians are inadequately addressed in DOTLPPF.

⁵ Within the AO, existing doctrine/policy/procedure/TTPs encompass most critical aspects of this task. The task can be performed as the majority of movement is conducted using tactical land transport means to fixed locations within the AO. COLPRO sheltering of uncontaminated casualties is provided by CBPS and transportable shelters allocated to medical unit operations. Rotary-wing transport, although a last resort, can be applied for movement within the AO by air. Movement from land to at-sea ship is also performed if required and decontamination cannot be performed on land. However, extended movement is not supportable. Assets do not exist enabling this activity. Further, COLPRO of contaminated casualties to preclude secondary contamination during transport of multiple casualties does not exist. Additionally, DOTLPPF does not adequately address casualties unable to wear protective equipment. However, improved PPWs and PIUs are expected in the mid term.

⁶ Doctrine, policy, procedures, and TTPs require the application of percutaneous protection by handling and transporting personnel against the potential for secondary exposure/contamination. Standard warfighter percutaneous protection is worn by military personnel performing these functions. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving exposed/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Exposed and contaminated c unable to wear percutaneous protection are not adequately addressed in doctrine, policy and standards. Protective equipment is not available for these casualties. Standard warfighter respiratory/ocular protection is worn by the casualty and requires the ability to provide a seal and obtain a draw against filter resistance. The PPW is limited in the number of hours of afforded protection to uncontaminated casualties, depending upon date of manufacture. PPWs in stock prior to 2004 have a maximum protection time period of 3 hours. PPWs obtained for stockage in 2004 and subsequently provide protection up to 6 hours. This is considered adequate for

most initial casualty movements within the AO. Casualties able to wear standard percutaneous protection assets are required to apply the equipment outside of CPSS. However, improved PPWs and PIUs are expected in the mid term. Medical units, meanwhile, are not provided stocks of this equipment for use by patients. Medical policy is the patient's unit is responsible for providing the material to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the assets.

⁷ Doctrine, policy, procedures, and TTPs exist for the movement of contaminated casualties to medical treatment. Military personnel performing handling and transport are required to wear CBRND percutaneous protection against the potential for secondary exposure/contamination. Casualties able to wear standard IPE are not placed into PPWs. Doctrine requires the individual's unit of assignment provide individual protective assets when the individual is received. However, the ability of any unit to pull and transfer equipment with each casualty, especially during operations, is generally not considered. Medical units, however, are not equipped with additional protective material for existing patients and replacement assets for casualties. Uncontaminated casualties unable to wear standard IPE are placed into PPWs to protect against contamination when moving through a contaminated area. Contaminated casualties must be able to wear standard IPE to protect against secondary contamination by transporting and handling personnel, a requirement that may not be achievable for certain types of casualties. Improved PPWs and PIUs are expected in the mid term. Further, military personnel handling and transporting casualties in PPWs, whether contaminated or not, are required to wear CBRND IPE. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving exposed/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The USN, USAF, and USMC use the disposable aircrew protective cape to protect aircrew between sheltering and the combat aircraft. The cape drapes over the wearer and is removed during entry into the aircraft to prevent transfer of contamination into the aircraft interior. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. The disposable aircrew boot cover is worn by USAF, USN, and USMC aviators over aircrew footwear while en route and mounting combat aircraft. The covers are removed during aircraft entry and are designed to prevent contamination transfer into the aircraft. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. Disposable aircrew hand protection is applied by the USAF, USMC, and USN for aviators over their gloves (and may be worn between glove layers for additional protection) during movement between shelter and aircraft. When used as an overglove, the gloves are removed during aircraft mounting during aircraft entry to preclude the potential for transfer of contamination into the aircraft interior. Medical Services practitioners performing treatment The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and EOD personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical impermeable barrier protective assets (e.g. splash shields, medical aprons, etc.) may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

⁸ Doctrine, policies, procedures, TTPs, and plans require casualties able to wear standard percutaneous protection be equipped and wear the protection when outside of COLPRO. Casualties unable to wear standard percutaneous protection, but able to wear respiratory/ocular protection, are placed into PPWs. No provision is made for casualties requiring movement and unable to wear respiratory/ocular protection. However, improved PPWs and PIUs are expected in the mid term. Medical units, meanwhile, are not provided stocks of protective percutaneous equipment for use by patients. Medical policy is the patient's unit is responsible for providing the material

to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the assets. The movement of large numbers of infectious, exposed, and/or contaminated casualties is not adequately addressed by existing doctrine, policy, procedures, and TTPs.

⁹ Medical personnel are trained on the proper wear of percutaneous protective protection as outlined in doctrine, policy, procedures, and TTPs. Doctrine, policy, procedures, and TTPs exist for the handling of contaminated casualties for medical treatment. Military personnel performing handling and transport are required to wear CBRND percutaneous protection against the potential for secondary exposure/contamination. Casualties able to wear standard IPE are not placed into PPWs. Uncontaminated casualties unable to wear standard IPE are placed into PPWs to protect against contamination when moving through a contaminated area. Contaminated casualties must be able to wear standard IPE to protect against secondary contamination by transporting and handling personnel, a requirement that may not be achievable for certain types of casualties. Improved PPWs and PIUs are expected in the mid term. Further, military personnel handling and transporting casualties in PPWs, whether contaminated or not, are required to wear CBRND IPE. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving exposed/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and EOD personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

¹⁰ Mobile casualty COLPRO does not exist for the transport of exposed/contaminated casualties precluding or mitigating the potential for secondary exposure/contamination of handling and transport personnel and resources. Handling and transport personnel must wear IPE and the transporting resource is considered contaminated until decontaminated and verified.

¹¹ Negative-pressure COLPRO with filtered expelled air does not exist within the inventory for the transport of numbers of exposed/contaminated casualties. Hospital ships are not equipped with COLPRO. All current COLPRO systems in land, air, and sea assets are not designed for the containment and transport of exposed/contaminated casualties. Casualties must be decontaminated before entry into COLPRO. COLPRO, however, may be applied for the protection of uncontaminated casualties against exposure/contamination to CBRN/TIM agents. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels and do not support transport of exposed/contaminated casualties. The only currently fielded land-based mobile COLPRO is CBPS. The CBPS system is available on a mobile platform and can provide a limited number of people protection. The CBPS consists of a dedicated M1113 HMMWV with an LMS mounted on the back and provides a highly mobile, contamination-free, environmentally controlled work area for forward deployed medical units. The CBPS has been fielded to treatment squads, forward surgical teams, and medical companies. Four personnel are required to operate the CBPS. However, these systems are limited in supply and cannot provide COLPRO during movement.

¹² Mobile COLPRO does not exist to protect uncontaminated casualties and transporting personnel/resources during movement within the AO.

¹³ The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to meet all operational requirements for protection from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital

operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. These systems are designed for standard room configurations and, like other COLPRO systems, are in limited number. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and are not installed in medical treatment facilities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these facilities are dedicated to critical operational requirements and restricted to assigned and designated personnel and do not generally include medical treatment facilities. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities will be addressing these issues for critical members of the installation/facility populace. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy all COLPRO requirements. Prior planning and prioritization of COLPRO allocation is critical.

¹⁴ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies outlined in doctrine, policy, procedures, and TTPs require levels of protection readiness based upon the threat and/or presence of contaminants. Full protection is required in the presence of contamination. This includes protective measures and the wear of protective equipment when the possibility exists for secondary exposure/contamination to personnel and equipment, such as the movement of exposed/contaminated casualties. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Plans within HTAs may incorporate this perception. However, doctrine, policy, procedures, and TTPs do not address their application to nonmilitary personnel.

¹⁵ Existing standards and procedures provide adequate protection of handling and transporting personnel against secondary exposure/contamination and require the application of protective equipment and measures if the potential exists for contamination/exposure. Transport assets are considered contaminated until decontaminated and verified. Unit-level training is limited to the movement of casualties to the medical facility and is predominantly reliant upon tactical ground transport. Standard transport is used to perform movement of uncontaminated casualties. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties. Exposed and contaminated casualties (human and MWA) unable to wear IPE and mask are not adequately addressed in doctrine, policy and standards. Protective equipment is not available for these casualties. The PPW may not be medically advisable for all casualties. Casualties able to wear standard IPE are required to apply the equipment outside of CPSs. However, improved PPWs and PIUs are expected in the mid term. Medical units, meanwhile, are not provided stocks of standard IPE for use by patients. Medical policy is the patient's unit is responsible for providing the equipment to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the equipment.

¹⁶ Doctrine, policies, procedures, and processes applied by medical and transport operations are designed to preclude or reduce the potential of secondary contamination of personnel and resources. The planned and adjusted tasking, allocation, and use of COLPRO, decontamination, and casualty and staff IPE are applied to protect casualties, personnel, and resources. Unit staff monitors, tracks, and directs the employment of resources to safely perform the handling and transport of casualties. The staff also manages the decontamination of employed resources for continued availability and support of operations.

¹⁷ No provision is made for casualties requiring movement and unable to wear respiratory/ocular protection. Medical units are not provided stocks of protective equipment for use by patients. Medical policy is the patient's unit is responsible for providing the material to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the assets. The movement of large numbers of infectious, exposed, and/or contaminated casualties is not adequately addressed by existing doctrine, policy, procedures, and TTPs. However, improved PPWs and PIUs are expected in the mid term.

¹⁸ Training for the treatment of contaminated/exposed casualties is available through the Army Medical Department (AMEDD), but is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability to ensure medical capabilities for CBRND is limited by routine medical operations and requirements. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities and to assess

capabilities. Casualty care, until completion of decontamination, is performed by Medical Corpsmen, not medical practitioners. Unit training is provided to selected personnel to conduct medical operations, including decontamination and triage, within a CBRN/TIM hazard.

¹⁹ The staffs of medical and transporting units maintain close coordination with operational units and higher headquarters to identify and move casualties rapidly from the battlefield to medical treatment centers. Front aid stations also coordinate movements from their locations to medical treatment centers with supporting units and medical unit staffs.

²⁰ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address the provision of CBRND protective assets for general base populace, as well as eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

²¹ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address the provision of CBRND protective assets for general base populace, as well as eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

²² Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as is CITADEL backfit of LHA/LHDs.

²³ The projected initial fielding of JECP within the mid term provides additional capabilities for the COLPRO protection of casualties within CBRN/TIM contaminated areas. JECP includes COLPRO adaptive inserts for buildings/rooms and legacy tentage and stand-alone COLPRO sheltering for small units. The projected mid-term fielding of JECP may alleviate COLPRO shortages but will likely be insufficient to satisfy all COLPRO requirements. Quantities to be fielded of these systems have not been determined. JTCOPS Block I is projected for initial fielding during the mid term. Prior planning and prioritization of COLPRO allocation is critical.

²⁴ Within the AO, existing doctrine/policy/procedure/TTPs encompass most critical aspects of this task. The task can be performed as the majority of movement is conducted using tactical land transport means to fixed locations within the AO. COLPRO sheltering of uncontaminated casualties is provided by CBPS and transportable shelters allocated to medical unit operations. Rotary-wing transport, although a last resort, can be applied for movement within the AO by air. Movement from land to at-

sea ship is also performed if required and decontamination cannot be performed on land. However, extended movement is not supportable. Assets do not exist enabling this activity. Further, COLPRO of contaminated casualties to preclude secondary contamination during transport of multiple casualties does not exist. Additionally, DOTLPF does not adequately address casualties unable to wear protective equipment.

²⁵ The projected Future Tactical Lift Option is under evaluation for the potential addition of COLPRO in the design and production specifications. A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

²⁶ JTCOPS Block II is projected for the far term. Continued fielding of JECF.

13.3.3 Functional Solution Analysis

13.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Medical units are not equipped with additional protective material for existing patients and replacement assets for casualties.
Non-Materiel Solutions: *Doctrine:* Adjust joint doctrine to require force planning of IPE support of Medical Services for patients and casualties. Disconnect requirement with operational unit. *Organization:* Develop organizational structures, resources, staffing, and stock management capabilities to support IPE requirements for patients and casualties.
- 2. Deficiency:** Casualties unable to wear PPWs or respiratory/ocular protection are not addressed.
Partial Non-Materiel Solutions: *Doctrine:* Establish alternative procedures and processes within doctrine, policy, and procedures for casualties unable to wear PPWs or respiratory/ocular protection and who must be moved within or through a CBRN/TIM contaminated zone. *Organization:* Develop organizational structures, resources, staffing, and stock management capabilities to support casualties unable to wear PPWs or respiratory/ocular protection. *Training:* Implement institutional, recurring, and unit training on established procedures and processes (see Doctrine) for the protection of casualties unable to wear PPWs or respiratory/ocular protection.
- 3. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.
Partial Non-Materiel Solutions: *Doctrine:* Requirement for measures to protect against all CBRN/TIM agents, particularly high-risk/high-threat agents.
- 4. Deficiency:** Medical Services doctrine, policy, and procedures are inadequate for the provision of medical care by medical providers in a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine methods, policy, procedures and technology enabling medical care by medical providers within a CBRN/TIM environment. *Organization:* Identify organization services and activities necessary to support the provision of medical care by medical providers within a CBRN/TIM environment (both with and without CPSs). *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for medical care by medical providers within a CBRN/TIM environment (both with and without CPSs); and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of medical providers and supporting medical staff. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.
- 5. Deficiency:** DOTLPF is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

6. **Deficiency:** DOTLPF is inadequate or nonexistent addressing CBRND of MWDs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.
7. **Deficiency:** The movement of large numbers of infectious, exposed, and/or contaminated casualties is not adequately addressed in DOTLPF.
Non-Materiel Solutions: *Doctrine:* Expand doctrine, policy, and procedures to address the movement of large numbers of infectious, exposed, and/or contaminated casualties. *Organization:* Identify organization services and activities necessary to support the movement of large numbers of infectious, exposed, and/or contaminated casualties. *Training:* Establish training criteria and standards for the movement of large numbers of infectious, exposed, and/or contaminated casualties. Develop and implement criteria for exercises and evaluations challenging the ability to perform the movement of large numbers of infectious, exposed, and/or contaminated casualties. *Facilities:* Identify and establish necessary infrastructure to support the movement of large numbers of infectious, exposed, and/or contaminated casualties.
8. **Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for eligible civilians.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
9. **Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for MWDs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.

- 10. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.
- Non-Materiel Solutions:** *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).
- 11. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.
- Non-Materiel Solutions:** *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by MWA, particularly MWD, operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).
- 12. Deficiency:** Mobile assets enabling extended period transport of infectious, exposed, and/or contaminated casualties.
- Partial Non-Materiel Solutions:** *Doctrine:* Establish in doctrine methods and processes enabling the extended transport of infectious, exposed, and/or contaminated casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Training:* Implement institutional, recurring, and unit training on the safe extended transport of infectious, exposed, and/or contaminated casualties.
- 13. Deficiency:** COLPRO of contaminated casualties to preclude secondary contamination during transport of multiple casualties does not exist.
- Partial Non-Materiel Solutions:** *Doctrine:* Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Training:* Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple contaminated casualties.
- 14. Deficiency:** Non-U.S. personnel performing the handling and movement of contaminated casualties are not addressed in DOTLPP.
- Non-Materiel Solutions:** *Doctrine:* Promulgate doctrine, policy, and procedures addressing CBRND of non-U.S. personnel performing the handling and movement of contaminated casualties. *Organization:* Identify organization services and activities necessary to support

CBRND of non-U.S. personnel performing the handling and movement of contaminated casualties. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for non-U.S. personnel, and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of non-U.S. personnel performing the handling and movement of contaminated casualties.

- 15. Deficiency:** Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source or handling and transporting personnel and resources.

Partial Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing the safe management of potentially hazardous expelled air by exposed/contaminated casualties wearing standard ocular/respiratory protection to preclude the potential for secondary exposure/contamination of handling/transporting personnel and resources. *Training:* Establish institutional, recurring, and unit training, exercise, and evaluation criteria and programs addressing potentially hazardous expelled air by exposed/contaminated casualties wearing standard ocular/respiratory protection.

- 16. Deficiency:** Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources (if casualties are contaminated) or exposure/contamination of casualties (if casualties are uncontaminated). *Training:* Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple casualties.

- 17. Deficiency:** Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.

Partial Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing negative-pressure COLPRO and the safe management of potentially hazardous exhausted air to preclude the potential for secondary exposure/contamination of uncontaminated/unexposed personnel and resources. *Training:* Establish institutional, recurring, and unit training, exercise, and evaluation criteria and programs addressing the operation and application of negative-pressure COLPRO and management of potentially hazardous exhaust air.

- 18. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 19. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 20. Deficiency:** Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated casualties.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Training:* Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple contaminated casualties.
- 21. Deficiency:** Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated MWA casualties.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine methods and processes enabling the transport of multiple MWA, particularly MWD casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Training:* Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple contaminated MWA casualties.
- 22. Deficiency:** The ability of the command and Medical Services staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements.
Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

23. Deficiency: Generally, casualty care, until completion of decontamination, is performed by medical corpsmen, not medical practitioners.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

24. Deficiency: Generally, MWA casualty care, until completion of decontamination, is performed by medical corpsmen, not medical/veterinary practitioners.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions.

13.3.3.2 IMA Assessment Summary

Table 13.3-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches vary from modification of current IPE developing new systems and conducting early technology assessments. Table 13.3-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.3-2. TASHLD 3: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Casualty protective system with integrated pseudomask	Develop a new-generation PPW with an integrated mask area that is contact-free of the face area and applies positive air flow.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
Contaminated casualty transport system	Develop/adapt clear, head-to-toe view of casualty, medical systems supporting, airtight and self-flushing system with positive/negative pressure capabilities and access ports for medical treatment.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Disposable IPE	Develop low-cost disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.

Idea for Materiel Approach	Description
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) with modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protection against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Prepositioned/reserve CBRN medical resources	Establish and maintain sufficient stocks of prepositioned and reserve CBRND medical resources identified in plans and required to support multiple operations with threat and ensure availability for expeditious movement to the and within the AO in the event of a CBRN event.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of COLPRO to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.3-3. TASHLD 3: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	Assess CBRND Material	Broad-Application Above-the-Neck Respiratory Protection	Casualty Protective System with Integrated Pseudomask	Chemical Air Generation	Chemical Treatment	Contaminated Casualty Transport System	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Disposable COLPRO	Disposable IPE	Filtration System Lowering Inhalation Pressure Requirement
Casualties unable to wear PPWs or respiratory/ocular protection are not addressed	X	X	X	X	X	X			X	X	X
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X		X	X	X	X	X	X	X	X	X
Mobile assets enabling extended period transport of infectious, exposed, and/or contaminated casualties.	X	X	X			X	X		X		
COLPRO of contaminated casualties to preclude secondary contamination during transport of multiple casualties does not exist.	X		X	X	X	X	X		X		
Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source or handling and transporting personnel and resources.			X	X	X						
Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.	X			X	X	X	X	X	X		

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Broad-Application Above-the-Neck Respiratory Protection</p>	<p style="text-align: center;">Casualty Protective System with Integrated Pseudomask</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Chemical Treatment</p>	<p style="text-align: center;">Contaminated Casualty Transport System</p>	<p style="text-align: center;">Develop COLPRO Kits</p>	<p style="text-align: center;">Develop and Establish Generic Unit CBRND Kits</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Disposable IPE</p>	<p style="text-align: center;">Filtration System Lowering Inhalation Pressure Requirement</p>
<p>Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.</p>		X	X	X	X	X	X		X		
<p>Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated casualties.</p>			X			X			X	X	
<p>Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated MWA casualties.</p>	X	X	X	X	X	X	X	X	X	X	X

Table 13.3-3. TASHLD 3: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>	<p style="text-align: center;">Integrate CBRN/TIM Protective Features into Functional Garments</p>	<p style="text-align: center;">Integrated Mobile COLPRO</p>	<p style="text-align: center;">Prepositioned/Reserve CBRN Medical Resources</p>	<p style="text-align: center;">Field-Expedient COLPRO Kits</p>	<p style="text-align: center;">Rebreathing Filtration</p>	<p style="text-align: center;">Topical</p>
Casualties unable to wear respiratory/ocular protection are not addressed.	X		X	X	X		X
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X	X	X		X		X
Mobile assets enabling extended period transport of infectious, exposed, and/or contaminated casualties.	X	X	X		X	X	X
COLPRO of contaminated casualties to preclude secondary contamination during transport of multiple casualties does not exist.	X		X		X		X
Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source or handling and transporting personnel and resources.	X		X		X	X	X
Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.			X		X		X
Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.			X		X	X	
Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated casualties.	X	X	X	X	X		X
Air and sea transport resources are inadequately equipped and prepared to transport exposed, infectious, and contaminated MWA casualties.	X		X	X	X	X	X

13.4 Task TASHLD 4: Protect MWDs against CBRN/TIM contamination/exposure

13.4.1 Functional Area Analysis

13.4.1.1 Definition

This task encompasses the survivability of an MWD subjected to a CBRN/TIM attack. MWD require both individual and COLPRO. MWD also require preventive veterinary/medical CBRN countermeasures to increase survivability from exposure to a toxic/infectious environment.

13.4.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.4.1.2.1 Supported Task: N/A

13.4.1.2.2 Lateral Task: TASHA 24

13.4.1.2.3 Supporting Task: N/A

13.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C 2.2.3)
4. Good personnel physical conditioning. (C2.2.4.3)
5. Negligible personnel experience. (C2.2.4.5)
6. Limited staff expertise. (C2.3.1.3)
7. Limited deployed supplies. (C2.8.2)
8. Limited prepositioned materiel. (C2.8.4)

Civil

1. High health risk. (C3.3.1.5)

2. TIMs present in the civilian sector. (C3.3.7.5)

13.4.2 Functional needs Analysis

13.4.2.1 Capability and Deficiency Assessment

This task deals with the survivability of MWDs exposed to CBRN/TIM agents. MWDs require IPE and COLPRO. There is also a need to have preventive veterinary/medical CBRN countermeasures for MWDs to increase the chances of their surviving exposure to a toxic/infectious environment. The overall capabilities for current, near/mid, and far term are rated “red.” Programs and materiel to perform CBRND of MWDs are inadequate or nonexistent, nor are any projected into the far term.

Current Capability and Deficiency

No current identified capability. There is a need to identify and develop CBRN/TIM collective and individual protective equipment and to conduct research on medical countermeasures to increase survivability from exposure to chemical or biological agents. DOTLPF is inadequate to promote the survival of these assets in a CBRN/TIM environment. For example, current DOTLPF does not mandate COLPRO allocation/space, although no other protective measure currently exists, for the protection of these assets.

Projected Near/Mid-Term Capability and Deficiency

No change projected for this task.

Projected Far-Term Capability and Deficiency

No change projected for this task.

13.4.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems affording equivalent level of protection for the handler, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

2. Percutaneous Protection:

COTS: Commercially available systems affording equivalent level of protection for the handler, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

- 3. Medical Protection:** Human and veterinary medications and vaccines, applicable to MWAs, applied as preventative measures. May include CBRND medical countermeasures such as SERPACWA upon investigation and determination of applicability for use.

COLPRO

1. Mobile COLPRO:

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO:

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

JTCOPS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.). Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: Application of DOTLPF, knowledge, experience, and acquired skills for the conduct of CBRND by command staff (as individual entities and a single body) and appropriate supporting activities.

Table 13.4-1. TASHLD 4: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
<i>Individual Protection</i>	N/A	0	N/A	2	3	0
Respiratory/Ocular Protection	N/A	0 ¹	N/A	N/A	3 ²	0 ³
Percutaneous Protection	N/A	0 ⁴	N/A	N/A	3 ²	0 ³
Medical Protection	N/A	N/A	N/A	2 ⁵	3 ^{5,6}	0 ³
<i>Collective Protection</i>	0	N/A	0	N/A	3	0
Mobile COLPRO	0 ⁷	N/A	0 ⁷	N/A	3 ⁸	0 ³
Fixed-Site COLPRO	0 ⁹	N/A	0 ¹⁰	N/A	3 ¹¹	0 ³
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	0 ¹²	0 ¹³	0 ¹⁴	2 ^{5,15}	3 ¹⁶	2 ¹⁷
<i>Unit Staff</i>	0 ¹⁸	0 ^{1,4,18}	0 ^{7,10,18}	2 ^{5,18}	3 ^{2,5,6,8,11,18}	1 ^{3,18}
Near/Mid						
<i>Individual Protection</i>	N/A	0	N/A	2	3	0
Respiratory/Ocular Protection	N/A	0 ¹	N/A	N/A	3 ²	0 ³
Percutaneous Protection	N/A	0 ⁴	N/A	N/A	3 ²	0 ³
Medical Protection	N/A	N/A	N/A	2 ⁵	3 ^{5,6}	0 ³
<i>Collective Protection</i>	0	N/A	0	N/A	3	0
Mobile COLPRO	0 ⁷	N/A	0 ⁷	N/A	3 ⁸	0 ³
Fixed-Site COLPRO	0 ⁹	N/A	0 ¹⁰	N/A	3 ¹¹	0 ³
<i>MOPP</i>	0 ¹²	0 ¹³	0 ¹⁴	2 ¹⁵	3 ¹⁶	2 ¹⁷
<i>Unit Staff</i>	0 ¹⁸	0 ^{1,4,18}	0 ^{7,10,18}	2 ^{5,18}	3 ^{2,5,6,18}	1 ^{3,18}
Far						
<i>Individual Protection</i>	N/A	0	N/A	2	3	0
Respiratory/Ocular Protection	N/A	0 ¹	N/A	N/A	3 ²	0 ³
Percutaneous Protection	N/A	0 ⁴	N/A	N/A	3 ²	0 ³
Medical Protection	N/A	N/A	N/A	2 ⁵	3 ^{5,6}	0 ³
<i>Collective Protection</i>	0	N/A	0	N/A	3	0
Mobile COLPRO	0 ⁷	N/A	0 ⁷	N/A	3 ⁸	0 ³
Fixed-Site COLPRO	0 ⁹	N/A	0 ¹⁰	N/A	3 ¹¹	0 ³
<i>MOPP</i>	0 ¹²	0 ¹³	0 ¹⁴	2 ¹⁵	3 ¹⁶	2 ¹⁷
<i>Unit Staff</i>	0 ¹⁸	0 ^{1,4,18}	0 ^{7,10,18}	2 ^{5,18}	3 ^{2,5,6,18}	1 ^{3,18}

System/Measure	M1	M2	M3	M4	M5	M6
Overall						
Current Overall Capability	0	0	0	2	3	1
Near/Mid-Term Overall Capability	0	0	0	2	3	1
Far-Term Overall Capability	0	0	0	2	3	1

	FAA Measure	Scale
M1	MWD sheltering (includes COLPRO against CBRN/TIM agents) is on hand.	<p>8–10: MWD CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN agents and high-risk TIMs in field, R&R, and kenneling circumstances facilitating MWD survival, health and well-being, and support activities.</p> <p>4–7: CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN warfare agents and selected high-risk TIMs in field, R&R, and kenneling circumstances and facilitating MWD survival, health and well-being, and support activities.</p> <p>1–3: CBRND COLPRO is available, allocated, in place, and provides protection against all CBRN warfare agents in field, R&R, and kenneling circumstances and facilitating MWD survival, health and well-being, and support activities.</p> <p>0: CBRND COLPRO is not specifically allocated for protection of MWD against CBRN/TIM agents in field, R&R, and kenneling circumstances facilitating MWD support activities.</p>
M2	MWDs are equipped with IPE.	<p>8–10: MWDs are equipped with effective IPE against all CBRN agents and high-risk TIMs.</p> <p>4–7: MWDs are equipped with effective IPE against all CBRN warfare agents and selected high-risk TIMs.</p> <p>1–3: MWDs are equipped with effective IPE against all CBRN warfare agents.</p> <p>0: MWD IPE is nonexistent.</p>
M3	MWD and handlers possess access to COLPRO away from kennels.	<p>8–10: MWD CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN agents and high-risk TIMs in field and R&R circumstances facilitating MWD survival and health and well-being.</p> <p>4–7: CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN warfare agents and selected high-risk TIMs in field and R&R circumstances and facilitating MWD survival and health and well-being.</p> <p>1–3: CBRND COLPRO is available, allocated, in place, and provides protection against all CBRN warfare agents in field and R&R circumstances and facilitating MWD survival and health and well-being.</p> <p>0: CBRND COLPRO is not specifically allocated for protection of MWD against CBRN/TIM agents in field and kenneling circumstances facilitating MWD support activities.</p>
M4	MWDs are protected by medical prophylaxis.	<p>8–10: MWD medical CBRND countermeasures exist and are available for all threat CBRN and high-risk TIM agents.</p> <p>4–7: MWD medical CBRND countermeasures exist and are available for high-threat CBRN and selected high-risk TIM agents.</p> <p>1–3: MWD medical CBRND countermeasures do not adequately address high-threat CBRN agents.</p> <p>0: MWD medical CBRND countermeasures do not exist for CBRN agents.</p>

M5	MWDs and handlers are trained in operations within CBRN/TIM environment.	<p>8-10 MWD teams are trained and equipped to maintain operations within a CBRN/TIM environment.</p> <p>4-7: MWD teams are trained and equipped to perform limited activities within a CBRN/TIM environment.</p> <p>1-3: MWD handlers are trained to conduct survival activities within a CBRN/TIM environment.</p> <p>0: MWD teams are not equipped and trained to survive a CBRN/TIM environment.</p>
M6	There is effective DOTLPPF in place to conduct task	<p>8-10: DOTLPPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4-7: Most critical aspects of DOTLPPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1-3: DOTLPPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPPF does not exist for this task.</p>

¹ MWD respiratory/ocular protection from CBRND does not exist within the DoD inventory, and applicable and tested COTS assets supporting mission requirements are not known.

² MWD handlers are trained and equipped to perform CBRND for themselves. MWD protective measures are restricted to available COLPRO (provided the commander permits the MWD within the shelter), or performing a barrier activity (e.g., wrapping in poncho, placing within a vehicle, etc.), performing limited decontamination using standard personnel decontamination kit, and immediately transporting to veterinary activities for evaluation and treatment.

³ DOTLPPF does not currently exist for this task. Current draft U.S. Army Veterinary Corps doctrine provides limited task support such as information on decontamination, COLPRO, and possible handler actions to reduce exposure/contamination but is inadequate as it does not establish and require COLPRO allocation and provide for the protection of MWD to preclude necessity for treatment, operational impacts, and/or asset loss.

⁴ MWD percutaneous protection from CBRND does not exist within the DoD inventory and applicable, and tested COTS assets supporting mission requirements are not known.

⁵ Standard prophylaxes do not exist for MWDs. Veterinarians do administer medications and vaccines routinely which may provide some prophylactic value, but are not designed and applied as CBRND measures.

⁶ MWD handlers are equipped and trained for survival within a CBRND environment. However, MWDs are not.

⁷ Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels and do not support the protection of MWDs. The only currently fielded land-based mobile group COLPRO is CBPS. The CBPS system is available on a mobile platform and can provide a limited number of people protection. The CBPS consists of a dedicated M1113 HMMWV with an LMS mounted on the back and provides a highly mobile, contamination-free, environmentally controlled work area for forward deployed medical units. The CBPS has been fielded to treatment squads, forward surgical teams, and medical companies. Four personnel are required to operate the CBPS. However, these systems are limited in supply and are generally dedicated to medical and C4ISR operations. None are allocated for the protection of MWD or MWD teams.

⁸ MWD handlers are trained in personal survival activities, including mobile COLPRO, against the effects of CBRN/TIM agents. However, MWDs are not and are only permitted into mobile COLPRO when specified by the commander and/or senior ranking person within the shelter.

⁹ The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support MWDs, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available during operations against an adversary. Current plans generally do not address the application of COLPRO to MWDs and do not allocate the limited COLPRO resources to this resource. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these facilities are dedicated to critical operational requirements and restricted to assigned and designated personnel. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy personnel, operations, and MWD sheltering needs.

¹⁰ MWD handlers may possess access to COLPRO, depending upon performed activity and location, against the effects of CBRN/TIM agents. However, MWDs are not permitted into COLPRO unless specified by the commander and/or senior ranking person within the shelter.

¹¹ MWD handlers are trained in personal survival activities, including fixed site COLPRO, against the effects of CBRN/TIM agents. However, MWDs are not permitted into COLPRO unless specified by the commander and/or senior ranking person within the shelter.

¹² CBRND COLPRO is not specifically allocated or designed for the protection of MWDs against CBRN/TIM agents during operations for R2, kenneling, and enabling the care and maintenance of MWDs. MOPP does not address MWDs.

¹³ MWDs are not CBRND trained, equipped, and fully integrated into CBRND exercises and evaluations requiring the use of IPE at the appropriate MOPP levels. MOPP does not address MWDs. MWD handlers are trained and equipped with IPE to achieve required MOPP levels upon notification or warning.

¹⁴ MWD teams away from kenneling are not equipped with and are not allocated COLPRO accommodating MWDs. MOPP does not address MWDs. Handlers may possess access to COLPRO, but the inclusion of the MWD is dependent upon the decision of the commander and/or senior ranking person within the shelter.

¹⁵ Prophylaxes for select CBRN agents are available for the personal use of the MWD handler. MOPP does not address MWDs.

¹⁶ Doctrine, policy, procedures, and TTPs do not address the application of MOPP levels and associated CBRND training and equipping of MWDs. DOTLPP addresses the CBRND training and equipping of MWD handlers and MOPP levels apply to these personnel.

¹⁷ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel, including MWD handlers. However, doctrine, policy, procedures, and TTPs do not address the application of MOPP levels to MWDs.

¹⁸ DOTLPP does not address and require the allocation of CBRND resources for the protection of MWDs.

13.4.3 Functional Solution Analysis

13.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Include in doctrine requirement for allocation of COLPRO for MWDs.

Partial Non-Materiel Solution: *Doctrine:* Incorporate into doctrine, policy, procedures, and TTPs the provision of COLPRO for MWD activities and functions supporting operations with threat. *Organization:* Organizational supporting structures, manning, and resources to support MWD COLPRO operations. *Training:* Formal and recurring training of MWD units and personnel on COLPRO operations for MWDs. *Leadership:* Ensure recognition of MWDs as a limited valuable resource requiring protection. *Facilities:* Develop supporting infrastructure (e.g., logistics, veterinary services, communications, etc.) to support MWD COLPRO.
- 2. Deficiency:** Include in doctrine requirement for COLPRO access for MWDs accompanied by handlers away from primary MWD COLPRO.

Partial Non-Materiel Solution: *Doctrine:* Incorporate into doctrine, policy, procedures, and TTPs the requirement to permit accompanied MWD access to COLPRO when away from MWD COLPRO operations. *Leadership:* Ensure recognition of MWDs as a limited valuable resource requiring protection and enforcement of doctrine.
- 3. Deficiency:** MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.

Partial Non-Materiel Solution: *Doctrine:* Establish doctrine, policy, and procedures for CBRND protection of MWDs and training enabling CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWD CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of MWD handlers and MWDs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, veterinary surveillance, communications, training, etc.).
- 4. Deficiency:** Command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to MWD.

Non-Materiel Solution: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWD and operations for CBRND. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.
- 5. Deficiency:** Adjust MOPP protocols to address MWDs.

Non-Materiel Solution: *Doctrine:* Adjust doctrine, policy, procedures, and TTPs to address actions for the protection of MWDs at each MOPP level. *Training:* Establish institutional and unit training for the conduct of MWD-related MOPP level actions. *Leadership:* Incorporate MWD-related activities for each MOPP level into planning and disseminated instructions.

6. **Deficiency:** Prophylaxis for MWAs is virtually nonexistent.

Partial Non-Materiel Solution: *Doctrine:* Establish doctrine, policy, and procedures for CBRND protection of MWDs and survival within a CBRN/TIM environment. *Organization:* Ensure organizational consideration for maintenance and support of MWD CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of handlers and MWDs on CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, veterinary surveillance, etc.).

7. **Deficiency:** Existing CBRND DOTLPF is inadequate, or nonexistent, for MWDs.

Non-Materiel Solution: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWDs for CBRND. *Organization:* Identify organizational services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWD handlers and MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND DOTLPF for MWDs.

13.4.3.2 IMA Assessment Summary

Table 13.4-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches vary from modifying current COLPRO systems to the development of new antibodies and vaccines. Table 13.4-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.4-2. TASHLD 4: Materiel Approaches

Idea for Materiel Approach	Description
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
COTS CBRND IPE materiel for MWD protection	Adapt COTS protective equipment, where necessary and desirable, for CBRND of MWDs.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. FDA testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop MWD COLPRO	Develop or adapt joint-level MWD transport and field kenneling systems for COLPRO function as transporter, field shelter, and COLPRO.
Develop/adapt MWA transport system with pressure/filtration	Develop or adapt MWA transport systems to provide COLPRO protection from CBRN/TIM agents.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.

Idea for Materiel Approach	Description
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
GOTS CBRND IPE materiel for MWD protection	Adapt existing GOTS CBRND materiel (e.g., PPW, etc.) for application to CBRND of MWDs.
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPWs, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.
MWA prophylaxes	Develop or adapt CBRND medical countermeasures and veterinary medicine for preexposure and post-exposure/presymptomatic protection of MWDs from CBRN/TIM. Develop topical that is easy to apply and provides shielding from CBRN/TIM, preventing agent absorption through hair or skin.
Rebreathing	Closed circuit mechanism to permit an individual's exhaled air to be filtered, CO ₂ removed and recirculated for breathing, allowing user to make use of all available oxygen in a closed environment.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Respiratory protection for MWAs	Modify existing technology for application by MWAs to provide some protection from CBRN/TIM. Specific masks would be desirable that are comparable to the human form factor.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.4-3. TASHLD 4: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Broad-Application Above-the-Neck Respiratory Protection</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Combinatorial Prophylaxes</p>	<p style="text-align: center;">COTS CBRND IPE Materiel for MWD Protection</p>	<p style="text-align: center;">Current Prophylaxes</p>	<p style="text-align: center;">Develop COLPRO Kits</p>	<p style="text-align: center;">Develop MWD COLPRO</p>	<p style="text-align: center;">Develop/Adapt MWA Transport System With Pressure/Filtration</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Field Expedient COLPRO Kits</p>
<p>Include in doctrine requirement for allocation of COLPRO for MWDs.</p>						X	X	X	X	X
<p>Include in doctrine requirement for COLPRO access for MWDs accompanied by handlers away from primary MWD COLPRO.</p>						X	X	X	X	X
<p>MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X	X	X	X	X
<p>Prophylaxis for MWAs is virtually nonexistent.</p>			X		X					

Table 13.4-3. TASHLD 4: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Field Expedient COLPRO Materials</p>	<p style="text-align: center;">Future Prophylaxes</p>	<p style="text-align: center;">GOTS CBRND IPE Materiel for MWD Protection</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>	<p style="text-align: center;">Integrated Mobile COLPRO</p>	<p style="text-align: center;">MWA Prophylaxes</p>	<p style="text-align: center;">Rebreathing</p>	<p style="text-align: center;">Regenerative Filtration</p>	<p style="text-align: center;">Respiratory Protection for MWA</p>	<p style="text-align: center;">Topical</p>
<p>Include in doctrine requirement for allocation of COLPRO for MWDs.</p>	X				X			X		
<p>Include in doctrine requirement for COLPRO access for MWDs accompanied by handlers away from primary MWD COLPRO.</p>	X				X					
<p>MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X	X	X	X	X
<p>Prophylaxis for MWAs is virtually nonexistent.</p>		X				X				X

13.5 Task TASHLD 5: Protect evacuees, detainees, civilians, and other identified groups from CBRN/TIM effects

13.5.1 Functional Area Analysis

13.5.1.1 Definition

Establish and provide COLPRO and/or individual protection to eligible civilians and detainees. The afforded protection is dependent upon the function and activities performed by the individual. NOTE: Civilians will encompass the full range of body types, ages, disabilities, and may include both genders.

13.5.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.5.1.2.1 Supported Task: OPSHLD 6

13.5.1.2.2 Lateral Task: TASHA 24

13.5.1.2.3 Supporting Task: N/A

13.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Poor personnel (evacuees, detainees, civilians, and other identified group) nutrition and health. (C2.2.4.1)
5. Poor personnel physical conditioning. (C2.2.4.3)
6. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)
7. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)

8. Poor evacuee, detainee, and other civilian physical conditioning. (C2.2.4.3 – NEW²)
9. Negligible personnel experience. (C2.2.4.5)
10. Limited staff expertise. (C2.3.1.3)
11. Limited deployed supplies. (C2.8.2)
12. No prepositioned materiel. (C2.8.4)
13. No host-nation support. (C2.8.5)
14. Negligible to limited commercial procurement. (C2.8.6)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Uncertain international organization support. (C3.1.2.5)
4. Poor civil health. (C3.3.1.4)

13.5.2 Functional Needs Analysis

13.5.2.1 Capability and Deficiency Assessment Summary

Table 13.5-1 discusses various capabilities to perform the task to the designated standards. The overall capabilities for current, near/mid, and far term are rated “red.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Collective protection would afford the most widespread protection to the affected groups, but these assets are limited in quantity and are intended for warfighter protection as a primary role. CBRND respiratory/ocular and percutaneous protection are available in certain situations, either possessed by detainees or provided in theater for dependents and contractors. But widespread use in all cases are limited based on the physical variety of individuals that would need to be considered, i.e., children of various ages. The Guardian Program is attempting to address the protection of critical personnel within the civilian populace on an established military installation but is currently focused upon installation response and mitigation capabilities primarily addressing first responders and follow-on incident management. Planning, respiratory/ocular protection, percutaneous protection, COLPRO, and training are included in this program. However, the provision of IPE and COLPRO for application of CBRND for detainees, civilians, and other identified groups is not adequately addressed in current DOTLMPF and stocks are inadequate, if they exist at all.

² The current *UJTL* condition description applies to only military personnel. The description should be expanded to include evacuees, detainees, and other civilians.

Projected Near/Mid-Term Capability and Deficiency

The projected mid-term fielding of JECF will expand capabilities to provide COLPRO for support of operations. However, the quantities remain in question and timing may shift to late mid term. The Guardian Program is expected to address critical civilian personnel within the general installation/facility population during the near to early mid-term. However, the Guardian Program is not expected to address general population, detainees, and non-U.S. personnel, nor operations involving locations other than established U.S. installations and facilities. Although additional assets are projected for the warfighter, no change is projected to DOTLPPF.

Projected Far-Term Capability and Deficiency

Continued fielding of JECF is expected during the far term with possible expansion of the program to address other identified and applicable COLPRO issues. The Guardian Program is expected to continue to address and resolve or mitigate CBRND issues on a limited basis for U.S. installations and facilities. Although additional assets are projected for the warfighter, no change is projected to DOTLPPF.

13.5.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

Other warfighter respiratory/ocular protection as available: Includes all standard warfighter respiratory/ocular systems of protection (e.g., M40, MCU-2A/P, etc.) that may be available and applied at the direction of the commander.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Obsolescing warfighter percutaneous protection: Obsolete or obsolescing warfighter CBRN ensembles, usually first- or second-generation protection, retained in selected HTAs for NEO application, when applied. Designed for adults.

Other warfighter percutaneous protection as available: Includes all standard Service-specific warfighter percutaneous protective assets (e.g., BDO, Saratoga, etc.) that may be available and applied at the direction of the commander.

3. Medical Protection: Standard warfighter CBRND prophylaxes. Designed for military population profile.

COLPRO

1. Mobile COLPRO:

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO:

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: Application of DOTLPF, knowledge, experience, and acquired skills for the conduct of CBRND by command staff (as individual entities and a single body) and appropriate supporting activities.

Table 13.5-1. TASHLD 5: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5
Current					
<i>Individual Protection</i>	2.3	N/A	2.0	2.0	1.3
Respiratory/Ocular Protection	4 ¹	N/A	3 ²	3 ³	2 ⁴
Percutaneous Protection	3 ⁵	N/A	3 ⁶	3 ⁷	2 ⁸
Medical Protection	0 ⁹	N/A	0 ⁹	0 ⁹	0 ⁹
<i>Collective Protection</i>	0	0	N/A	0	1.0
Mobile COLPRO	0 ¹⁰	0 ¹¹	N/A	0 ¹¹	1 ¹²
Fixed-Site COLPRO	0 ¹³	0 ¹⁴	N/A	0 ¹⁴	1 ¹²
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	4 ¹⁵	0 ^{15, 16}	3 ^{15, 17}	1 ^{15, 18}	0 ¹⁹
<i>Unit Staff</i>	4 ²⁰	0 ²¹	3 ^{20, 22}	0 ²³	2 ^{20, 24}
Near/Mid					
<i>Individual Protection</i>	2.3	N/A	2.7	2.0	1.3
Respiratory/Ocular Protection	4 ¹	N/A	4 ^{2, 25}	3 ³	2 ⁴
Percutaneous Protection	3 ⁵	N/A	4 ^{6, 25}	3 ⁷	2 ⁸
Medical Protection	0 ⁹	N/A	0 ⁹	0 ⁹	0 ⁹
<i>Collective Protection</i>	0	2.0	N/A	2.0	1
Mobile COLPRO	0 ¹⁰	0 ¹¹	N/A	0 ¹¹	1 ¹²
<i>Fixed-Site COLPRO</i>	0 ¹³	4 ^{14, 25, 26}	N/A	4 ^{14, 25, 26}	1 ¹²
<i>MOPP</i>	4 ¹⁵	0 ^{15, 16}	3 ^{15, 17}	1 ^{15, 18}	0 ¹⁹
Unit Staff	4 ²⁰	4 ^{21, 25, 26}	4 ^{20, 22, 25, 26}	0 ²³	4 ^{20, 24, 27}
Far					
<i>Individual Protection</i>	2.3	N/A	3.3	2.0	1.3
Respiratory/Ocular Protection	4 ¹	N/A	5 ^{2, 25}	3 ³	2 ⁴
Percutaneous Protection	3 ⁵	N/A	5 ^{6, 25}	3 ⁷	2 ⁸
Medical Protection	0 ⁹	N/A	0 ⁹	0 ⁹	0 ⁹
<i>Collective Protection</i>	0	2.5	N/A	2.5	1
Mobile COLPRO	0 ¹⁰	0 ¹¹	N/A	0 ¹¹	1 ¹²
Fixed-Site COLPRO	0 ¹³	5 ^{21, 25, 26}	N/A	5 ^{14, 25, 26}	1 ¹²
<i>MOPP</i>	4 ¹⁵	0 ^{15, 16}	3 ^{15, 17}	1 ^{15, 18}	0 ¹⁹
<i>Unit Staff</i>	5 ^{20, 27}	5 ^{21, 25, 26, 27}	5 ^{20, 22, 25, 26, 27}	0 ²³	5 ^{20, 24, 27}

System/Measure	M1	M2	M3	M4	M5
Overall					
Current Overall Capability	3	0	3	1	1
Near/Mid-Term Overall Capability	3	2	3	1	2
Far-Term Overall Capability	4	3	4	1	2

	FAA Measure	Scale
M1	Plans established for protecting detainees, civilians, and other identified groups from CBRN/TIM effects.	<p>8–10: Plans, policies, and procedures provide clear and specific guidance for the provision of CBRND protective measures, equipment, and training to detainees (with and without CBRND articles and personal effects authorized under the appropriate Geneva Convention), eligible civilians, and other plan identified and similar groups. Resources are allocated and in place for the effective accomplishment of this task. Forces are trained and equipped to provide CBRND protection as outlined in the appropriate plans, policies, and procedures.</p> <p>4–7: Plans provide general guidance and information for the provision of CBRND protective equipment and training to detainees (with and without CBRND articles and personal effects authorized under the appropriate Geneva Convention), eligible civilians, and other plan identified and similar groups. Resources are allocated and available for the accomplishment of this task. Forces are trained and equipped to support CBRND protection of these groups.</p> <p>1–3: Plans reference doctrine and policy on the provision of CBRND protective equipment to detainees (with and without CBRND articles and personal effects authorized under the appropriate Geneva Convention), eligible civilians, and other similar groups. Forces are trained on doctrine and policy regarding CBRND protection of these groups.</p> <p>0: Plans do not address the provision of CBRND protection for detainees, eligible civilians, and similar groups.</p>
M2	Eligible non–force members are protected using COLPRO.	<p>8–10: CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN agents and high-risk TIMs for all sheltering eligible non–force members.</p> <p>4–7: CBRND COLPRO is available, allocated, in place, and provides protection from all CBRN warfare agents and selected high-risk TIMs for sheltering eligible non–force members.</p> <p>1–3: CBRND COLPRO is available, allocated, in place, and provides protection against all CBRN warfare agents for sheltering eligible non–force members.</p> <p>0: CBRND COLPRO is not allocated and in place for sheltering eligible non–force members.</p>
M3	Eligible non–force members are protected using IPE.	<p>8–10: Eligible non–force members are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>4–7: Mission support eligible civilians and at-risk eligible civilians are trained, equipped, and possess ready access to CBRND protective measures and equipment.</p> <p>1–3: Training, equipping, and ready access to CBRND protective measures and equipment is limited to select groups.</p> <p>0: Training, equipping, and ready access to CBRND protective measures and equipment is nonexistent.</p>

M4	Detained personnel possess or are provided individual protection and/or collective protection against exposure to CBRN/TIM agents.	<p>8–10: Detained personnel are trained, equipped, and possess ready access to COLPRO and immediate identifiable IPE for protection against CBRN/TIM agent exposure.</p> <p>4–7: Detained personnel are equipped and possess access to COLPRO and/or identifiable IPE for protection against CBRN/TIM agent exposure.</p> <p>1–3: Detained personnel are equipped and possess access to IPE for protection against CBRN/TIM agent exposure.</p> <p>0: Detained personnel are not equipped or possess access to IPE.</p>
M5	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Plans exist in selected HTAs for the protection of eligible civilians, primarily civilians not supporting operations, using existing and obsolescing force standard and limited acquired COTS respiratory/ocular protective assets. At the direction of the commander, stocks of force equipment and consumables may be applied to offset shortages in equipment for the short term. Current plans for operations outside the United States call for the evacuation of eligible civilians to safe areas outside the AO. Civilians supporting the mission and remaining within the AO, particularly non-U.S. personnel, however, are not adequately addressed for the provision of military force–equivalent CBRND IPE. Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. However, equipage of these personnel is currently restricted to selected activities and functions. Most civilian personnel, both those performing mission support and not, are not equipped and trained for survival in a CBRN/TIM environment. Plans for the collection and housing of EPWs and detained civilians envision locations far to the rear or outside the AO. However, these personnel are required to be furnished and afforded protection throughout their custody, not just the period of long-term containment. EPWs governed by the Geneva Convention for the Treatment of Prisoners of War, are permitted to retain personal effects and protective equipment such as CBRN protective masks and clothing. However, both governing Geneva Conventions for prisoners of war (POWs) and civilians require the detaining force protect the detainees. The U.S., as a signatory of the Conventions, is obligated to provide protective assets to these personnel if they do not possess protective respiratory/ocular devices and working stocks were not captured from the adversary. Consequently, the U.S. must provide protection from the point of capture until release. Stocks designed to support force operational needs would be subject to issue if a threat exists. EPW-designated IPE, including respiratory/ocular protection, which is clearly identifiable, does not exist and the potential is present for confusion in identification between EPW and force members. Current planning does not consider this potential force impacting issue.

² Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. However, equipage of these personnel is currently restricted to selected activities and functions such as hazardous materials response teams, EMS, fire department, etc. Most civilian personnel, both those performing mission support and not, are not equipped and trained for survival in a CBRN/TIM environment. Force stocks are also applied during operations directed by national authorities requiring rapid response for the evacuation and/or protection of designated personnel or groups. Civilians not supporting the mission in selected HTAs are provided CBRND respiratory/ocular protection using obsolescing force standard (M17 series masks with M13 series filters) and limited acquired COTS respiratory/ocular protection. Additional assets must be pulled from force stocks should the available designated assets be depleted. At the direction of the commander, stocks of force equipment and consumables may be applied to offset shortages in equipment for the short term. Civilians on U.S. installations and facilities within the United States and its territories are generally not equipped with CBRND respiratory/ocular protection. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities for civilian personnel and will be addressing these issues for critical members of the installation/facility populace. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a national authority–directed evacuation/protection rapid response operation.

³ EPWs governed by the Geneva Convention for the Treatment of Prisoners of War, are permitted to retain personal effects and protective equipment such as CBRN protective masks and clothing. However, both governing Geneva Conventions for POWs and civilians require the detaining force protect the detainees. The U.S., as a signatory of the Conventions, is obligated to provide protective assets to these personnel if they do not possess protective IPE and working stocks were not captured from the adversary. Consequently, the U.S. must provide protection from the point of capture until release. Stocks designed to support force operational needs would be subject to issue if a threat exists. EPW-designated IPE that is clearly identifiable does not exist and the potential is present for confusion in identification between EPW and force members. Current planning does not consider this potential force impacting issue. Plans for the collection and housing of EPWs and detained civilians envision locations far to the rear or outside the AO. However, these personnel are required to be furnished and afforded protection throughout their custody, not just the period of long-term containment.

⁴ Doctrine, policy, procedures, TTPs, and planning are inadequate to afford effective CBRND respiratory/ocular protection to detainees, civilians, and other identified groups. Eligible civilians are not defined, the provision of CBRND measures and material to other than U.S. military members is not sufficiently addressed, and current DOTLPP does not reflect and support the changing nature of the force. DOTLPP providing guidance for CBRND of detainees does not exist.

⁵ Plans exist in selected HTAs for the protection of eligible civilians, primarily civilians not supporting operations, using existing and obsolescing force standard and limited acquired COTS percutaneous protective assets. At the direction of the commander, stocks of force equipment and consumables may be applied to offset shortages in equipment for the short term. Current plans for operations outside the United States call for the evacuation of eligible civilians to safe areas outside the AO. Civilians supporting the mission and remaining within the AO, particularly non-U.S. personnel, however, are not adequately addressed for the provision of military force equivalent CBRND IPE. Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. However, equipment of these personnel is currently restricted to selected activities and functions. Most civilian personnel, both those performing mission support and not, are not equipped and trained for survival in a CBRN/TIM environment. Plans for the collection and housing of EPWs and detained civilians envision locations far to the rear or outside the AO. However, these personnel are required to be furnished and afforded protection throughout their custody, not just the period of long-term containment. EPWs governed by the Geneva Convention for the Treatment of Prisoners of War, are permitted to retain personal effects and protective equipment such as CBRN protective masks and clothing. However, both governing Geneva Conventions for POWs and civilians require the detaining force protect the detainees. The U.S., as a signatory of the Conventions, is obligated to provide protective assets to these personnel if they do not possess protective respiratory/ocular devices and working stocks were not captured from the adversary. Consequently, the U.S. must provide protection from the point of capture until release. Stocks designed to support force operational needs would be subject to issue if a threat exists. EPW-designated IPE, including percutaneous protection, which is clearly identifiable, does not exist and the potential is present for confusion in identification between EPW and force members. Current planning does not consider this potential force impacting issue.

⁶ Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. However, equipment of these personnel is currently restricted to selected activities and functions such as hazardous materials response teams, EMS, fire department, etc. Most civilian personnel, both those performing mission support and not, are not equipped and trained for survival in a CBRN/TIM environment. Force stocks are also applied during operations directed by national authorities requiring rapid response for the evacuation and/or protection of designated personnel or groups. Civilians not supporting the mission in selected HTAs are provided CBRND percutaneous protection using obsolescing force standard and limited acquired COTS respiratory/ocular protection. Additional assets must be pulled from force stocks should the designated assets be depleted. At the direction of the commander, stocks of force equipment and consumables may be applied to offset shortages in equipment for the short term. Civilians on U.S. installations and facilities within the United States and its territories are generally not equipped with CBRND respiratory/ocular protection. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities for critical civilian personnel and will be addressing these issues. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a National authority-directed evacuation/protection rapid response operation.

⁷ EPWs governed by the Geneva Convention for the Treatment of Prisoners of War, are permitted to retain personal effects and protective equipment such as CBRN protective masks and clothing. However, both governing Geneva Conventions for POWs and civilians require the detaining force protect the detainees. The U.S., as a signatory of the Conventions, is obligated to provide protective assets to these personnel if they do not possess protective IPE and working stocks were not captured from the adversary. Consequently, the U.S. must provide protection from the point of capture until release. Stocks designed to support force operational needs would be subject to issue if a threat exists. EPW-designated IPE that is clearly identifiable does not exist and the potential is present for confusion in identification between EPW and force members. Current planning does not consider this potential force impacting issue. Plans for the collection and housing of EPWs and detained civilians envision locations far to the rear or outside the AO. However, these personnel are required to be furnished and afforded protection throughout their custody, not just the period of long-term containment.

⁸ Doctrine, policy, procedures, TTPs, and planning are inadequate to afford effective CBRND percutaneous protection to detainees, civilians, and other identified groups. Eligible civilians are not defined, the provision of CBRND measures and material to other than U.S. military members is not sufficiently addressed, and current DOTLPP does not reflect and support the changing nature of the force. DOTLPP providing guidance for CBRND of detainees does not exist.

⁹ Doctrine, policy, procedures, TTPs, and planning do not address the provisioning of CBRND medical countermeasures to nonmilitary members.

¹⁰ Plans do not adequately address the provisioning of mobile COLPRO systems for the protection of nonoperational personnel and predominantly rely upon IPE and evacuation for these personnel in HTAs and the AO. Civilians supporting the mission are not considered separately, but are included in unit mobile sheltering requirements if integrated into a force unit. COLPRO for other civilians supporting the mission (e.g., Host-nation personnel, contractor employees, third-party nationals, etc.) is generally not planned or provided. Mobile COLPRO within the United States and its territories is predominantly confined to deployable unit warfighting resources and selected Homeland Defense response activities. LHA/LHDs and selected grey-water combatant vessels are outfitted with CITADEL COLPRO. These systems are dedicated to vessel crew and operations, but may be applied to protect otherwise unprotected personnel.

¹¹ Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels and do not support the protection of detainees, civilians, and other eligible or identified groups. The only currently fielded land-based mobile COLPRO is CBPS. The CBPS system is available on a mobile platform and can provide a limited number of people protection. The CBPS consists of a dedicated M1113 HMMWV with an LMS mounted on the back and provides a highly mobile, contamination-free, environmentally controlled work area for forward deployed medical units. The CBPS has been fielded to treatment squads, forward surgical teams, and medical companies. Four personnel are required to operate the CBPS. However, these systems are limited in supply and are generally dedicated to medical and C4ISR operations.

¹² Doctrine, policy, procedures, TTPs, and planning are inadequate to afford effective CBRND COLPRO protection to detainees, civilians, and other identified groups. Eligible civilians are not defined, the provision of CBRND measures and material to other than U.S. military members is not sufficiently addressed, and current DOTLPP does not reflect and support the changing nature of the force. DOTLPP providing guidance for CBRND of detainees does not exist.

¹³ Plans do not adequately address the provisioning of mobile COLPRO systems for the protection of nonoperational personnel and predominantly rely upon IPE and evacuation for these personnel in HTAs and the AO. Civilians supporting the mission are not considered separately, but are included in unit sheltering requirements if integrated into a force unit. COLPRO for other civilians supporting the mission (e.g., host-nation personnel, contractor employees, third-party nationals, etc.) is generally not planned or provided.

¹⁴ The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to protect detainees, civilians, and other identified groups from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available during operations against an adversary. Current COLPRO systems are not available in the quantities and types necessary to support the protection of eligible civilians and detainees. Current plans generally do not address the application of COLPRO to non-force personnel and do not allocate the limited COLPRO resources to this activity. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these facilities are dedicated to critical operational requirements and restricted to assigned and designated personnel. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities for critical civilian personnel and will be addressing these issues. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a national authority-directed evacuation/protection rapid response operation. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy both operational and eligible civilian sheltering needs.

¹⁵ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Plans within HTAs may incorporate this perception. However, doctrine, policy, procedures, and TTPs do not address their application to these personnel.

¹⁶ Nonmilitary personnel are generally not trained and fully integrated into exercises and evaluations requiring the use of COLPRO as relates to the appropriate MOPP levels.

¹⁷ Nonmilitary personnel are generally not trained, equipped, and fully integrated into exercises and evaluations requiring the use of IPE at the appropriate MOPP levels.

Designated nonmilitary personnel performing selected functions and activities (e.g., EMS, fire department, etc.) are trained, equipped, and exercised/evaluated.

¹⁸ Detained personnel may not be cognizant of U.S. MOPP levels and their associated actions. Alternative designations and training may be required to enhance detainee survival.

¹⁹ Doctrine, policy, procedures, and TTPs do not address the application of MOPP levels and associated training and equipping of non-U.S. military personnel. DOTLPP providing guidance for CBRND of detainees does not exist.

²⁰ Unit staff personnel planning is guided by current doctrine, policy, procedures, and TTPs. Select HTA doctrine does provide limited guidance on the provisioning of protection to in-place, known, eligible civilians not supporting the mission (e.g., military dependents, etc.). However, the emphasis within HTAs is upon short-term protection until evacuation. Planning for the provision of CBRND to nonmilitary personnel is a combination of known available assets not otherwise committed to operations, threat, number of persons involved, ability to protect the target population, available relocation resources, expected time to move the population, and expected operational demands. DOTLPP providing guidance for CBRND of detainees does not exist. The protection of non-force members within the United States and its territories is constrained by available protective resources and impacted by OSHA requirements for nonuniformed personnel. Staff training, processes, and planning/operating guidance do not adequately consider civilians supporting the mission and remaining within the AO, particularly non-U.S. personnel. The provisioning and standards for civilians performing mission support tasks, activities, and functions are not adequately addressed for the provision of military force equivalent CBRND IPE where and when appropriate. Civilians supporting the mission within the United States and its governed territories are governed by OSHA requirements. Staff personnel representing selected activities such as fire department, EMS, and other similar standard response functions are aware and knowledgeable of OSHA requirements and are involved in staff planning and operational processes. However, equipment of these personnel is currently restricted to selected activities and functions. Further, host-nation standards and requirements similar to OSHA may exist and apply to non-U.S. personnel, activities, and functions supporting the mission and are not generally known to the staff. Most civilian personnel, both those performing mission support and not, are not addressed in planning for survival and operations within a CBRN/TIM environment.

²¹ Availability of COLPRO for other than operational needs is not a consideration the unit staff can reasonably expect or build into plans. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities for critical civilian personnel and will be addressing these issues. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a National authority-directed evacuation/protection rapid response operation. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy both operational and eligible civilian sheltering needs.

²² Unit staff planners in selected HTAs do address the short-term protection of nonmilitary personnel not supporting the mission. However, the equipping and training of civilians supporting the mission is not adequately defined and addressed for planning action by unit staff planners and supporting functions. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities for critical civilian personnel and will be addressing these issues. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a National authority-directed evacuation/protection rapid response operation. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy both operational and eligible civilian sheltering needs.

²³ DOTLPP providing guidance for CBRND of detainees does not exist.

²⁴ Doctrine, policy, procedures, and TTPs do not address the application of MOPP levels and associated training and equipping of non-U.S. military personnel other than for selected personnel, functions, and activities such as fire department, EMS, and similar entities. DOTLPP providing guidance for CBRND of detainees does not exist.

²⁵ Improvements are expected as a result of the Guardian Program as assets are identified and fielded for critical civilian personnel. However, protection of the general population is not likely to be addressed.

²⁶ The projected fielding of JECF in the mid term includes adaptive/insertive COLPRO for existing tentage and facilities. Quantities to be fielded of these systems has not been determined.

²⁷ Continued Guardian Program progress and corresponding development of associated detailed DOTLPP is expected to address the protection of the critical nonmilitary populace at U.S. facilities and installations. The Guardian Program, however, is not likely to address non-U.S. personnel supporting operations and civilians protected under a National authority-directed evacuation/protection rapid response operation. Further, the Guardian Program is not expected to address detainees.

13.5.3 Functional Solutions Analysis

13.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** The definition of “eligible civilians” is not clear.

Non-Materiel Solutions: *Doctrine:* Define “eligible civilians” supporting the mission/military operations for CBRND and establish their inclusion in the force within doctrine, policy, procedures, and TTPs. Define other eligible civilians and their relationship to the force, protection afforded by the force, and obligations of the force and the target population. *Organization:* Identify organizational services dependent upon civilians for mission/military operations success. Identify organization services and activities necessary to support survivability of eligible civilians, detainees, evacuees, and other designated/identified groups. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians, detainees, evacuees, and other designated/identified groups; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians, detainees, evacuees, and other designated/identified groups. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).

2. **Deficiency:** The command staffs do not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to eligible civilians, detainees, evacuees, and other non-U.S. military identified groups.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel, detainees, non-U.S. personnel, and other groups and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, detainees, evacuees, and other identified groups. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians, detainees, and other designated personnel. Conduct CBRN/TIM training, exercises, and evaluations including these groups, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians, detainees, and other designated personnel. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).

- 3. Deficiency:** DOTLPF is inadequate or nonexistent addressing CBRND of eligible civilians, detainees, evacuees, and other designated/identified groups.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, procedures, and TTPs addressing CBRND of eligible civilians, detainees, evacuees, and other designated/identified groups. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilians, detainees, evacuees, and other designated/identified groups. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians, detainees, evacuees, and other designated/identified groups; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians, detainees, evacuees, and other designated/identified groups. *Personnel:* Establish criteria and requirements that eligible civilians supporting the mission/military operations are medically qualified to perform their tasks in a CBRN/TIM environment using CBRND resources and are adequately trained in CBRND and operations within a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).
- 4. Deficiency:** Policies and plans do not adequately address the protection of eligible civilians, detainees, evacuees, and other designated groups from CBRN/TIM.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilians, detainees, evacuees, and other designated groups for CBRND. Includes specific guidance for planning and operations involving these groups. *Leadership:* Ensure awareness of need for planning and resource allocation for the protection of eligible civilians, detainees, evacuees, and other designated groups from the effects of CBRN/TIM.
- 5. Deficiency:** Eligible civilians, detainees, evacuees, and other identified groups are not equipped and trained to survive a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, procedures, and TTPs for the identification, equipping, preparing, training, and protection of eligible civilians, detainees, evacuees, and other identified groups for survival and operations within a CBRN/TIM environment. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilian, detainee, evacuee, and other identified group CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of eligible civilians supporting the mission for CBRND measures and activities. Includes training of other civilians, detainees, evacuees, and other identified groups for survival in a CBRN/TIM environment. Also includes integration into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilian, detainee, evacuee, and other identified group survival. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).
- 6. Deficiency:** Most civilians are not equipped or have access to IPE for survival within a CBRN/TIM environment. Detainees are likely not to possess IPE.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the provisioning of civilians, evacuees, detainees, and other designated groups with CBRND that addresses the variation within a potential population. Institute in doctrine, policy, and procedures the central correlation of plans and taskings to identify eligible civilian, detainee, evacuee, and other designated group CBRND support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment and preposition of CBRND assets for these groups. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilian, detainee, evacuee, and other identified group CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of eligible civilians supporting the mission for CBRND measures and activities. Training of other civilians, detainees, evacuees, and other identified groups for survival in a CBRN/TIM environment. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilian, detainee, evacuee, and other identified group survival. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).

7. **Deficiency:** Most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of eligible civilians supporting the mission/military operations addressing the variation within the potential protected working populations. *Organization:* Identify organizational services dependent upon civilians for mission/military operations success. *Training:* Establish institutional and unit training of eligible civilians supporting the mission for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilians supporting the mission/operations CBRND (e.g., logistics, medical, training, communications, security, etc.).

8. **Deficiency:** Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities, are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.).

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for protection of evacuees during NEO operations with threat and addressing the variation within the potential protected working populations. *Leadership:* Awareness and ensure plans adequately address CBRND protection of evacuees during NEO operations with threat. *Facilities:* Infrastructure supports the acquisition and provisioning of COTS/GOTS material for the protection of evacuees.

9. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRN/TIM protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, detainees, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, detainees, evacuees, and other identified groups. *Training:* Include eligible civilians, detainees, and other identified groups in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. personnel. *Leadership:* Ensure leadership awareness of criticality and increased dependence of military operations, requirements to protect detainees, and need to protect other eligible/designated groups. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

10. Deficiency: Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

11. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal ramifications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

13.5.3.2 IMA Assessment Summary

Table 13.5-2 is a list of ideas for material approaches and a corresponding description of each idea. While current IPE could be used for mission essential civilians; the larger quantities required meeting this task and the difficulties/hazards associated with it make IPE unrealistic. Approaches need to focus on use of current COLPRO systems and developing field-expedient and rapidly deployable systems. Table 13.5-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.5-2. TASHLD 5: Materiel Approaches

Idea for Materiel Approach	Description
Procure/develop field-expedient COLPRO kits	Procure COLPRO kits similar to those used for the Chemical Stockpile Emergency Preparedness Program for appropriate activities and requirements. This protective measure is currently provided to populations located in the vicinity of chemical demilitarization sites. Other materials may be adaptable and procured to establish COLPRO in existing structures. Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPW, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.

Table 13.5-3. TASHLD 5: IMA Assessment

Identified Gaps	Ideas for Material Approaches (IMA)	Develop/Procure Field-Expedient COLPRO Kits	Disposable COLPRO	Modular COLPRO
Eligible civilians, detainees, evacuees, and other identified groups are not equipped and trained to survive a CBRN/TIM environment		X	X	X
Most civilians are not equipped or have access to IPE for survival within a CBRN/TIM environment. Detainees are likely not to possess IPE.		X	X	X
Most civilians performing essential activities supporting operations are not equivalently equipped to their military counterparts. This statement is particularly true of contractors.		X	X	X
Short-notice NEO evacuation operations for other than existing areas prepared in advance for NEO activities, are likely to necessitate the use of military force assets which may provide inadequate protection for segments of the potential population (e.g., babies, young children, disabled, etc.).		X	X	X

13.6 Task TASHLD 6: Provide safe, collectively protected environment for critical and essential mission tasks and activities and for rest and relief

13.6.1 Functional Area Analysis

13.6.1.1 Definition

COLPRO provides a contamination-free (MOPP-free) environment where critical activities (e.g., command and control, communication, and maintenance of low-density assets) can be performed, and provides MOPP relief for individuals and units. COLPRO may be included in a fixed facility, transportable shelter, mobile-mounted shelter, vehicle, aircraft, ship, or an expedient shelter. Entry/exit procedures must be strictly followed to prevent introducing contamination into a CPS. A CPS is brought to fully operational condition if not done so prior to an attack.

Because COLPRO assets are limited (if available at all), commanders must prioritize those activities that are critical to battlefield success to be performed in CPS. Forces are rotated, when and where possible, for rest and relief within CPS facilities or outside the hazard area. The facility, vessel, or vehicular (air or ground) CPS clean air supply system is activated if COLPRO filtration systems were not placed into operation prior to the event. Unoccupied vehicles (air and surface) remain sealed to prevent the infiltration of contamination. Environmental Sheltering with Reduced CB Hazard CPS is placed into operation. Prior to an actual attack, CPS may be activated and the following tasks performed:

- CPSs are assessed and prepared for use. The commander may place a CPS into operation or on standby for an anticipated attack.
- Facilities, vehicles, vessels, and aircraft are prepared wherever possible against infiltration of a CBRN/TIM agent.
- Expedient shelters are established in facilities, vehicles, vessels, aircraft, etc., for protection of resources. Expedient shelters may also be constructed using available materials.

13.6.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 5, TA 7, TA 7.1).

13.6.1.2.1 Supported Task: OPSHLD 7

13.6.1.2.2 Lateral Task: TASHA 24

13.6.1.2.3 Supporting Task: N/A

13.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. Limited CONUS resupply. (C2.8.3)
8. No prepositioned materiel. (2.8.4)
9. No host-nation support. (C2.8.5)
10. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.6.2 Functional Needs Analysis

13.6.2.1 Capability and Deficiency Assessment Summary

Table 13.6-1 discusses current capabilities to perform the task to the designated standards. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/striking in a CBRN/TIM environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Most mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires prioritization of available assets

to address critical activities/functions and the application of IPE for CBRND. However, although prioritization is applied for critical activities and functions, not all such requirements can be satisfied with current COLPRO. Individual protection, therefore, remains the mainstay for protection against CBRN/TIM agents. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter.

Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities are necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance.

Medical prophylaxes do exist for the protection of the warfighter against a limited number of biological and chemical agents. However, few are FDA approved. A number possess IND authorization for application. Medications are considered for their potential prophylactic value, but are not always FDA approved for this purpose. Not all threat CBRN agents are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes.

COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians (in general) and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the CBRND provisioning and training of eligible civilians is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE. DOTLPF does address the need for R2 of non-COLPRO-protected personnel in a contamination/hazard-free environment at least once every 24 hours. The methodology includes COLPRO, rotation to a clean area, and other planned considerations. However, operational requirements may not support this activity, particularly by engaged elements. Further, the largely manual current nature of command operations inherently delays protective actions versus automation, further complicated by the current stovepipe reporting and information flow as information flows vertically without a corresponding horizontal flow for alerting/warning of CBRN/TIM agents.

Projected Near/Mid-Term Capability and Deficiency

JECP is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. The P3I upgraded CBPS, JTCOPS, CP-DEPMEDS, fielding of the JSLNBCRS variants, and backfit of LHA/LHD vessels are projected to include COLPRO in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. However, individual protection is projected to

remain the principal method of CBRND. Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents and high-threat/high risk TIMs (particularly TICs). Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

The potential for COLPRO in the Future Tactical Lift Option builds upon the mid-term COLPRO capabilities. As with the mid term, CBRND will continue to rely upon individual CBRND protection against CBRN/TIM agents. Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection which will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time. Additional changes in capabilities from the mid term are not projected.

13.6.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination

or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

3. Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

COLPRO

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCRS is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system either until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.6-1. TASHLD 6: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current												
<i>Individual Protection</i>	N/A	N/A	N/A	N/A	4	N/A	N/A	N/A	6	N/A	N/A	3
Respiratory/Ocular Protection	N/A	N/A	N/A	N/A	4 ¹	N/A	N/A	N/A	6 ²	N/A	N/A	3 ³
Percutaneous Protection	N/A	N/A	N/A	N/A	4 ⁴	N/A	N/A	N/A	6 ⁵	N/A	N/A	3 ³
<i>Collective Protection</i>	4	3.5	9	0	1	0	1.5	0	6	2	6	4
Mobile COLPRO	3 ⁶	6 ⁷	9 ⁶	0 ⁸	2 ⁹	0 ¹⁰	1 ⁶	0 ¹¹	6 ¹²	1 ⁶	6 ¹³	4 ^{8,9,14}
Fixed-Site COLPRO	5 ¹⁵	1 ¹⁶	9 ¹⁵	0 ⁸	0 ¹⁷	0 ¹⁰	2 ¹⁵	0 ¹⁸	6 ¹²	3 ¹⁵	6 ¹³	4 ^{8,17,19}
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	8 ²⁰	8 ²⁰	8 ²⁰	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁰	0 ¹⁸	6 ²²	8 ²⁰	6 ²⁰	8 ²⁰
<i>Unit Staff</i>	8 ²³	6 ²⁴	9 ²³	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁵	0 ¹⁸	8 ²⁶	8 ²³	8 ²⁷	6 ^{23,25,26}
Near/Mid-Term												
<i>Individual Protection</i>	N/A	N/A	N/A	N/A	4	N/A	N/A	N/A	6	N/A	N/A	3
Respiratory/Ocular Protection	N/A	N/A	N/A	N/A	4 ^{1,28}	N/A	N/A	N/A	6 ²⁹	N/A	N/A	3 ³
Percutaneous Protection	N/A	N/A	N/A	N/A	4 ^{4,30}	N/A	N/A	N/A	6 ³¹	N/A	N/A	3 ³
<i>Collective Protection</i>	4.5	5	9	0	1	.5	2	0	6	2	6	4
Mobile COLPRO	3 ^{6,32}	6 ⁷	9 ⁶	0 ³³	2 ⁹	0 ¹⁰	1 ⁶	0 ¹¹	6 ²	1 ⁶	6 ¹³	4 ^{8,9,14}
Fixed-Site COLPRO	6 ^{15,34}	4 ^{15,16,34,35}	9 ¹⁵	0 ⁸	0 ¹⁷	1 ^{10,36}	3 ¹⁵	0 ¹⁸	6 ⁵	3 ¹⁵	6 ¹³	4 ^{8,17,19}
<i>MOPP</i>	8 ²⁰	8 ²⁰	8 ²⁰	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁰	0 ¹⁸	6 ²²	8 ²⁰	6 ²⁰	8 ²⁰
<i>Unit Staff</i>	8 ²³	8 ^{24,37}	9 ²³	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁵	0 ¹⁸	8 ²⁶	8 ²³	8 ³⁸	6 ^{23,25,26}
Far-Term												
<i>Individual Protection</i>	N/A	N/A	N/A	N/A	4	N/A	N/A	N/A	6	N/A	N/A	3
Respiratory/Ocular Protection	N/A	N/A	N/A	N/A	4 ^{1,28,39}	N/A	N/A	N/A	6 ⁴⁰	N/A	N/A	3 ³
Percutaneous Protection	N/A	N/A	N/A	N/A	4 ^{4,30,41}	N/A	N/A	N/A	6 ⁴²	N/A	N/A	3 ³
<i>Collective Protection</i>	5	5.5	9	0	1	1	2.5	0	6	2	6	4
Mobile COLPRO	3 ^{6,32,43}	6 ⁷	9 ⁶	0 ⁴⁴	2 ⁹	0 ¹⁰	1 ⁶	0 ¹¹	6 ²	1 ⁶	6 ¹³	4 ^{8,9,14}
Fixed-Site COLPRO	7 ^{15,34,45}	5 ^{15,16,34,35,45}	9 ¹⁵	0 ⁸	0 ¹⁷	2 ^{10,36}	4 ¹⁵	0 ¹⁸	6 ⁵	3 ¹⁵	6 ¹³	4 ^{8,17,19}
<i>MOPP</i>	8 ²⁰	8 ²⁰	8 ²⁰	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁰	0 ¹⁸	6 ²²	8 ²⁰	6 ²⁰	8 ²⁰
<i>Unit Staff</i>	8 ²³	8 ^{24,37}	9 ²³	0 ⁸	0 ²¹	0 ¹⁰	8 ²⁵	0 ¹⁸	8 ²⁶	8 ²³	8 ⁴⁶	6 ^{23,25,26}
Overall												
Current Overall Capability	7	6	9	0	0	1	6	0	7	6	7	5
Near/Mid-Term Overall Capability	7	7	9	0	0	1	6	0	7	6	7	5
Far-Term Overall Capability	7	7	9	0	0	1	6	0	7	6	7	5

	FAA Measure	Scale
M1	Critical activities and functions are afforded COLPRO.	<p>8–10: All critical facilities and activities are equipped with operational COLPRO.</p> <p>4–7: Selected critical facilities and activities possess are equipped or possess access to operational COLPRO.</p> <p>1–3: Selected key critical facilities and activities are equipped or possess access to COLPRO.</p> <p>0: Critical facilities and activities are not equipped or possess access to COLPRO.</p>
M2	Unit COLPRO systems are established/ operational rapidly within receipt of commander’s orders.	<p>8–10: COLPRO requires minimal unit resources to rapidly and safely erect, place into operation, and maintain upon implementation instructions.</p> <p>4–7: COLPRO requires the application of considerable unit resources to rapidly and safely erect, place into operation, and maintain upon implementation instructions.</p> <p>1–3: COLPRO requires significant unit and assistive resources to rapidly and safely erect, place into operation, and maintain upon implementation instructions.</p> <p>0: COLPRO cannot be rapidly and safely erected, placed into operation, and maintained upon implementation instructions.</p>
M3	Priorities are established for use of COLPRO assets.	<p>8–10: Detailed prioritization of available and appropriate COLPRO is established, implemented, and adjusted when necessary to support critical activities and functions, and the rotation of forces for rest and relief based upon mission, criticality, threat, assessments, and resources.</p> <p>4–7: General prioritization of COLPRO exists and is applied to the allocation of available COLPRO to critical activities, functions, and force rest and relief.</p> <p>1–3: Prioritization of available COLPRO is inadequate to address the allocation of available COLPRO to critical activities, functions, and force rest and relief.</p> <p>0: COLPRO prioritization is nonexistent.</p>
M4	Sustained operational capability is achieved with COLPRO.	<p>8–10: Sufficient and adequate COLPRO is available and operational to sustain operational capabilities within a CBRN/TIM environment.</p> <p>4–7: Adequate operational capabilities are sustained for selected functions and activities with available and operational COLPRO.</p> <p>1–3: Sustained operational capabilities are seriously degraded and limited within a CBRN/TIM environment and are not mitigated by the application of COLPRO.</p> <p>0: Sustained operational capability is not supported by COLPRO and individual protection.</p>
M5	Unit COLPRO systems are erectable within a contaminated environment while encumbered by MOPP.	<p>8–10: COLPRO is rapidly and safely erected/striked, placed in operation, and maintained within a CBRN/TIM environment by personnel encumbered by IPE and with minimal resources.</p> <p>4–7: COLPRO is safely erected/striked, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel.</p> <p>1–3: Selected COLPRO is safely erected/striked, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel.</p> <p>0: COLPRO cannot be rapidly and safely erected, placed into operation, and maintained by IPE-encumbered personnel.</p>

M6	Unit and personnel are trained and capable of fabricating expedient sheltering using available material and/or kits.	<p>8–10: Units and personnel are fully trained and routinely exercised and evaluated on the effective application of expedient COLPRO measures and equipment.</p> <p>4–7: Units and personnel are fully trained and evaluated on the application of expedient COLPRO measures and equipment upon predeployment notification for operations with threat.</p> <p>1–3: Units and personnel are provided limited training on the application of expedient COLPRO measures and equipment.</p> <p>0: Training, exercising, and evaluation of forces on the application of expedient COLPRO measures and equipment is inadequate or nonexistent.</p>
M7	All personnel possess access to collective protection for rest and relief in a 24-hour period.	<p>8–10: Units are adequately equipped with or have sufficient access to COLPRO to provide all personnel with R&R access more than once every 24 hours.</p> <p>4–7: Units are adequately equipped with or have sufficient access to COLPRO to provide all personnel with R&R access at least once every 24 hours.</p> <p>1–3: Units are equipped with or have access to COLPRO to provide personnel with R&R access once every 24 hours.</p> <p>0: Units are inadequately equipment and possess insufficient access to COLPRO to provide all personnel with R&R access at least once every 24 hours.</p>
M8	Appropriate collective protection for maintenance precludes maintenance backlog resulting from contaminated critical items not repairable due to lack of collectively protected maintenance facilities.	<p>8–10: COLPRO affording a minimum necessary and safe level of protection for maintenance of contaminated critical items is available and in place and maintains support of OPTEMPO and operations.</p> <p>4–7: COLPRO is available and in place affording reduced protection requirements for maintenance of contaminated critical items essential to OPTEMPO and operations.</p> <p>1–3: Limited COLPRO is available and in place supporting the maintenance of selected contaminated critical assets essential to OPTEMPO and operations.</p> <p>0: COLPRO does not exist to perform maintenance of contaminated critical assets.</p>
M9	Operational activities and functions are not degraded/unavailable due to CBRN/TIM release.	<p>8–10: Operational capabilities are maintained within a CBRN/TIM environment through the application of COLPRO and individual protection.</p> <p>4–7: Operational capabilities are degraded or limited within a CBRN/TIM environment but are supported by the application of COLPRO and individual protection.</p> <p>1–3: IPE encumbrances and COLPRO availability impose serious impacts and limitations upon operational capabilities and performance of functions and activities within a CBRN/TIM environment.</p> <p>0: IPE encumbrances and COLPRO availability preclude operational capability and performance within a CBRN/TIM environment.</p>
M10	Forces are collectively protected against CBRN/TIM environment.	<p>8–10: Forces are allocated and have in place CBRND COLPRO in required quantities and types and are afforded protection from all CBRN agents and high-risk TIMs.</p> <p>4–7: Forces are allocated and have in place CBRND COLPRO in sufficient quantities and types to afford protection from all CBRN agents and selected high-risk TIMs.</p> <p>1–3: Forces are allocated and have in place CBRND COLPRO in quantities and types to afford protection from all CBRN warfare agents.</p> <p>0: Forces are not allocated and have in place sufficient CBRND COLPRO quantities and types to afford protection from CBRN agents.</p>

M11	Procedures prepared to prevent spread of contamination into collective protection interior.	<p>8–10: Detailed procedures and measures are in place for the decontamination and removal of contaminated resources during entry processing, and are checked by shelter personnel for compliance and presence of contamination, prior to accessing the contamination-free interior of the shelter and all force personnel are trained to perform the procedures and measures. The procedures and measures are posted, in brief, within the CCA as guidance and reference.</p> <p>4–7: Designated shelter personnel receive detailed training on procedures and measures for the decontamination/ removal of entering contaminated resources and the conduct of checking for contamination presence, prior to release and access to the contamination-free interior of the shelter and force personnel are provided limited training to perform the procedures and measures under the direction of the overseeing shelter personnel. General procedures and measures are posted, in brief, within the contamination control.</p> <p>1–3: Shelter and force personnel are provided general guidelines and procedures and limited training for decontamination and removal of contaminated resources during entry processing prior to accessing the contamination-free interior of the shelter.</p> <p>0: Procedures are not provided and personnel trained to preclude the introduction and spread of contamination within the COLPRO contamination-free area.</p>
M12	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment. CBRND IPE is currently Service-specific and protects against all known CBRN warfare agents and selected TIMs. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

² Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection. However, the encumbrances associated with ocular/respiratory protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

³ Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment.

⁴ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment. Service-specific CBRND percutaneous protection is currently applied for the protection of the force against known CBRN warfare agents and selected TIMs. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. COTS assets meeting OSHA requirements (and NFPA for firefighters) are applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

⁵ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets). Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

⁶ Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels. Selected U.S. Naval combat vessels may be equipped with full COLPRO (CITADEL). However, these systems are generally restricted to critical operations areas of the ships. The critical areas are contiguous in that they share common bulkheads and movement between areas is not prevented. CCAs are operated in areas located between the covered areas and the remainder of the ship. These areas are designated. The remainder of the interior of the vessel uses the Circle William concept. Circle William requires prior warning of the presence of a CBRN/TIM in the path of the ship or knowledge of an impending attack to be fully effective. This concept requires the shutdown of the ventilation system and sealing of hatches, bulkheads, and other such openings to seal the interior of the vessel from intrusion by a CBRN/TIM. However, the majority of these actions are performed manually and are initiated upon detection of the potential CBRN/TIM agent. There are concerns about the potential for large amounts of a CBRN/TIM agent to be drawn in by the high-velocity ventilation systems and dispersed throughout the interior of the ship during the period between agent encounter and completion of Circle William. There are concerns about the ability of the vessel to remain in Circle William until it is determined the vessel is no longer exposed to a CBRN/TIM. U.S. Naval combat vessels with full COLPRO of their critical functions currently include the DDG-51 class of destroyers, selected LSDs (vessel hulls 44 through 52), LHDs (vessel hulls 1 through 6), LHAs (vessel hulls 1 through 5), and four of the AOE-6 (vessel hulls 6 through 8 and 10) class ships. Submarines are considered fully protected so long as they remain sealed and do not take in air. The LHD and LHA Amphibious Assault Ships are undergoing a COLPRO backfit of SCPE for their critical functions. Other areas of these ships will use the Circle William Concept. Carriers, frigates, cruisers, DD-963 class destroyers, and other vessels not discussed earlier in note, do not currently afford their critical functions full COLPRO. Naval hospital ships, U.S. Naval auxiliaries, and USCG vessels are not equipped with COLPRO. Areas critical to the safe operation of the ship may not be protected against CBRN/TIMs. Ability of these vessels to successfully incorporate a concept similar to Circle William is a concern. There are also concerns about the ability of these vessels to prevent infiltration of CBRN/TIM into their interior. Infiltration of vapors can cause a build up of concentrations within the vessel that could exceed the levels surrounding the ship. U.S. Coast Guard (USCG) vessels are under the control and direction of DoD during a declared war. During peacetime, however, USCG is under the auspices of the Department of Homeland Security. USCG vessels are often attached to U.S. operations overseas for port security, coastal patrol, and similar functions. USCG personnel are also dispatched with military forces deploying overseas for peacekeeping and other operations. USCG vessels and personnel served in Vietnam, Haiti, Granada, and other force deployments. The ability of USCG resources to effectively integrate into DoD operations involving potential CBRN/TIM events is a concern. Mobile COLPRO are armored or soft-skinned vehicle-supported and -based systems. They include both ground and air platforms. The operation of the COLPRO may not be supported while the vehicle is in motion. They may or may not include CBRN/TIM filtration systems. Mobile COLPRO run the full range of protective capabilities from passive to fully protective COLPRO. The majority of vehicles qualify as passive COLPRO, provided the exchange of air between the interior and the exterior is limited. Mobile COLPRO systems generally do not

provide protection for large numbers of personnel. Currently, the M1A1 Abrams MBT and the M93A1 FOX NBC Reconnaissance System Block I provide full COLPRO for their crews. The CBPS is a general use fully protective COLPRO system mounted on an ECV HMMWV. The CBPS may be used for C4 operations, as aid stations, or for other needs. A variety of Environmental Sheltering with Reduced CB Hazard (ESRCBH) CPS exists in a small percentage aircraft and other vehicles. The majority of these provide clean filtered air through piping or hose systems. In both the ESRCBH CPS and passively protective COLPRO systems, the occupants must wear a minimum of respiratory/ocular protection. Combat crewed vehicles are not generally equipped with CBRN/TIM filtration systems. These vehicles are not able to provide clean filtered air to crew and passengers and thereby extend the operational capabilities of the force. Support vehicles are similar to combat vehicles in that they do not routinely have CBRN/TIM filtration systems. Operators and passengers must, as with the combat vehicles, depend upon their IPE for clean air and protection. Unlike the combat-crewed vehicles, support vehicles generally are more open for infiltration by CBRN/TIM agents. Most airframes are also not equipped with CBRN/TIM filtration systems. They are either open exchange (normally lower altitude airframes) or provide the ability to switch to bottled air (usually jet aircraft). The concern is the aircrews are dependent upon the filtration systems of their IPE to provide clean filtered air. This reduces the extended operational time of the aircrew to that of their IPE. A concern is the inability to conduct mobile combat operations and to move large numbers of troops throughout a CBRN/TIM hazard area without the need to maintain them in IPE. Degradation of performance is a factor after a period of time wearing IPE.

⁷ Existing mobile COLPRO varies on the time period required to setup and establish operations. This may range from a few seconds (to activate system and manipulate switch to transfer from open air to filtered) or to several hours for ground preparation and system setup. If the COLPRO systems are set up and in readiness for placement into operation, this task can usually be accomplished quickly.

⁸ Doctrine, policies, procedures, TTPs, and existing COLPRO systems do not address and support sustained operations within a CBRN/TIM environment.

⁹ Mobile COLPRO systems installed as integral systems of combat systems can generally be placed into operation within a contaminated environment. However, selected systems must be erected and/or require extensive preparation that must be performed within a clean environment. Doctrine, policies, procedures, and TTPs do not address the erection and establishment of COLPRO within a contaminated environment. They are predicated upon these systems being prepared and in place prior to the presence of contaminants.

¹⁰ Expedient COLPRO (ECP) kits, procedures, and training do not currently exist.

¹¹ Mobile COLPRO for the maintenance of critical material does not exist.

¹² Limited COLPRO is available in type and quantity to support operations, particularly multiple operations with threat. Limitations are considered during planning and alternatives are developed by the staff. The combination of IPE and available COLPRO provides flexibility to meet and maintain operational capability.

¹³ Doctrine, policy, procedures, and TTPs outline the steps and requirements for removal of exposed/contaminated articles and decontamination of entering personnel prior to accessing the shelter interior. The CCA is located between the contaminated area and the shelter interior. All actions are taken in this area under the oversight of the designated and trained shelter management personnel. The force is provided varying levels of training for processing through the CCA. This ranges from predeployment training, exercises, and evaluations to briefings by the CCA personnel prior to entry. Procedures may be posted within the CCA for each processing station. Radiological monitoring is feasible for checking for contamination on personnel completing the processing. However, chemical and biological detection and monitoring capabilities are limited for verification of decontamination.

¹⁴ Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources.

¹⁵ There is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to protect all critical activities and functions from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available in any large quantity during operations against an adversary. Current COLPRO systems are not available in the quantities and types necessary to support the protection of eligible civilians and detainees. Current plans generally do not address the application of COLPRO to non-force personnel and do not allocate the limited COLPRO resources to this activity. Fixed-site

COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and specific functions and activities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these are not present for all critical activities and functions. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities and will address COLPRO for critical activities/functions. The Guardian Program, however, is not likely to address field COLPRO operations.

¹⁶ Current site COLPRO requires significant resources, often involving assistive resources such as heavy construction equipment, to prepare the site and setup the system. Support services such as utilities are often required. These operations are often large and complex involving more than the COLPRO structure itself. Existing site COLPRO systems cannot be rapidly setup and placed into operation. However, if the COLPRO systems are setup and in readiness for placement into operation, this can usually be accomplished quickly.

¹⁷ Current site COLPRO systems are not designed or enabled for erection and/or striking within a CBRN/TIM environment. Doctrine, policies, procedures, and TTPs do not support the erection and striking of COLPRO within a toxic environment. They predicate COLPRO establishment prior to the presence of contamination and striking after decontamination within an otherwise clean environment.

¹⁸ Doctrine, policies, procedures, and TTPs do not address the application of COLPRO for maintenance of contaminated critical material with reduced IPE. Material must currently be contaminated prior to entry into COLPRO.

¹⁹ There are insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources.

²⁰ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs as determined by the commander. MOPP levels and methodologies define protective requirements and readiness for various level of threat and include the activation and operation of COLPRO as well as the ear and readiness of IPE by the force. MOPP levels and methodologies seek to protect the force through an integrated DOTLPF, COLPRO, and IPE scaled approach.

²¹ Doctrine, policies, procedures, and TTPs do not support the erection and striking of COLPRO within a toxic environment. They predicate COLPRO establishment prior to the presence of contamination and striking after decontamination within an otherwise clean environment.

²² MOPP levels and methodologies provide flexibility for the adjustment of IPE to meet local operational and threat requirements. The intent is to achieve and maintain the lowest level necessary for survival of the force and operational accomplishment. Adjustments are made as dictated by local circumstances. However, prolonged wear of IPE will degrade performance.

²³ Doctrine, policy, procedures, and TTPs combined with staff experience, training, and knowledge provide the basis for prioritization of allocation of limited COLPRO resources. Not all critical activities and functions can currently be allocated COLPRO. Requirements must be balanced with operational needs, available resources, and alternative protective capabilities. The staff functions formulate the allocation collaboratively and make recommendations to the commander for decisioning. The determinations are identified in plans and disseminated to the force. Adjustments are made when necessary during operations or upon changes in available resources.

²⁴ Staff plans are initiated within the AO to support operations and are adjusted as necessary to address changes in resources, threat, and circumstances. COLPRO are sited, prepared, and placed in readiness for operations to protect personnel, activities, and functions against the CBRN/TIM threat. The staff disseminates the alerting and warning to subordinate elements to commence CBRND operations. Currently, the transmission and reception of CBRN/TIM hazard alarm, warning, and report information is performed manually predominantly using ATP-45 formats and processes. Each unit is responsible for ensuring potentially or indirectly affected subordinate units are notified of the hazard. This task is generally performed using nondedicated existing and available communications systems. Personnel are trained to react to these messages and to perform the appropriate actions. The training is reinforced during deployment preparation for operations with a threat. However, adjacent units, particularly non-U.S. and often other U.S. Services, may not receive alerts, warnings, and reports until these have been processed up through channels and then disseminated back down channels, creating unnecessary delays with potential ramifications for OPTEMPO and unit survivability.

²⁵ Doctrine, policy, procedures, and TTPs require operational planning staffs consider and plan for the provision of at least one R2 within every 24-hour period for all force members. This requirement addresses the protective life of current IPE and provides for IPE exchange, feeding, and other needs of the force which cannot be performed within a CBRN/TIM environment. Staffs monitor and ensure resources are in place and available for support of the force commensurate with operational requirements and OPTEMPO. Alternatives identified in existing literature include rotation of units on the line, partial rotation of personnel within a unit, and a dedicated COLPRO-equipped support unit which travels the line.

²⁶ Unit staff planning and preparations include preparing the force for operations within a CBRN/TIM environment. Degradation is considered in the development of taskings, R2 requirements, and force application. MOPP levels are developed, implemented, and adjusted to meet local operational needs and threat. Constant evaluation of force activities is performed for necessary changes and modifications to maintain force operational capabilities. Unit staff provides for R2 of personnel operating outside COLPRO at least once every 24 hours within COLPRO. Staff also manages COLPRO allocation and operations for support of operational requirements and critical activities/functions.

²⁷ Commander and staff planning and predeployment preparation include ensuring shelter personnel are designated and trained to perform their tasks in a CBRN/TIM environment. Shelter operations are monitored and issues are addressed by the staff as necessary to ensure the safety and well-being of the force.

²⁸ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

²⁹ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection. However, the encumbrances associated with ocular/respiratory protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

³⁰ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

³¹ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets). Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

³² Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as are two variants of the JSLNBCRS, the M93A1 Fox NBCRS Block II, and backfit of LHA/LHDs to include CITADEL.

³³ Doctrine, policies, procedures, TTPs, and existing COLPRO systems do not address and support sustained operations within a CBRN/TIM environment.

³⁴ JTCOPS Block I is projected for initial fielding during the mid term. The projected initial capabilities fielding of JECP is within the mid term and will include adaptive insertable COLPRO systems (including liner) for existing buildings/rooms and stand-alone COLPRO for small groups of personnel. JECP may provide the capability to provide COLPRO for critical activities and functions; however, JECP acquisition quantities have not as yet been determined.

³⁵ JECP requirements include rapid setup and initiation of operation.

³⁶ Identification, development and/or acquisition of assets for JECP include ECP assets for adaptation of tentage and structures to support expeditionary operations. The JECP program is currently proceeding through the JCIDS process.

³⁷ The projected fielding of JWARN will decrease the time taken to disseminate alerting and warning information to the force. Additionally, JWARN will enable the notification of adjacent units connected to the network. Manual notification methods and means will remain foundational for many units during the transition period and for elements of units.

³⁸ Commander and staff planning and predeployment preparation include ensuring shelter personnel are designated and trained to perform their tasks in a CBRN/TIM environment. Shelter operations are monitored and issues are addressed by the staff as necessary to ensure the safety and well-being of the force.

³⁹ The next-generation series of nonaviator respiratory/ocular protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

⁴⁰ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection. However, the encumbrances associated with ocular/respiratory protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

⁴¹ The next-generation series of nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

⁴² Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks (especially those associated with the repair and maintenance of delicate and intricate assets). Prolonged wear places stress upon the individual and will impact performance. Doctrine, policy, and procedures are inadequate for sustained operations within a CBRN/TIM environment, especially forces conducting expeditionary operations in austere environments and possessing reduced logistical footprints.

⁴³ The projected Future Tactical Lift Option is under evaluation for the potential addition of COLPRO in the design and production specifications. A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

⁴⁴ Doctrine, policies, procedures, TTPs, and existing COLPRO systems do not address and support sustained operations within a CBRN/TIM environment.

⁴⁵ JTCOPS Block II is projected for the far term. Continued fielding of JECP.

⁴⁶ Commander and staff planning and predeployment preparation include ensuring shelter personnel are designated and trained to perform their tasks in a CBRN/TIM environment. Shelter operations are monitored and issues are addressed by the staff as necessary to ensure the safety and well-being of the force.

13.6.3 Functional Solutions Analysis

13.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Strengthen doctrine and require the joint development of CBRND protective assets/measures to protect forces against all CBRN agents and high-threat/high-risk TIMs. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 2. Deficiency:** Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.

Partial Non-Materiel Solutions: *Organization:* Develop organizational structures, resources, staffing, and capabilities to support personnel exchange and R2 to preclude degradation of tasks and to promote the well-being of the force. *Training:* Ensure training, exercises, and evaluations effectively promote acclimation and endurance of wear of IPE. *Leadership:* Ensure awareness of degradation effects.
- 3. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 4. Deficiency:** Current DOTLPF does not adequately address the erection, maintenance, operations, and striking of CPSs within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the erection, maintenance, operation, and striking of CPS within a CBRN/TIM environment for CBRND. *Organization:* Organizational structures supporting the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment for CBRND. *Training:* Develop institutional and unit-level training on the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of establishing CPSs within a CBRN/TIM environment for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment (e.g., logistics, training, etc.).

- 5. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
- 6. Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.
Partial Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization:* Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at-risk. *Training:* Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership:* Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities:* Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.
- 8. Deficiency:** USCG assets supporting operations are not adequately equipped with CBRND assets and resources.
Partial Non-Materiel Solutions: *Doctrine:* Establish with doctrine, policy, and procedures responsibilities for equipping, training, and supporting USCG assets supporting force operations during periods of other than declared war. *Organization:* Develop organizational structures, agreements, resources, and staffing to support and ensure survivability of supporting USCG resources. *Training:* Train, exercise, and evaluate USCG CBRND capabilities as integral component of force. *Leadership:* Recognize differences and challenges associated with CBRND operations by USCG assets and personnel, training providing skills and knowledge to managed operations involving these assets, and the ability and willingness to implement necessary changes and activities to prepare for and conduct operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of the force, including allocated USCG assets and personnel.
- 9. Deficiency:** Current mobile COLPRO is inadequate to support operations by highly mobile forces.
Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/ comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.
- 10. Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and

available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership:* Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

11. Deficiency: Existing COLPRO requires extensive services, logistics, and resources to establish.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPS guidelines and requirements for COLPRO by type of operation and involved forces. *Organization:* Develop minimal organizational structures, resources, and assets essential to the erection and establishment of COLPRO by system type. *Training:* Develop institutional and unit-level training on the erection and establishment of COLPRO with emphasis upon minimalization of committed resources. *Leadership:* Ensure awareness and knowledge of extent of committed resources to establish various types of COLPRO. *Facilities:* Review infrastructure with view towards minimalization of required services, logistics, and resources to erect and establish COLPRO.

12. Deficiency: ECP kits, procedures, and training do not currently exist.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization:* Organizational structures supporting the application of ECP for CBRND. *Training:* Develop institutional and unit-level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support ECP (e.g., logistics, training, etc.).

13. Deficiency: COLPRO for maintenance of critical contaminated material permitting reduced IPE is nonexistent.

Partial Non-Materiel Solutions: *Doctrine:* Develop and establish in doctrine, policies, procedures, and TTPs requirements, standards, and guidelines for the application of COLPRO to maintenance activities on critical material that is contaminated and required for maintenance of OPTEMPO and mission success. *Organization:* Develop organizational structures, resources, staffing, and capabilities to enable effective application of COLPRO for maintenance of critical assets. *Training:* Implement institutional, recurring, and unit training

for all personnel tasked with performance of critical asset maintenance in the conduct of maintenance and repair activities in a CBRN/TIM environment upon contaminated assets. Exercises and evaluations incorporate criteria challenging this capability. *Leadership*: Recognize ability to sustain OPTEMPO and for mission success with the capability to perform sensitive repairs on critical assets. *Facilities*: Develop supporting infrastructure enabling and supporting maintenance and repair activities on contaminated assets.

14. Deficiency: Inadequate COLPRO to support expeditionary and highly mobile forces.

Partial Non-Materiel Solutions: *Doctrine*: Develop and disseminate appropriate doctrine, policy, and procedures for the application of common materials for COLPRO and for COLPRO kits and components. *Organization*: Develop organizational structures, resources, staffing, and capabilities to enable effective application of available COLPRO and implementation of expedient COLPRO capabilities. *Training*: Establish initial and recurring training of all members of the force on the conduct of expedient COLPRO. Exercises and evaluations incorporate criteria challenging this capability. *Leadership*: Recognize potential for expedient COLPRO to improve force capabilities and survivability. *Facilities*: Develop supporting infrastructure enabling expedient COLPRO and the effective application of available COLPRO.

15. Deficiency: Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine*: Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership*: Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

16. Deficiency: COLPRO for other than radiological is almost nonexistent, including critical facilities, outside HTA OCONUS.

Non-Materiel Solutions: *Doctrine*: Enforce existing doctrine and policy.

- 17. Deficiency:** Manual nature of current alerting and warning processes impact dissemination to subordinate and neighboring units and implementation of MOPP requirements for CBRND.
Non-Materiel Solutions: *Doctrine:* Include requirement for cross-Service notification of adjacent force elements. *Training:* Include cross-Service notification of adjacent force elements in training criteria. Incorporate criteria into exercises and evaluations to challenge alerting and notification of adjacent force elements. *Leadership:* Ensure awareness of adjacent elements and criticality of time to protect the force. *Facilities:* Develop supporting infrastructure for cross-Service communications.
- 18. Deficiency:** Insufficient COLPRO is available to support rest and resupply activities for all personnel within a 24-hour period necessary to support sustained operations within a contaminated environment. This is particularly true of forward operating light forces.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policies.
- 19. Deficiency:** Quantities and availability of mobile COLPRO is inadequate.
Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.
- 20. Deficiency:** Airlift assets (both tactical and strategic) are not equipped with COLPRO.
Partial Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training:* Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership:* Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities:* Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.

13.6.3.2 IMA Assessment Summary

Table 13.6-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on procurement of existing systems and development of field-expedient and modular systems. Table 13.6-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.6-11. TASHLD 6: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPW, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.

Table 13.6-12. TASHLD 6: IMA Assessment

Identified Gaps	Assess CBRND Material	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Disposable COLPRO	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Integrated Mobile COLPRO	Modular COLPRO	Regenerative Filtration
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X	X	X						
Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.	X	X	X	X	X	X		X	
Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.		X		X	X	X	X		X
USCG assets supporting operations are not adequately equipped with CBRND assets and resources.		X	X	X	X	X	X		X
Existing COLPRO requires extensive services, logistics, and resources to establish.	X	X	X	X	X	X		X	X
ECP kits, procedures, and training do not currently exist.		X	X	X	X	X			X
COLPRO for maintenance of critical contaminated material permitting reduced IPE is nonexistent.		X	X	X	X	X	X	X	X
Inadequate COLPRO to support expeditionary and highly mobile forces.	X	X	X	X	X	X	X	X	X
Airlift assets (both tactical and strategic) are not equipped with COLPRO.		X	X	X	X	X	X		X

13.7 Task TASHLD 7: Provide COLPRO for repairing critical assets

13.7.1 Functional Area Analysis

13.7.1.1 Definition

Repairing critical components (e.g., avionics, electronics, etc) is especially difficult while wearing full MOPP gear. Decontamination of contaminated critical assets may not be possible or achievable. However, the nature of these assets may be such they are essential to military operations and replacements may not be readily available. The repair of these assets and their return to service and supports the force and mission. COLPRO is used to permit MOPP-reduced repair operations to continue in contaminated environments. Because COLPRO assets are limited, commanders must prioritize items to be repaired.

13.7.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (TA 5, TA 7, TA 7.1).

13.7.1.2.1 Supported Task: OPSHLD 7

13.7.1.2.2 Lateral Task: TASHA 24

13.7.1.2.3 Supporting Task: N/A

13.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Normal personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. No prepositioned materiel. (C2.8.4)

Civil. N/A

13.7.2 Functional needs Analysis

13.7.2.1 Capability and Deficiency Assessment Summary

Table 13.7-1 discusses the performance of the task to the designated standards. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Decontamination of contaminated complex, sensitive, and/or electronic assets may not possible due to component materials. Servicing of these assets often requires the application of instrumentation for assessment and subsequent repairs/maintenance involving high levels of dexterity, visual acuity, tactility, and finite movements within very confined, restricted, and potentially hazardous spaces. Often, these assets perform critical functions in operations and are high-value/low-density assets. The loss of these assets to await replacements may affect the success of the force. For example, a critical piece of electronics in a targeting pod attached to a ground combat support airframe may require repair to enable the airframe to successfully perform its task. Aggressive adversary activities and/or attrition of resources may necessitate maximum sustained application of remaining resources. Repair capabilities upon contaminated assets of this nature supports OPTEMPO sustainment and sortie generation. Current capabilities are inadequate to support this need. These assets must be repaired outside COLPRO (adversely impacting the ability to perform high-fidelity-type repairs), replaced (potentially removing the end asset out of operations until a replacement component/asset is received), or decontaminated (not always possible due to constructed materials or design). Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. The assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Existing Service-specific IPE is limited on the period and scope of protection afforded the warfighter. Physiological and psychological encumbrances increase with prolonged wear. This tendency requires regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities. Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited and does not include maintenance activities of critical contaminated assets. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Most mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires prioritization of available assets to address critical activities/functions and the application of IPE for CBRND. However, although prioritization is applied for critical activities

and functions, not all such requirements can be satisfied with current COLPRO. Individual protection, therefore, remains the mainstay for protection against CBRN/TIM agents. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities is necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the provisioning and training of eligible civilians with CBRND is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE.

Projected Near/Mid-Term Capability and Deficiency

JECP is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. JTCOPS, CP-DEPMEDS, and the P3I upgraded CBPS are projected to include COLPRO in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. However, these systems, as with current systems, are not projected to support this task. Individual protection is projected to remain the principal method of CBRND. Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems.

Projected Far-Term Capability and Deficiency

As with the mid term, CBRND will continue to rely upon individual CBRND protection against CBRN/TIM agents. Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous

protection which will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems.

13.7.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

- CPOG:** Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.
- Chemical Protective Undergarment (CPU):** Worn under standard IPE as additional layer of protection against contact with CBRN agents.
- BVO/GVO:** Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).
- Chemical Protective Footwear Cover (CPFC):** Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.
- Chemical Protective Glove (CPG):** Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.
- Chemical Protective Helmet System (CPHS):** CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.
- SCALP:** Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.
- Wet-Weather Gear: Includes Severe-Weather Gear (USN).** Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.
- M-2 Apron:** Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.
- Joint Service Lightweight Integrated Suit Technology (JSLIST):** Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.
- Joint Block I/II Glove Upgrade (JB1/2GU):** Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.
- Joint Firefighter Integrated Response Ensemble (JFIRE):** Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.
- Multi-purpose Overboot (MULO):** Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

COLPRO

1. Mobile COLPRO

- CBPS:** M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCLR is an example of the second type of system.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.7-1. TASHLD 7: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4
Current				
<i>Individual Protection</i>	4	N/A	4	3
Respiratory/Ocular Protection	4 ¹	N/A	4 ¹	3 ²
Percutaneous Protection	4 ³	N/A	4 ³	3 ²
<i>Collective Protection</i>	4	4	1	4
Mobile COLPRO	3 ⁴	3 ⁴	2 ⁵	4 ^{5,6}
Fixed-Site COLPRO	5 ⁷	5 ⁷	0 ⁸	4 ^{8,9}
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	8 ¹⁰	8 ¹⁰	0 ¹¹	8 ¹⁰
<i>Unit Staff</i>	8 ¹²	8 ¹²	0 ¹¹	6 ^{11,12}
Near/Mid				
<i>Individual Protection</i>	4	N/A	4	3
Respiratory/Ocular Protection	4 ^{1, 13}	N/A	4 ^{1,13}	3 ¹⁴
Percutaneous Protection	4 ^{3, 15}	N/A	4 ^{3,15}	3 ²
<i>Collective Protection</i>	4.5	4.5	1	4
Mobile COLPRO	3 ^{4,16}	3 ^{4, 16}	2 ⁵	4 ^{5,6}
Fixed-Site COLPRO	6 ^{7,17}	6 ^{7, 17}	0 ⁸	4 ^{8,9}
<i>MOPP</i>	8 ¹⁰	8 ¹⁰	0 ¹¹	8 ¹⁰
<i>Unit Staff</i>	8 ¹²	8 ¹²	0 ¹¹	6 ^{11,12}
Far				
<i>Individual Protection</i>	4	N/A	4	3
Respiratory/Ocular Protection	4 ^{1,13, 18}	N/A	4 ^{1,13,18}	3 ¹⁹
Percutaneous Protection	4 ^{3,15, 20}	N/A	4 ^{3,15,20}	3 ²
<i>Collective Protection</i>	5	5	1	4
Mobile COLPRO	3 ^{4,16,21}	3 ^{4,16,21}	2 ⁵	4 ^{5,6}
Fixed-Site COLPRO	7 ^{7,17,22}	7 ^{7,17,22}	0 ⁸	4 ^{8,9}
<i>MOPP</i>	8 ¹⁰	8 ¹⁰	0 ¹¹	8 ¹⁰
<i>Unit Staff</i>	8 ¹²	8 ¹²	0 ¹¹	6 ^{11,12}
Overall				
Current Overall Capability	6	7	1	5
Near/Mid-Term Overall Capability	6	7	1	5
Far-Term Overall Capability	6	7	1	5

	FAA Measure	Scale
M1	Repair activities are not degraded/unavailable due to CBRN/TIM attacks.	<p>8–10: Maintenance and repair activities supporting operations are maintained within a CBRN/TIM environment through the application of COLPRO and individual protection.</p> <p>4–7: Maintenance and repair activities supporting operations are degraded or limited within a CBRN/TIM environment but are supported by the application of COLPRO and individual equipment.</p> <p>1–3: IPE encumbrances and COLPRO availability impose serious impacts and limitations upon maintenance and repair activities supporting operations within a CBRN/TIM environment.</p> <p>0: IPE encumbrances and COLPRO availability preclude maintenance and repair activities and performance supporting operations within a CBRN/TIM environment.</p>
M2	Critical repair activities are accommodated by COLPRO.	<p>8–10: Critical repair activities and functions are equipped with COLPRO affording the minimum necessary and safe level of protection for maintenance of contaminated critical items as well as full protection of maintenance personnel during periods not performing maintenance on contaminated assets.</p> <p>4–7: Critical repair activities are equipped with COLPRO affording reduced protection requirements for maintenance of contaminated critical items.</p> <p>1–3: Selected critical repair activities are equipped with COLPRO supporting the maintenance of contaminated critical assets.</p> <p>0: Critical repair activities are not equipped with COLPRO to perform maintenance of contaminated critical assets.</p>
M3	COLPRO is rapidly erectable within contaminated environment by personnel wearing IPE.	<p>8–10: COLPRO is rapidly and safely erectable/striking, placed in operation, and easily maintained within a CBRN/TIM environment by personnel encumbered by IPE and with minimal resources.</p> <p>4–7: COLPRO is safely erectable/striking, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel.</p> <p>1–3: COLPRO that is safely erectable/striking, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel is inadequate and/or does not exist in sufficient quantities to support operations.</p> <p>0: COLPRO that is safely erectable/striking, placed in operation, and maintained within a CBRN/TIM environment by IPE-encumbered personnel is nonexistent.</p>
M4	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPF does not exist for this task.</p>

¹ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing respiratory/ocular protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment. CBRND IPE is currently Service-specific and protects against all known CBRN warfare agents and selected TIMs. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile

canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

² Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment.

³ Doctrine, policy, procedures, training, exercises, and evaluations serve to build the capability of individuals to perform tasks while wearing percutaneous protection. However, the encumbrances associated with percutaneous protection do degrade performance and limit the conduct of certain tasks. Prolonged wear places stress upon the individual and will impact performance. Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment. Service-specific CBRND percutaneous protection is currently applied for the protection of the force against known CBRN warfare agents and selected TIMs. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

⁴ Limited COLPRO is available in type and quantity to support operations, particularly multiple operations with threat. Limitations are considered during planning and alternatives are developed by the staff. The combination of IPE and available COLPRO provides flexibility to meet and maintain operational capability. Prioritization is required of the available resources. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels. Selected U.S. Naval combat vessels may be equipped with full COLPRO (CITADEL). However, these systems are generally restricted to critical operations areas of the ships. These areas are designated. The remainder of the interior of the vessel uses the Circle William concept. Circle William requires prior warning of the presence of a CBRN/TIM in the path of the ship or knowledge of an impending attack to be fully effective. This concept requires the shutdown of the ventilation system and sealing of hatches, bulkheads, and other such openings to seal the interior of the vessel from intrusion by a CBRN/TIM. However, the majority of these actions are performed manually and are initiated upon detection of the potential CBRN/TIM agent. There are concerns about the potential for large amounts of a CBRN/TIM agent to be drawn in by the high-velocity ventilation systems and dispersed throughout the interior of the ship during the period between agent encounter and completion of Circle William. There are concerns about the ability of the vessel to remain in Circle William until it is determined the vessel is no longer exposed to a CBRN/TIM. Mobile COLPRO are armored or soft-skinned vehicle-supported and -based systems. They include both ground and air platforms. They may or may not include CBRN/TIM filtration systems. Mobile COLPRO run the full range of protective capabilities from passive to fully protective COLPRO. The majority of vehicles qualify as passive COLPRO, provided the exchange of air between the interior and the exterior is limited. Mobile COLPRO systems generally do not provide protection for large numbers of personnel. The CBPS is a general use fully protective COLPRO system mounted on an ECV HMMWV. The CBPS may be used for C4 operations, as aid stations, or for other needs.

⁵ Mobile COLPRO systems installed as integral systems of combat systems can generally be placed into operation within a contaminated environment. However, selected systems must be erected and/or require extensive preparation that must be performed within a clean environment. Doctrine, policies, procedures, and TTPs do not address the erection and establishment of COLPRO within a contaminated environment. They are predicated upon these systems being prepared and in place prior to the presence of contaminants.

⁶ Doctrine, policies, procedures, TTPs, and existing COLPRO systems do not address and support sustained operations within a CBRN/TIM environment. Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources.

⁷ Limited COLPRO is available in type and quantity to support operations, particularly multiple operations with threat. Limitations are considered during planning and alternatives are developed by the staff. The combination of IPE and available COLPRO provides flexibility to meet and maintain operational capability. There is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to protect all activities and functions from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a repair operation of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available in any large quantity during operations against an adversary. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and specific functions and activities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these are not present for all activities and functions. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities and will address COLPRO for critical activities/functions. The Guardian Program, however, is not likely to address field COLPRO operations.

⁸ Current site COLPRO systems are not designed or enabled for erection and/or striking within a CBRN/TIM environment. Doctrine, policies, procedures, and TTPs do not support the erection and striking of COLPRO within a toxic environment. They predicate COLPRO establishment prior to the presence of contamination and striking after decontamination within an otherwise clean environment.

⁹ Doctrine, policies, procedures, and TTPs do not address the application of COLPRO for maintenance of contaminated critical material with reduced IPE. Material must currently be contaminated prior to entry into COLPRO. Doctrine, policies, procedures, TTPs, and existing COLPRO systems do not address and support sustained operations within a CBRN/TIM environment. Inadequate quantities of COLPRO systems exist to support all critical activities and functions within the force. Prioritization is required of the available resources.

¹⁰ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs as determined by the commander. MOPP levels and methodologies define protective requirements and readiness for various level of threat and include the activation and operation of COLPRO as well as the ear and readiness of IPE by the force. MOPP levels and methodologies seek to protect the force through an integrated DOTLPF, COLPRO, and IPE scaled approach. MOPP levels and methodologies provide flexibility for the adjustment of IPE to meet local operational and threat requirements. The intent is to achieve and maintain the lowest level necessary for survival of the force and operational accomplishment. Adjustments are made as dictated by local circumstances. However, prolonged wear of IPE will degrade performance.

¹¹ Doctrine, policies, procedures, and TTPs do not support the erection and striking of COLPRO within a toxic environment. They predicate COLPRO establishment prior to the presence of contamination and striking after decontamination within an otherwise clean environment.

¹² Doctrine, policy, procedures, and TTPs combined with staff experience, training, and knowledge provide the basis for prioritization of allocation of limited COLPRO resources. Not all critical activities and functions can currently be allocated COLPRO. Requirements must be balanced with operational needs, available resources, and alternative protective capabilities. The staff functions formulate the allocation collaboratively and make recommendations to the commander for decisioning. The determinations are identified in plans and disseminated to the force. Adjustments are made when necessary during operations or upon changes in available resources. Unit staff planning and preparations include preparing the force for operations within a CBRN/TIM environment. Degradation is considered in the development of taskings, R2 requirements, and force application. MOPP levels are developed, implemented, and adjusted to meet local operational needs and threat. Constant evaluation of force activities is performed for necessary changes and modifications to maintain force operational capabilities. Unit staff provides for R2 of personnel operating outside COLPRO at least once every 24 hours within COLPRO. Staff also manages COLPRO allocation and operations for support of operational requirements and critical activities/functions.

¹³ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to

integrate with future warfighter CBRND IPE and function equipment/assets. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

¹⁴ Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment.

¹⁵ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

¹⁶ Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as are two variants of the JSLNBCRS, the M93A1 and Fox NBCRS Block II to include COLPRO.

¹⁷ JTCOPS Block I is projected for initial fielding during the mid term. The projected initial capabilities fielding of JECP is within the mid term and will include adaptive insertable COLPRO systems (including liner) for existing buildings/rooms and stand-alone COLPRO for small groups of personnel. JECP may provide the capability to provide COLPRO for critical activities and functions; however, JECP acquisition quantities have not as yet been determined.

¹⁸ The next-generation series of nonaviator respiratory/ocular protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

¹⁹ Doctrine, policies, procedures, TTPs, and training do not address the erection of COLPRO within a contaminated environment but do address the operation and maintenance of COLPRO in a toxic environment.

²⁰ The next-generation series of nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

²¹ A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

²² JTCOPS Block II is projected for the far term. Continued fielding of JECP.

13.7.3 Functional Solution Analysis

13.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Promulgate requirement for development of CBRND protective equipment and measures to protect against all CBRN/TIM agents, particularly high-risk/high-threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 2. Deficiency:** Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.

Partial Non-Materiel Solutions: *Organization:* Develop organizational structures, resources, staffing, and capabilities to support personnel exchange and R2 to preclude degradation of tasks and to promote the well-being of the force. *Training:* Ensure training, exercises, and evaluations effectively promote acclimation and endurance of wear of IPE. *Leadership:* Ensure awareness of degradation effects.
- 3. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 4. Deficiency:** Current DOTLPF does not adequately address the erection, maintenance, operations, and striking of CPSs within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment for CBRND. *Organization:* Organizational structures supporting the erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment for CBRND. *Training:* Develop institutional and unit-level training on the erection, maintenance, operation, and striking of CPS within a CBRN/TIM environment to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of establishing CPSs within a CBRN/TIM environment for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support erection, maintenance, operation, and striking of CPSs within a CBRN/TIM environment (e.g., logistics, training, etc.).

5. **Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.
6. **Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.
Partial Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization:* Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at-risk. *Training:* Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership:* Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities:* Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.
7. **Deficiency:** Current mobile COLPRO is inadequate to support operations by highly mobile forces.
Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.
8. **Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.
Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership:* Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:*

Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

9. **Deficiency:** Existing COLPRO requires extensive services, logistics, and resources to establish.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPS guidelines and requirements for COLPRO by type of operation and involved forces. *Organization:* Develop minimal organizational structures, resources, and assets essential to the erection and establishment of COLPRO by system type. *Training:* Develop institutional and unit-level training on the erection and establishment of COLPRO with emphasis upon minimalization of committed resources. *Leadership:* Ensure awareness and knowledge of extent of committed resources to establish various types of COLPRO. *Facilities:* Review infrastructure with view towards minimalization of required services, logistics, and resources to erect and establish COLPRO.

10. **Deficiency:** ECP kits, procedures, and training do not currently exist.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization:* Organizational structures supporting the application of ECP for CBRND. *Training:* Develop institutional and unit-level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support ECP (e.g., logistics, training, etc.).

11. **Deficiency:** COLPRO for maintenance of critical contaminated material permitting reduced IPE is nonexistent.

Partial Non-Materiel Solutions: *Doctrine:* Develop and establish in doctrine, policies, procedures, and TTPs requirements, standards, and guidelines for the application of COLPRO to maintenance activities on critical material that is contaminated and required for maintenance of OPTEMPO and mission success. *Organization:* Develop organizational structures, resources, staffing, and capabilities to enable effective application of COLPRO for maintenance of critical assets. *Training:* Implement institutional, recurring, and unit training for all personnel tasked with performance of critical asset maintenance in the conduct of maintenance and repair activities in a CBRN/TIM environment upon contaminated assets. Exercises and evaluations incorporate criteria challenging this capability. *Leadership:* Recognize ability to sustain OPTEMPO and for mission success with the capability to perform sensitive repairs on critical assets. *Facilities:* Develop supporting infrastructure enabling and supporting maintenance and repair activities on contaminated assets.

12. **Deficiency:** Inadequate COLPRO to support expeditionary and highly mobile forces.

Partial Non-Materiel Solutions: *Doctrine:* Develop and disseminate appropriate doctrine, policy, and procedures for the application of common materials for COLPRO and for COLPRO kits and components. *Organization:* Develop organizational structures, resources, staffing, and capabilities to enable effective application of available COLPRO and implementation of expedient COLPRO capabilities. *Training:* Establish initial and recurring training of all members of the force on the conduct of expedient COLPRO. Exercises and

evaluations incorporate criteria challenging this capability. *Leadership*: Recognize potential for expedient COLPRO to improve force capabilities and survivability. *Facilities*: Develop supporting infrastructure enabling expedient COLPRO and the effective application of available COLPRO.

13. Deficiency: Quantities and availability of mobile COLPRO is inadequate.

Non-Materiel Solutions: *Doctrine*: Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

14. Deficiency: Airlift assets (both tactical and strategic) are not equipped with COLPRO.

Partial Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training*: Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership*: Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities*: Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.

13.7.3.2 IMA Assessment Summary

Table 13.7-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on procurement of existing systems, and development of field-expedient and modular systems. Table 13.7-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.7-2. TASHLD 7: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPW, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.

Table 13.7-3. TASHLD 7: IMA Assessment

Identified Gaps	Assess CBRND Material	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Disposable COLPRO	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Integrated Mobile COLPRO	Modular COLPRO	Regenerative Filtration
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X	X	X						
Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.	X	X	X	X	X	X	X	X	X
Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO		X		X	X	X	X		X
Existing COLPRO requires extensive services, logistics, and resources to establish.	X	X	X	X	X	X		X	X
Expedient COLPRO (ECP) kits, procedures, and training do not currently exist.		X	X	X	X	X			X
COLPRO for maintenance of critical contaminated material permitting reduced IPE is nonexistent.		X	X	X	X	X	X	X	X
Inadequate COLPRO to support expeditionary and highly mobile forces.	X	X	X	X	X	X	X	X	X
Airlift assets (both tactical and strategic) are not equipped with COLPRO.		X	X	X	X	X	X		X

13.8 Task TASHLD 8: Prelocate consumables to COLPRO and units

13.8.1 Functional Area Analysis

13.8.1.1 Definition

CBRND stocks fall in both medical and nonmedical categories. Items are transported and positioned in anticipation of need. Especially critical are consumables such as filters and extra sets of protective overgarments. NBC staff personnel work closely with logisticians and medical service personnel to ensure required stocks are on hand or readily available. Refer to individual Service documents for specifics.

13.8.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.8.1.2.1 Supported Task: OPSHLD 8

13.8.1.2.2 Lateral Task: TASHA 20

13.8.1.2.3 Supporting Task: N/A

13.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. No prepositioned materiel. (C2.8.4)
8. No host-nation support. (C2.8.5)
9. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.8.2 Functional Needs Analysis

13.8.2.1 Capability and Deficiency Assessment Summary

Table 13.8-1 discusses various current and expected capabilities applied to accomplish this task. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

DOTLPF is central to ensuring the prepositioning of consumables for asset availability to the warfighter. General logistics DOTLPF exists addressing the planning, movement, management and positioning of material for support of operations. Reallocation and integration of resources are addressed in existing DOTLPF. Deficiencies include inadequate quantities and types of COLPRO, inadequate prophylaxes addressing all CBRN agents and high-threat/high-risk TIMs (particularly TICs), insufficient DOTLPF for sustained operations within a CBRN/TIM environment, individual combat loads restricting available weight and space for CBRND materiel, and the absence of CBRND for MWDs. Expeditionary and highly mobile force operations, both with reduced and limited logistical support, are not adequately addressed in DOTMLPF, and the design of most CBRND systems and associated logistics does not adequately support these type of operations. Deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment; nor does the command staff possess clear guidance for planning and providing CBRND of these personnel and elements. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities are necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Most mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires prioritization of available assets and the application of IPE for CBRND. Medical prophylaxes do exist for the protection of the warfighter against a limited number of biological and chemical agents. However, few are FDA approved. A number possess IND authorization for application.

Medications are considered for their potential prophylactic value, but are not always FDA approved for this purpose. Not all threat CBRN agents are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians (in general) and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the CBRND provisioning and training of eligible civilians is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents and high-threat/high risk TIMs (particularly TICs). JECF is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. The P3I upgraded CBPS, JTCOPS, CP-DEPMEDS, fielding of the JSLNBCRS variants, and backfit of LHA/LHD vessels are projected to include COLPRO in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. However, although the fielding of joint Service assets will gradually improve logistics, the force will continue to contend with the logistics support of existing Service-specific assets. Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection which will continue to reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be

fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time. The potential for COLPRO in the Future Tactical Lift Option builds upon the mid-term COLPRO capabilities. Additional changes in capabilities from the mid term are not projected.

13.8.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): USAF combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: USN/USMC system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes CB filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaced M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Medical Barrier Assets: Standard barrier assets applied by Medical Services personnel against contact with biohazards. May provide a degree of additional barrier protection against CBRN hazards when applied with IPE.

Patient Protective Wrap (PPW): Enclosed casualty bag made of CBRN protective materials. Incorporates small flexible transparent window positioned over casualties face for viewing by medical practitioners. Uses cardboard stays to maintain separation of bag from casualty's face. Does not permit head-to-toe viewing of casualty. Supports limited medical assistance. Requires the wear of standard warfighter respiratory/ocular protection. Two wraps currently in stock. Legacy system provides protection up to 3 hours and newer system up to 6 hours.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

3. Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

COLPRO

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCLR is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system either until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation

is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.8-1. TASHLD 8: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8
Current								
<i>Individual Protection</i>	3	5	6	3	5	5	N/A	6
Respiratory/Ocular Protection	3 ¹	5 ²	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Percutaneous Protection	3 ⁶	5 ⁷	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Medical Protection	3 ⁸	N/A	6 ⁹	3 ³	5 ¹⁰	5 ¹⁰	N/A	6 ⁵
<i>Collective Protection</i>	3.5	5	N/A	2.5	5	5	N/A	6
Mobile COLPRO	3 ¹¹	5 ¹²	N/A	2 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Fixed-Site COLPRO	4 ¹³	5 ¹⁴	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	8 ¹⁵	N/A	N/A	N/A	N/A	N/A	N/A	6 ⁵
<i>Unit Staff</i>	6 ¹⁶	6 ¹⁷	6 ¹⁸	2 ¹⁹	5 ²⁰	6 ²¹	8 ²²	6 ⁵
Near/Mid								
<i>Individual Protection</i>	3	6	6	3	5	5	N/A	6
Respiratory/Ocular Protection	3 ^{1,23}	6 ^{2,24}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Percutaneous Protection	3 ^{6,25}	6 ^{7,26}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Medical Protection	3 ^{8,27}	N/A	6 ⁹	3 ³	5 ¹⁰	5 ¹⁰	N/A	6 ⁵
<i>Collective Protection</i>	4.5	5	N/A	2.5	5	5	N/A	6
Mobile COLPRO	3 ^{11,28}	5 ^{12,29}	N/A	2 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Fixed-Site COLPRO	6 ^{13,30}	5 ^{14,31}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
<i>MOPP</i>	8 ¹⁵	N/A	N/A	N/A	N/A	N/A	N/A	6 ⁵
<i>Unit Staff</i>	6 ¹⁶	6 ¹⁷	6 ¹⁸	2 ¹⁹	5 ²⁰	6 ²¹	8 ²²	6 ⁵
Far								
<i>Individual Protection</i>	3	8	6	3	5	5	N/A	6
Respiratory/Ocular Protection	3 ^{1,23,32}	8 ^{2,24}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Percutaneous Protection	3 ^{6,25,33}	8 ^{7,26}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Medical Protection	3 ^{8,27,34}	N/A	6 ⁹	3 ³	5 ¹⁰	5 ¹⁰	N/A	6 ⁵
<i>Collective Protection</i>	5	5	N/A	2.5	5	5	N/A	6
Mobile COLPRO	3 ^{11,28,35}	5 ^{12,29}	N/A	2 ³	5 ⁴	5 ⁴	N/A	6 ⁵
Fixed-Site COLPRO	7 ^{13,30,36}	5 ^{14,31}	N/A	3 ³	5 ⁴	5 ⁴	N/A	6 ⁵
<i>MOPP</i>	8 ¹⁵	N/A	N/A	N/A	N/A	N/A	N/A	6 ⁵

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8
<i>Unit Staff</i>	6 ¹⁶	6 ¹⁷	6 ¹⁸	2 ¹⁹	5 ²⁰	6 ²¹	8 ²²	6 ⁵
Overall								
Current Overall Capability	5	5	6	3	5	5	8	6
Near/Mid-Term Overall Capability	5	6	6	3	5	5	8	6
Far-Term Overall Capability	6	6	6	3	5	5	8	6

	FAA Measure	Scale
M1	Forces are equipped to operate in a CBRN/TIM environment.	<p>8–10: Forces are adequately equipped and possess ready access to CBRND resources to conduct sustained operations in a CBRN/TIM environment.</p> <p>4–7: Forces are adequately equipped and possess ready access to CBRND resources to conduct operations in a CBRN/TIM environment.</p> <p>1–3: Uniformed forces are equipped and possess access to CBRND resources to conduct operations in a CBRN/TIM environment.</p> <p>0: Forces are not equipped and possess access to CBRND resources to conduct operations in a CBRN/TIM environment.</p>
M2	Nonmedical CBRN/TIM consumables and expendables are on hand.	<p>8–10: CBRND systems, components, and consumables are available and in place in plan identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>4–7: CBRND systems, components, and consumables are available and in place supporting operations but reflect adjusted plan quantities and types for limitations and constraints in availability. Adjustments to operations are made without serious impact.</p> <p>1–3: Limitations and constraints upon available CBRND system, component, and consumable quantities and types require changes to operations with potentially serious impact.</p> <p>0: CBRND systems, components, and consumables availability and allocation do not support operations.</p>
M3	Medical CBRN/TIM consumables and expendables are on hand.	<p>8–10: CBRND systems, components, and consumables are available and in place in plan identified quantities and types to support sustained operations within a CBRN/TIM environment.</p> <p>4–7: CBRND systems, components, and consumables are available and in place supporting operations but reflect adjusted plan quantities and types for limitations and constraints in availability. Adjustments to operations are made without serious impact.</p> <p>1–3: Limitations and constraints upon available CBRND system, component, and consumable quantities and types require changes to operations with potentially serious impact.</p> <p>0: CBRND systems, components, and consumables availability and allocation do not support operations.</p>

M4	Operations are sustainable over multiple CBRN/TIM attacks based upon organic, on-hand, and issued CBRN/TIM protective assets, consumables, and expendables.	<p>8–10: Forces (including military, eligible civilians, and MWAs) are adequately equipped and possess ready access to sufficient CBRND resources to support sustained operations through multiple CBRN/TIM attacks across the spectrum of operations and without unplanned and unforecasted resupply.</p> <p>4–7: Forces (including military and eligible civilians) are equipped and possess ready access to sufficient CBRND to support sustained operations through multiple CBRN/TIM attacks involving major operations with planned and forecasted resupply.</p> <p>1–3: Forces are inadequately equipped and/or possess limited access to CBRND resources to sustain operations through multiple CBRN/TIM attacks and/or are reliant upon resupply.</p> <p>0: Forces are not equipped and resupplied with CBRND resources for operations with multiple CBRN/TIM attacks.</p>
M5	CBRND asset replenishment effectively maintains OPTEMPO and force survivability.	<p>8–10: CBRND resources are stockpiled and prepositioned within or near the AO in plan identified quantities and types to support sustained operations against multiple CBRN/TIM attacks upon the force. Continuing replenishment of unit operating stocks, and AO stockpiles and prepositioned stocks maintains plan established and operations related adjusted stock levels.</p> <p>4–7: CBRND resources are stockpiled and prepositioned within or near the AO in plan identified required quantities and types to support sustained operations in a CBRN/TIM environment. Periodic replenishment of unit operating stocks, and AO stockpiles and prepositioned stocks maintains plan established stock levels.</p> <p>1–3: CBRND resources are stockpiled at depots outside the OA, prepositioned within or near the AO, and stocked within units in plan identified quantities and types to support sustained operations within a CBRN/TIM environment. Replenishment of operating unit and AO operating stocks from prepositioned and depot stocks are performed as outlined in the appropriate plan.</p> <p>0: CBRND stockpiles and prepositioned stocks of CBRND resources and replenishment of operating stocks are inadequate to support sustained operations in a CBRN/TIM environment.</p>
M6	Positioning of consumables effectively supports forces.	<p>8–10: Forces are issued identified CBRND assets and possess immediate access to replacement CBRND consumables. Replenishment is continuing and supports immediate availability.</p> <p>4–7: Forces are issued identified CBRND assets and possess ready access to replacement CBRND consumables. Periodic replenishment maintains availability at a sufficient level to support operations</p> <p>1–3: Forces are issued identified CBRND assets and possess reasonable access to replacement CBRND consumables. Programmed replenishment maintains minimal operational stocks.</p> <p>0: Forces do not possess needed access to initial and replacement CBRND consumables. Programmed replenishment is inadequate to support operations in a CBRN/TIM environment.</p>
M7	Integrated staff effort (medical, logistics, NBC) to prepare plan.	<p>8–10: Fully integrated staff functions collaboratively develop effective and detailed operational plans establishing integrated CBRND support requirements for CBRN/TIM defense operations.</p> <p>4–7: Staff functions collaborate in the development of operational plans addressing CBRND support requirements for CBRN/TIM defense operations.</p> <p>1–3: Force staff functions predominantly operate autonomously of each other and coordinate the development of operational plans involving CBRND support requirements and CBRN/TIM defense operations.</p> <p>0: Force staff functions do not coordinate development of operational plans entailing inclusion of CBRND support requirements for CBRN/TIM defense operations.</p>

M8	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPPF does not exist for this task.</p>
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¹ CBRND IPE is currently Service-specific. Respiratory/ocular protection is diverse across the Services and performed functions. USAF combat aircrews conduction operations within a CBRN environment are equipped with the MBU-19/P Chemical-Biological AERP that includes protective hood, MBU-12/P mask, C-2 filter canister, an intercom for ground communications, and a blower assembly. The AERP provides protection whether or not supplemental oxygen is present. USN and USMC aviators use the A/P22P-14(V) Respirator Assembly that is a self-contained protective system deployed for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN and USMC) aircrews. The system incorporates a CB filter, dual air/oxygen supply, and a crossover manifold with dual protective capabilities for flight and ground protection. The A/P 22P-14(V) 1 is not compatible with aircraft with oxygen delivery systems and supports helicopter crew use. Version 2 is used for the EA-6B and F-18A, Version 3 for AV-8B and F-18C/D, and Version 4 is applied for C-130 aircrews. The M17 series mask is obsolescent and is relegated to NEO support in selected HTAs. The mask is designed for the military standard profile (ground) and does not adequately protect all potential nonmilitary populace members, for which is retained. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The system is a stand-alone system that accompanies the user. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The M48 CB Apache Aviator Mask protects AH-64 Apache helicopter aviators and flight support personnel. The blower assembly uses the C-2 filter canister to provide filtered, breathable air. The M-48 replaced the M43 Type 1 mask. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection.

² Respiratory/ocular CBRND protection asset expendables and consumables include filters, batteries, exhaust and inlet valves, disposable aviator materials, and other assets designed for replacement or disposal. These are identified in the applicable technical manuals and directives and are a consideration in the planning, acquisition, positioning, and allocation of logistics resources supporting operations. The diversity of respiratory/ocular assets between the services does place an increased logistical burden upon planners and the logistics systems to accommodate unique requirements for specific systems. Limited standardization does exist, such as the C-2 filter canister, but not all expendable and consumable components are standard across the services. Doctrine, policy, procedures, and TTPs include the planning, identification, positioning, and allocation by the command staff of these assets to ensure their availability to the force.

³ Doctrine, policy, and procedures to not adequately address sustained operations over multiple CBRN/TIM attacks. Current assets are limited in their ability to address these types of operations and will require increased quantities, service, replacement, and issue, placing serious demands upon logistics systems for support. Degradation to operational performance is a significant concern in these circumstances.

⁴ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified CBRN/TIM threat. The allocation and dissemination of CBRND materiel is managed by the staff based upon plans, operational requirements, anticipated or experienced threat, and available resources. Expeditionary operations are a particular concern. Availability of spares and resupply will be limited during the period until the theater matures (usually the first 30–90 days). Maneuvering highly mobile forces operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPPF and, subsequently, in planning.

⁵ DOTLPPF is adequate for the planning, movement, management, positioning, and reallocation of CBRND materiel in support of operations. However, DOTLPPF is inadequate for sustained operations within a CBRN/TIM environment and for expeditionary and highly mobile force operations with reduced logistical footprints. DOTLPPF is also inadequate or nonexistent addressing CBRND of eligible civilians and MWAs.

⁶ Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The USN, USAF, and USMC use the disposable aircrew protective cape to protect aircrew between sheltering and the combat aircraft. The cape drapes over the wearer and is removed during entry into the aircraft to prevent transfer of contamination into the aircraft interior. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. The disposable aircrew boot cover is worn by USAF, USN, and USMC aviators over aircrew footwear while en route and mounting combat aircraft. The covers are removed during aircraft entry and are designed to prevent contamination transfer into the aircraft. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. Disposable aircrew hand protection is applied by the USAF, USMC, and USN for aviators over their gloves (and may be worn between glove layers for additional protection) during movement between shelter and aircraft. When used as an overglove, the gloves are removed during aircraft mounting to preclude the potential for transfer of contamination into the aircraft interior. Medical Services practitioners performing treatment The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and EOD personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

⁷ The Service-specific ensembles, footwear, hand covers, and other percutaneous protective assets are designed for disposal following exposure to CBRN/TIM agents. However, selected assets are designed to be decontaminated and reused rather than disposal. These include the M-2 protective apron and BVO/GVO footwear covers. Expendable/consumable CBRND percutaneous protective assets are a consideration in the planning, acquisition, positioning, and allocation of logistics resources supporting operations. The diversity of percutaneous assets between the services places an increased logistical burden upon planners and the logistics systems to accommodate unique service requirements. Limited standardization does exist, such as footwear covers, aviator disposable coverings, ensembles (the BDO is used by the U.S. Army and USAF), but not all expendable and consumable assets are standard across the services. Doctrine, policy, procedures, and TTPs include the planning, identification, positioning, and allocation by the command staff of these assets to ensure their availability to the force.

⁸ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Military personnel are administered and/or issued CBRND medical countermeasures for operations with threat. Vaccines for selected biological agents, topicals, and preexposure and/or post-exposure/presymptomatic medications are applied to mitigate or preclude the effects of specific CBRN/TIM agents. Currently, preexposure prophylaxis is available for nerve agents (G and V series), and vesicants (H, HD, HN, L, CX), topical only. SERPACWA is the preexposure countermeasure for vesicants and one nerve agent. TSP is approved by the FDA as a supplement for SERPACWA. Post-exposure prophylaxis is available for pulmonary (CG) agent, but is not FDA approved. Radioprotective steroids and neutraceuticals may be effective as pre- and post-exposure prophylactics. 5-androstenediol is an IND preexposure treatment for radiological exposure. Iodide/potassium iodide is FDA approved for application against Iodine 131, 132, 134, and 135. Post-exposure radiological exposure prophylaxis consists of neutraceuticals, plant isoflavone genistein, and alpha tocopherol (Vitamin E) but are not approved by the FDA for prophylaxis against radiation. FDA-approved preexposure medical countermeasures are available for anthrax, cholera, HFRS (Haantan), Rift Valley fever, yellow fever, HFRS (Haantan), and smallpox. IND status vaccines are currently available for Q-fever, tularemia (although use has been placed on hold by the FDA), Botulinum, Junin hemorrhagic fever, and VEE/WEE/EEE. Antiviral/bacterial medications may be administered and/or issued to provide a level of protection against biological agents.

⁹ Medical CBRND materiel, including consumables and expendables, are administered, issued, and prepositioned for identified CBRN/TIM threats. The types, quantities, movement, administration, issuance, and positioning of medical CBRND materiel is addressed by the command and support staffs during the planning and support for operations and is addressed in doctrine, policy, and procedures. Expeditionary and highly mobile force operations are particular concerns. Availability of spares and resupply will be limited for expeditionary forces during the period until the theater matures (usually the first 30–90 days). Highly mobile forces maneuvering and operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective materiel may be reduced or eliminated despite threat level. Medical CBRND materiel for MWAs is virtually nonexistent. The application of presymptomatic medical CBRND materiel to eligible civilians is not addressed in current doctrine, policy, and procedures. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPF and, subsequently, in planning.

¹⁰ Medical CBRND materiel, including consumables and expendables, are administered, issued, and prepositioned for identified CBRN/TIM threats. The types, quantities, movement, administration, issuance, and positioning of medical CBRND materiel is addressed by Medical Services, JTF, and unit staffs during the planning and support of operations and is addressed in doctrine, policy and procedures. Expeditionary and highly mobile force operations are particular concerns. Availability of spares and resupply will be limited for expeditionary forces during the period until the theater matures (usually the first 30–90 days). Highly mobile forces maneuvering and operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective materiel may be reduced or eliminated despite threat level. Medical CBRND materiel for MWAs is virtually nonexistent. The application of presymptomatic medical CBRND materiel to eligible civilians is not addressed in current DOTLPF. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPF and, subsequently, in planning.

¹¹ Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels. Selected U.S. Naval combat vessels may be equipped with full COLPRO (CITADEL). However, these systems are generally restricted to critical operations areas of the ships. The critical areas are contiguous in that they share common bulkheads and movement between areas is not prevented. CCAs are operated in areas located between the covered areas and the remainder of the ship. These areas are designated. The remainder of the interior of the vessel uses the Circle William concept. Circle William requires prior warning of the presence of a CBRN/TIM in the path of the ship or knowledge of an impending attack to be fully effective. This concept requires the shutdown of the ventilation system and sealing of hatches, bulkheads, and other such openings to seal the interior of the vessel from intrusion by a CBRN/TIM. However, the majority of these actions are performed manually and are initiated upon detection of the potential CBRN/TIM agent. There are concerns about the potential for large amounts of a CBRN/TIM agent to be drawn in by the high-velocity ventilation systems and dispersed throughout the interior of the ship during the period between agent encounter and completion of Circle William. There are concerns about the ability of the vessel to remain in Circle William until it is determined the vessel is no longer exposed to a CBRN/TIM. U.S. Naval combat vessels with full COLPRO of their critical functions currently include the DDG-51 class of destroyers, selected LSDs (vessel hulls 44 through 52), LHDs (vessel hulls 1 through 6), LHAs (vessel hulls 1 through 5), and four of the AOE-6 (vessel hulls 6 through 8 and 10) class ships. Submarines are considered fully protected so long as they remain sealed and do not take in air. The LHD and LHA Amphibious Assault Ships are undergoing a COLPRO Backfit of SCPE for their critical functions. Other areas of these ships will use the Circle William Concept. Carriers, frigates, cruisers, DD-963 class destroyers, and other vessels not discussed earlier in note, do not currently afford their critical functions full COLPRO. Naval hospital ships, U.S. Naval auxiliaries, and USCG vessels are not equipped with COLPRO. Areas critical to the safe operation of the ship may not be protected against CBRN/TIMs. Ability of these vessels to successfully incorporate a concept similar to Circle William is a concern. There are also concerns about the ability of these vessels to prevent infiltration of CBRN/TIM into their interior. Infiltration of vapors can cause a build up of concentrations within the vessel that could exceed the levels surrounding the ship. USCG vessels are under the control and direction of DoD during a declared war. The USCG, however, is under the auspices of the Department of Homeland Security during peacetime. USCG vessels are often attached to U.S. operations overseas for port security, coastal patrol, and similar functions. USCG personnel are also dispatched with military forces deploying overseas for peacekeeping and other operations. USCG vessels and personnel served in Vietnam, Haiti, Granada, and other force deployments. The ability of USCG resources to effectively integrate into DoD operations involving potential CBRN/TIM events is a concern. Mobile COLPRO are armored or soft-skinned vehicle-supported and -based systems. They include both ground and air platforms. The operation of the COLPRO may not be supported while the vehicle is in motion. They may or may not include CBRN/TIM filtration systems. Mobile COLPRO run the full range of protective capabilities from passive to fully protective COLPRO. The majority of vehicles qualify as passive COLPRO, provided the exchange of air between the interior and the exterior is limited. Mobile COLPRO systems generally do not provide protection for large numbers of personnel. Currently, the M1A1 Abrams MBT and the M93A1 FOX NBC Reconnaissance System Block I provide full COLPRO for their crews. The CBPS is a general use fully protective COLPRO system mounted on an ECV HMMWV. The CBPS may be used for C4 operations, as aid stations, or for other needs. A variety of Environmental Sheltering with Reduced CB Hazard (ESRCBH) CPS exist in a small percentage aircraft and other vehicles. The majority of these provide clean filtered

air through piping or hose systems. In both the ESRCBH CPS and passively protective COLPRO systems, the occupants must wear a minimum of respiratory/ocular protection. Combat crewed vehicles are not generally equipped with CBRN/TIM filtration systems. These vehicles are not able to provide clean filtered air to crew and passengers and thereby extend the operational capabilities of the force. Support vehicles are similar to combat vehicles in that they do not routinely have CBRN/TIM filtration systems. Operators and passengers must, as with the combat vehicles, depend upon their IPE for clean air and protection. Unlike the combat-crewed vehicles, support vehicles generally are more open for infiltration by CBRN/TIM agents. Most airframes are also not equipped with CBRN/TIM filtration systems. They are either open exchange (normally lower altitude airframes) or provide the ability to switch to bottled air (usually jet aircraft). The concern is the aircrew are dependent upon the filtration systems of their IPE to provide clean filtered air. This reduces the extended operational time of the aircrew to that of their IPE. A concern is the inability to conduct mobile combat operations and to move large numbers of troops throughout a CBRN/TIM hazard area without the need to maintain them in IPE. Degradation of performance is a factor after a period of time wearing IPE.

¹² Mobile COLPRO expendables and consumables include filters, fuel, batteries, and other assets designed for replacement or disposal. These are identified in the applicable technical manuals and directives and are a consideration in the planning, acquisition, positioning, and allocation of logistics resources supporting operations. The diversity of COLPRO assets between the services does place an increased logistical burden upon planners and the logistics systems to accommodate unique requirements for specific systems. Limited standardization does exist, such as certain filters, but not all expendable and consumable components are standard across the services and systems. Doctrine, policy, procedures, and TTPs include the planning, identification, positioning, and allocation by the command staff of these assets to ensure their availability to the force.

¹³ There are insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to protect all critical activities and functions from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available in any large quantity during operations against an adversary. Current COLPRO systems are not available in the quantities and types necessary to support the protection of eligible civilians and detainees. Current plans generally do not address the application of COLPRO to non-force personnel and do not allocate the limited COLPRO resources to this activity. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and specific functions and activities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these are not present for all critical activities and functions. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities and will address COLPRO for critical activities/functions. The Guardian Program, however, is not likely to address field COLPRO operations.

¹⁴ Site COLPRO expendables and consumables include filters, fuel, batteries, and other assets designed for replacement or disposal. These are identified in the applicable technical manuals and directives and are a consideration in the planning, acquisition, positioning, and allocation of logistics resources supporting operations. The diversity of COLPRO assets between the services does place an increased logistical burden upon planners and the logistics systems to accommodate unique requirements for specific systems. Limited standardization does exist, such as certain filters, but not all expendable and consumable components are standard across the services and systems. Additionally complicating logistical support are legacy systems installed into MILCON facilities within HTAs and selected CONUS locations, as well as older vessels. These systems will vary based upon when the system was installed, facility/vessel design, and other factors largely associated with the age of the system. Doctrine, policy, procedures, and TTPs include the planning, identification, positioning, and allocation by the command staff of these supporting expendable and consumable assets to ensure their availability to the force for COLPRO operations.

¹⁵ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs as determined by the commander. MOPP levels and methodologies define protective requirements and readiness for various level of threat and include the activation and operation of COLPRO as well as the wear and readiness of IPE by the force. MOPP levels and methodologies seek to protect the force through an integrated DOTLPP, COLPRO, and IPE scaled approach.

¹⁶ The command staff reviews identified forces and the potential threat for planned operations. Specified forces, time permitting, train and prepare for operations involving the potential threat. Equipping the tasked force is an integral part of planning and preparation. The command staff tracks force readiness for planned operations. Readiness issues are addressed by the staff. The combination of established force organic assets, material acquisitions, prepositioned material, and movement of identified CBRND resources from assigned stockpiles and reallocation activities are pursued by the command staff to prepare and support deploying forces as outlined by the appropriate plan. Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days). Deploying units may not possess full CBRND resources and capabilities during the initial stages of deployment and until after arrival within the AO. The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPP and, subsequently, in planning.

¹⁷ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified CBRN/TIM threat. The allocation of CBRND materiel is managed by the command staff. Expeditionary operations are a particular concern. Availability of spares and resupply will be limited during the period until the theater matures (usually the first 30–90 days). Maneuvering highly mobile forces operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPP and, subsequently, in planning.

¹⁸ Medical CBRND materiel, including consumables and expendables, are administered, issued, and prepositioned for identified CBRN/TIM threats. The types, quantities, movement, administration, issuance, and positioning of medical CBRND materiel is addressed by the JTF staff and supporting staffs during the planning and support for operations and is addressed in doctrine, policy, and procedures. Expeditionary and highly mobile forces are particular concerns. Availability of spares and resupply will be limited for expeditionary forces during the period until the theater matures (usually the first 30–90 days). Highly mobile forces maneuvering and operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The individual combat load also places limitations upon weight and type of equipment and consumables. Protective materiel may be reduced or eliminated despite threat level. Medical CBRND materiel for MWAs is virtually nonexistent. The application of presymptomatic medical CBRND materiel to eligible civilians is not addressed in current doctrine, policy, and procedures. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPP and, subsequently, in planning.

¹⁹ The command staff plans for operations using JTF plans for the potential threat. Equipping the force is an integral part of planning and preparation. The combination of established force organic assets, material acquisitions, prepositioned material, and movement of identified CBRND resources from unit designated stockpiles and reallocation activities are pursued by the command staff with the JTF staff to prepare and support the force as outlined by the appropriate plan. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPP and, subsequently, in planning.

²⁰ Available CBRND systems are not prepositioned in sufficient quantities to support concurrent military operations. Timing for replenishment of systems is dependent upon operational consumption, available replenishment stocks within the AO and in the line of communications, manufacturing capabilities, system age, and funding availability. Production for replenishment by industry may require a period to expand or establish manufacturing capabilities which could exceed the necessary replenishment timeline. This concern is particularly applicable when components or systems are dependent upon non-U.S. manufacturing capabilities. Expeditionary operations are a particular concern. Availability of spares and resupply will be limited during the period until the theater matures (usually the first 30–90 days). Maneuvering highly mobile forces operating in austere environments, behind adversary lines, and possessing reduced logistical footprints are similarly constrained. The command staff coordinates operational replenishment requirements with the JTF staff and reallocates available resources to meet critical operational needs, as necessary. Sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPP and, subsequently, in planning.

²¹ Plans, guidance, threats, taskings, and operational requirements are assessed by the command staff to determine operational requirements, including CBRND. However, dual taskings can occur on specific resources necessitating changes in resource taskings for operations. Unsatisfied requirements are reviewed for potential adjustments within available resources and/or identification and action for resolution. Limitations upon resource availability may necessitate adjustments to the planned mix and quantities. These adjustments may impact optimal CBRND protection with implications for operational planning and support. Identification of unsatisfied requirements are coordinated with the JTF staff for review and resolution assistance by the command staff.

²² Doctrine, policy, and procedures for operational planning and operations management require the involvement and integration of all core and supporting functions and activities. Support requirements for CBRND are addressed in planning when there exists a CBRN/TIM threat. The command staff collects, processes, interprets, and acts upon information

obtained from all applicable resources. This requires a fully integrated staff effort for accurate and timely decision-making. However, sustained operations within a CBRN/TIM environment are not adequately addressed in DOTLPF and, subsequently, in planning.

²³ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

²⁴ Fielding of standard joint Service CBRND respiratory/ocular protection will reduce logistical impacts and enable reallocation of related consumables/expendables between elements of the force within the AO. Standardization reduces the logistics impact and simplifies planning and support of operations. However, replacement of existing Service-specific systems will be performed over time and into the far term. Continued support of Service-specific systems will be required until removed from operational stocks.

²⁵ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

²⁶ Fielding of standard joint Service CBRND percutaneous protection will reduce logistical impacts and enable reallocation of related consumables/expendables between elements of the force within the AO. Standardization reduces the logistics impact and simplifies planning and support of operations. However, replacement of existing Service-specific systems will be performed over time and into the far term. Continued support of Service-specific systems will be required until removed from operational stocks.

²⁷ Cell Culture Derived Vaccinia is projected for production during the near-term. Clostridium Botulinum Toxin Medical Defense System is projected for availability during the mid term for Serotypes A, B, C, E, and F. The SERPACWA Active TSP is also projected for production during the late mid term.

²⁸ Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as are two variants of the JSLNBCRS, and the M93A1 Fox NBCRS Block II.

²⁹ Integration of standardized COLPRO systems into the design and backfit of mobile systems for CBRND operations will gradually replace legacy systems and their associated logistics support requirements. Further, the cross-service (primarily USAF, USMC, and U.S. Army) fielding of the CBPS provides a basis for further standardization of common mobile COLPRO system requirements between the services.

³⁰ JTCOPS Block I is projected for initial fielding during the mid term. The projected initial capabilities fielding of JECF is within the mid term and will include adaptive insertable COLPRO systems (including liner) for existing buildings/rooms and stand-alone COLPRO for small groups of personnel. JECF may provide the capability to provide COLPRO for critical activities and functions; however, JECF acquisition quantities have not as yet been determined.

³¹ Integration of standardized COLPRO systems into the design and backfit of site systems for CBRND operations will gradually replace legacy systems and their associated logistics support requirements. Further, the cross-service fielding of JECF and JTCOPS provides a basis for further standardization of common site COLPRO system requirements between the services.

³² The next-generation series of aviator and nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

³³ The next-generation series of aviator and nonaviator percutaneous protective assets are in R&D. The capabilities and fielding of these assets are not as yet determined.

³⁴ Active TSPs are projected for replacement of SERPACWA TSP and SERPACWA Active TSP in the far term. The Chemical Agent Prophylaxis and Cyanide Pretreatment are also projected for the far term. The Multivalent VEE Vaccine is projected to begin production in FY2013. The Next-Generation Anthrax Vaccine, Tularemia Vaccine, and Plague Vaccine are projected for production beginning in FY2010. Serotypes A and B are addressed in the Recombinant Bivalent Botulinum Vaccine projected for production in FY2012. A number of R&D efforts are under way for the development of preexposure and post-exposure prophylaxes. Potentially, these efforts may produce viable prophylaxes within the mid and far term resulting in fielded material. However, possible resulting prophylaxes cannot be predicted at this time.

³⁵ The projected Future Tactical Lift Option is under evaluation for the potential addition of COLPRO in the design and production specifications. A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

³⁶ JTCOPS Block II is projected for the far term. Continued fielding of JECF.

13.8.3 Functional Solutions Analysis

13.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Ensure doctrine effectively describes the limitations of CBRND protective equipment to enable users to choose appropriate equipment for the threat encountered. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 2. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 3. Deficiency:** Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.

Partial Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine addressing prolonged wear of IPE. *Organization:* Develop organizational structures, resources, staffing, and capabilities to support personnel exchange and R2 to preclude degradation of tasks and to promote the well-being of the force. *Training:* Ensure training, exercises, and evaluations effectively promote acclimation and endurance of wear of IPE. *Leadership:* Ensure awareness of degradation effects.
- 4. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 5. Deficiency:** Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

6. **Deficiency:** Not all critical facilities and activities are equipped with COLPRO.

Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine and policy.

7. **Deficiency:** Current mobile COLPRO is inadequate to support operations by highly mobile forces.

Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.

8. **Deficiency:** Maneuvering forces are inadequately equipped with COLPRO capabilities.

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training:* Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced

logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership:* Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

9. Deficiency: Inadequate COLPRO to support expeditionary and highly mobile forces.

Partial Non-Materiel Solutions: *Doctrine:* Develop and disseminate appropriate doctrine, policy, and procedures for the application of common materials for COLPRO and for COLPRO kits and components. *Organization:* Develop organizational structures, resources, staffing, and capabilities to enable effective application of available COLPRO and implementation of expedient COLPRO capabilities. *Training:* Establish initial and recurring training of all members of the force on the conduct of expedient COLPRO. Exercises and evaluations incorporate criteria challenging this capability. *Leadership:* Recognize potential for expedient COLPRO to improve force capabilities and survivability. *Facilities:* Develop supporting infrastructure enabling expedient COLPRO and the effective application of available COLPRO.

10. Deficiency: Quantities and availability of mobile COLPRO is inadequate.

Non-Materiel Solutions: *Doctrine:* Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training:* Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership:* Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of highly mobile forces.

11. Deficiency: Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.

Partial Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization:* Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at-risk. *Training:* Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership:* Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities:* Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.

12. Deficiency: USCG assets supporting operations are not adequately equipped with CBRND assets and resources.

Partial Non-Materiel Solutions: *Doctrine:* Establish with doctrine, policy, and procedures responsibilities for equipping, training, and supporting USCG assets supporting force operations during periods of other than declared war. *Organization:* Develop organizational structures, agreements, resources, and staffing to support and ensure survivability of supporting USCG resources. *Training:* Train, exercise, and evaluate USCG CBRND capabilities as integral component of force. *Leadership:* Recognize differences and challenges associated with CBRND operations by USCG assets and personnel, training providing skills and knowledge to managed operations involving these assets, and the ability and willingness to implement necessary changes and activities to prepare for and conduct operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for CBRND of the force, including allocated USCG assets and personnel.

13. Deficiency: Airlift assets (both tactical and strategic) are not equipped with COLPRO.

Partial Non-Materiel Solutions: *Doctrine:* Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training:* Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership:* Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities:* Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.

14. Deficiency: DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

15. Deficiency: DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWDs for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.

16. Deficiency: Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of eligible civilians and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of eligible civilians CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of eligible civilians for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for eligible civilians survivability. *Facilities:* Develop supporting infrastructure for eligible civilians CBRND (e.g., logistics, medical, communications, training, etc.).

- 17. Deficiency:** Deploying MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of MWA handlers, and MWA for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, communications, training, etc.).

- 18. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection eligible civilians. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).

- 19. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying MWAs.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWA, particularly MWD, survivability and mission and operations for CBRND. *Organization:* Identify organizational services and activities supporting MWA survivability and CBRN/TIM environment operations. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

- 20. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Training:* Train, potential eligible civilians on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of eligible civilians within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of eligible civilians.
- 21. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for MWAs.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic/veterinary medical CBRND protective countermeasures for eligible civilians, non-U.S. forces, and MWA. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for eligible civilians, non-U.S. forces, and MWA. *Training:* Train, non-MWA handlers on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of MWAs within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of MWAs.
- 22. Deficiency:** Efficacy of existing prophylaxes varies widely.
Non-Materiel Solutions: *Doctrine:* Establish overarching single common standard for prophylaxes efficacy.
- 23. Deficiency:** Not all prophylaxes are FDA approved.
Non-Materiel Solutions: *Doctrine:* Require FDA approval of all prophylaxes, including medications potentially applied as prophylaxes. The latter requires specific approval as prophylactic treatment.
- 24. Deficiency:** Forces have, and may in the future, require medical prophylaxis administration/issue upon arrival in the AOR.
Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection during and throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a

CBRN/TIM environment by deploying, redeploying, relocating, and en route forces.

Training: Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocation, and en route; training providing the skills to manage the force in these circumstances; and willingness and ability to implement necessary changes and activities to prepare and appropriately protect the force. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while preparing, deploying, redeploying, relocating, and en route.

25. Deficiency: CBRND equipment is often not issued and available to deploying forces until after arrival in the AO.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection throughout deployment, redeployment, relocation, and en route phases of movement. *Organization:* Ensure resources, taskings, and staff are in place or available to perform CBRND operations within a CBRN/TIM environment by deploying, relocating, and en route forces. *Training:* Train, exercise, and evaluate the force for CBRND operations within a CBRN/TIM environment while deploying, redeploying, relocating, and en route. *Leadership:* Recognize criticality of readiness of the force for potential CBRND operations within a CBRN/TIM environment while deploying, relocating, and en route. *Facilities:* Develop supporting infrastructure for CBRND operations of the force while deploying, redeploying, relocating, and en route.

26. Deficiency: The individual combat load places limitations upon weight and type of equipment and consumables. Protective equipment may be reduced or eliminated despite threat level.

Non-Materiel Solutions: *Doctrine:* Emphasize in doctrine, policies, and procedures for preparation of the force for CBRND protection throughout deployment, redeployment, relocation, and en route phases of movement. *Leadership:* Recognize impact upon mission success and force survivability for reduction of CBRND measures not consistent with threat.

27. Deficiency: Available CBRND systems are not stockpiled and prepositioned in sufficient quantities to support concurrent military operations.

Non-Materiel Solutions: *Doctrine:* Institute in doctrine, policy, and procedures the central correlation of national and strategic theater plans and taskings to identify CBRN/TIM support requirements for two or more concurrent operations with threat with comparison to existing and programmed quantities and types of CBRND systems and resources, to include replenishment. *Leadership:* Implement development of plans and taskings consistent with stockpile and prepositioning support capabilities. *Facilities:* Develop supporting infrastructure for CBRND stockpile and prepositioning supporting plans and taskings. Stockpile and preposition as necessary to support determined requirements.

13.8.3.2 IMA Assessment Summary

Table 13.8-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on procurement of existing systems, and development of field-expedient

and modular systems. Vaccines and antidote programs need to be tied to current need projected threats; sufficient quantities need to be procured. Table 13.8-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.8-2. TASHLD 8: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Develop/adapt MWA transport system with pressure/filtration	Develop or adapt MWA transport systems to provide COLPRO protection from CBRN/TIM agents.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Equipment and supplies protective packaging and containment systems	Investigate and develop standardized CBRN/TIM protective packaging and containment systems (includes sprays, boxes, envelopes, drapes, etc.) for the protection of equipment and supplies from contact with CBRN/TIM agents
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.

Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.
Modular COLPRO	Develop modular COLPRO that can be erected in various configurations to protect various groups of people separately by their designation (EPW, civilian, etc.); accommodates small to large numbers of people; protects all critical activities and functions, MWAs, prelocated consumables, and maintenance/repair activities; and addresses the commander's intent.
Prepositioned/reserve CBRN medical resources	Establish and maintain sufficient stocks of prepositioned and reserve CBRND medical resources identified in plans and required to support multiple operations with threat and ensure availability for expeditious movement to the and within the AO in the event of a CBRN event.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.8-3. TASHLD 8: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Chemical Treatment</p>	<p style="text-align: center;">Combinatorial Prophylaxes</p>	<p style="text-align: center;">Develop COLPRO Kits</p>	<p style="text-align: center;">Develop and Establish Generic Unit CBRND Kits</p>	<p style="text-align: center;">Develop/Adapt MWA Transport System with Pressure/Filtration</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Equipment and Supplies Protective Packaging and Containment Systems</p>	<p style="text-align: center;">Field-Expedient COLPRO Kits</p>
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X				X	X		X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>				X						
<p>Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.</p>	X	X	X		X	X		X		X
<p>Inadequate COLPRO to support expeditionary and highly mobile forces.</p>		X	X		X	X	X	X		X
<p>Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.</p>					X			X		X
<p>USCG assets supporting operations are not adequately equipped with CBRND assets and resources.</p>					X	X		X		X
<p>Airlift assets (both tactical and strategic) are not equipped with COLPRO.</p>					X	X	X	X	X	X
<p>Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X		X	X	X
<p>Deploying MWAs are not equipped and trained to survive a CBRN/TIM environment</p>	X	X	X	X	X	X	X	X		X

Table 13.8-3. TASHLD 8: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Field-Expedient COLPRO Materials</p>	<p style="text-align: center;">Future Prophylaxes</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>	<p style="text-align: center;">Integrate CBRN/TIM Protective Features into Functional Garments</p>	<p style="text-align: center;">Modular COLPRO</p>	<p style="text-align: center;">Prepositioned/Reserve CBRN Medical Resources</p>	<p style="text-align: center;">Regenerative Filtration</p>	<p style="text-align: center;">Topical</p>
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>			X				X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>		X				X		X
<p>Encumbrances associated with ocular/respiratory and percutaneous protection degrade performance and limit the conduct of certain tasks.</p>	X		X	X	X		X	X
<p>Inadequate COLPRO to support expeditionary and highly mobile forces.</p>	X		X	X	X		X	
<p>Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.</p>	X		X	X			X	X
<p>USCG assets supporting operations are not adequately equipped with CBRND assets and resources.</p>	X		X	X			X	X
<p>Airlift assets (both tactical and strategic) are not equipped with COLPRO.</p>	X		X	X			X	X
<p>Deploying eligible civilians are not equipped and trained to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X	X	X
<p>Deploying MWAs are not equipped and trained to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X	X	X

13.9 Task TASHLD 9: Perform protective measures to prevent or mitigate CBRN/TIM contamination of equipment and supplies

13.9.1 Functional Area Analysis

13.9.1.1 Definition

CBRN/TIM protection can be provided to equipment and supplies by using packaging, coverings, and coatings/materials. Packaging is use of containers to preclude infiltration of agents into protected assets. Includes boxes, bags, cans, enclosed trailers, plastic bottles, shipping containers, etc. Coverings are specifically designed to place over critical assets to protect them from contamination. CBRN/TIM protective features may be added to standard environmental protective qualities. Includes plastic wraps, tarps, and similar covering. Coatings/material encompasses application of protective features to, or incorporation in equipment design to resist penetration/retention of CBRN/TIM agents. Includes films, paints, sprays, etc.

13.9.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.9.1.2.1 Supported Tasks: OPSHLD 7, OPSHLD 10, OPSHLD 12

13.9.1.2.2 Lateral Task: TASHA 15

13.9.1.2.3 Supporting Task: N/A

13.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Negligible personnel experience. (C2.2.4.5)
3. Limited staff expertise. (C2.3.1.3)
4. Abundant deployed supplies. (C2.8.2)
5. Limited CONUS resupply. (C2.8.3)
6. Extensive prepositioned materiel. (C2.8.4)

7. No host-nation support. (C2.8.5)
8. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.9.2 Functional Needs Analysis

13.9.2.1 Capability and Deficiency Assessment Summary

This task deals with the protection of equipment and supplies against CBRN/TIM using packaging, coverings, and coatings/material. Packaging includes the use of boxes, bags, cans, enclosed trailers, plastic bottles, and shipping containers. Covering includes the use of plastic wraps, tarps, and similar coverings. Coatings/material includes the use of films, paints, and sprays. Table 13.9-1 shows the assessment of these capabilities. The overall capabilities for current, near/mid, and far term are rated “red.” Existing programs are inadequate or nonexistent for this task, and none are currently projected into the near/mid and far terms.

Current Capability and Deficiency

Current capabilities are limited for the protection of equipment and supplies from CBRN/TIM contamination. Existing DOTLPF addresses protection through the application of policies, standards, and criteria providing for the housing of materiel within structures, multiple layers of plastic wrapping for in-transit materiel, two protective coatings (volatile and nonvolatile chemical agent-resistant coating [CARC]), and limited specific purpose packagings. Open stored materiel is not adequately addressed. Open stored and operationally ready materiel and equipment (e.g., ground support equipment for aircraft, munitions, large equipment asset shipments, etc.) are present in all force operations. Current practices are predominantly the application of coverings such as tarps, tents, buildings, etc., when available. CARC is applied to combat vehicles for easing of decontamination. Not all supplies and equipment are inherently protected or packaged to protect against CBRN/TIM contamination. Certain materials used in the packaging or construction of equipment and supplies may absorb CBRN/TIM agents in vapor form and are not generally known to the force. DOTLPF is limited or nonexistent for the application of commonly available materials for CBRN/TIM protection of assets, capabilities and procedures for handling exposed/contaminated equipment/supplies other than decontamination, protection of open stored material, and training to preclude contamination of assets. There is an absence of doctrine, policy, and procedures establishing protective pack, containerization, packaging, coverings, and coatings for equipment and supplies that conceivably may encounter contamination within a CBRN/TIM environment and address protection of all classes of supply within a CBRN/TIM environment. Further, there is a finite and limited ability to perform containment of contaminated material for storage, handling, and movement.

Projected Near/Mid-Term Capability and Deficiency

No change is projected for this task.

Projected Far-Term Capability and Deficiency

No change is projected for this task.

13.9.2.2 Resource Systems

Individual Protection—Percutaneous Protection—COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Protective Posture Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit protective posture level.

Unit Staff: The application of DOTLPP for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.9-1. TASHLD 9: Capability and Deficiency Assessment

System/Measure	M1	M2	M3
Current			
Individual Protection	4 ¹	4 ²	3 ³
Protective Posture Methodology	4 ⁴	2 ⁵	4 ⁶
Unit Staff	3 ⁷	3 ⁷	3 ⁷
Near/Mid			
Individual Protection	4 ¹	4 ²	3 ³
Protective Posture Methodology	4 ⁴	2 ⁵	4 ⁶
Unit Staff	3 ⁷	3 ⁷	3 ⁷
Far			
Individual Protection	4 ¹	4 ²	3 ³
Protective Posture Methodology	4 ⁴	2 ⁵	4 ⁶
Unit Staff	3 ⁷	3 ⁷	3 ⁷
Overall			
Current Overall Capability	4	3	3
Near/Mid-Term Overall Capability	4	3	3
Far-Term Overall Capability	4	3	3

	FAA Measure	Scale
M1	Plans include protective measures for materiel assets.	<p>8–10: All critical assets possess inherent protection or unit plans and procedures detail protection activities against contamination and exposure to CBRN/TIM agents.</p> <p>4–7: Unit plans and procedures address the protection of critical assets from contamination by CBRN/TIM agents.</p> <p>1–3: Unit plans and procedures address the protection of selected critical assets against splash contamination by CBRN/TIM agents.</p> <p>0: Unit plans do not address the protection of critical assets against CBRN/TIM contamination.</p>
M2	Critical assets are protected from CBRN/TIM contamination.	<p>8–10: All critical assets possess inherent protection or unit personnel and activities are fully trained and equipped to perform protection activities against contamination and exposure to CBRN/TIM agents.</p> <p>4–7: Unit personnel are trained and possess adequate materiel for the protection of critical assets from contamination by CBRN/TIM agents.</p> <p>1–3: Unit personnel are trained and possess materiel for the protection of selected critical assets against splash contamination by CBRN/TIM agents.</p> <p>0: Unit training and materiel resources do not address the protection of critical assets against CBRN/TIM contamination.</p>

M3	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>
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¹ Not all supplies and equipment are inherently protected or packaged to protect against CBRN/TIM contamination. Specific assets may include CBRN/TIM protection through deliberate requirements for acquisition or the nature of the enclosing packaging. CBRN/TIM protective coverings are limited in coverage and quantities. CBRN/TIM protective coatings are limited to two variants of CARC. CBRN/TIM protective packaging are limited or not identified. Doctrine, policy, and procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

² Equipment and supplies protection is generally seen as placement under coverings (e.g., buildings, tents, tarps, etc.). Unit-level training for protection of equipment and supplies is generally a short briefing on covering, and not adequate to preclude unnecessary loss of assets.

³ There is inadequate DOTLPP to protect equipment and supplies from CBRN/TIM contamination.

⁴ Unit plans and procedures integrate protective posture levels and methodologies for the protection of the force. Included in these documents is generally guidance addressing the protection of equipment and supplies at different levels of protective posture. This guidance is disseminated to subordinate units by the command staff for implementation and application as a means of reducing decontamination requirements and/or potential asset loss.

⁵ Personnel are briefed on equipment and supplies protective activities as part of their protective posture training for operations.

⁶ Doctrine, policy, and procedures for the development and adjustment of protective posture levels and methodologies do include instructions for addressing protection of equipment and supplies.

⁷ Unit plans and procedures address the protection of equipment and supplies from CBRN/TIM contamination through the application of coverings (e.g., buildings, tents, tarps, etc.). However, certain materials used in the construction or packaging of equipment and supplies may absorb a CBRN or TIM agent in vapor form. Assets affected in this manner are not generally known to the force and command staff. Doctrine, policy, and procedures do not identify commonly available materials providing CBRN/TIM protection which might be applied to provide barrier and containment protection of equipment and supplies, particularly assets in transit or stored in the open.

13.9.3 Functional Solution Analysis

13.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Not all supplies and equipment are inherently protected or packaged to protect against CBRN/TIM contamination.
Partial Non-Materiel Solution: *Doctrine:* Integrate protective measures, assets, and activities for CBRND of all classes of supplies into doctrine, policy, and procedures. *Leadership:* Implement, manage, and enforce the application of CBRND protective measures, assets, and activities for all classes of supplies. Also, awareness of need for materiel protection.
- 2. Deficiency:** CBRN/TIM protective coverings are limited in coverage and quantities.
Partial Non-Materiel Solution: *Doctrine:* Establish in doctrine and policy requirement for application of coverings providing CBRN/TIM protection to equipment and supplies and implement through TTPs knowledge and application of these resources. *Training:* Institute in initial, recurring, and unit training effective application of CBRN/TIM protective coverings.
- 3. Deficiency:** CBRN/TIM protective coatings are limited to two variants of CARC.
Partial Non-Materiel Solution: *Doctrine:* Establish in doctrine and policy requirement for full range of CBRN/TIM protective coatings for assets and resources with application to operations with threat. *Organization:* Organizational structures to effectively apply and maintain CBRN/TIM protective coatings. *Training:* Implement institutional, recurring, and unit training for the effective application and maintenance of CBRN/TIM protective coatings. *Leadership:* Awareness protectant coatings support OPTEMPO by reducing decontamination and/or replacement requirements. *Facilities:* Necessary infrastructure enabling force use of CBRN/TIM protectant coatings.
- 4. Deficiency:** CBRN/TIM protective packagings are limited or not identified for other than specialized functions.
Partial Non-Materiel Solution: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed to prevent contamination of equipment and supplies. *Organization:* Identify organizational resources and support requirements for the application of CBRN/TIM protective containment packaging/systems. *Training:* Train, exercise, and evaluate the application of CBRN/TIM protective containment packaging/systems. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the application of CBRN/TIM protective containment packaging/systems.
- 5. Deficiency:** The predominant means of protection of supporting assets is generally limited to decontamination of the asset following secondary exposure/contamination.

Partial Non-Materiel Solution: *Doctrine:* Include the application of CBRN/TIM protective containment packaging/systems and other alternative methods to preclude exposure/contamination of resources in doctrine, policy, and procedures.

Training: Train, exercise, and evaluate the application of CBRN/TIM protective containment packaging/systems and other alternatives precluding exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the application of CBRN/TIM containment packaging/systems and other alternatives to prevent exposure/contamination.

6. **Deficiency:** Doctrine, policy, procedures for application of commonly available materials for CBRN/TIM protection are limited or nonexistent.

Non-Materiel Solution: *Doctrine:* Include the application of commonly available materials with CBRN/TIM protective capabilities into doctrine, policy, and procedures. *Training:* Include the application of commonly available materials with CBRN/TIM protective capabilities in institutional and unit level training, exercises, and evaluations.

7. **Deficiency:** Unit-level training for protection of equipment and supplies is generally limited to a short briefing on covering, and not adequate to preclude unnecessary loss of assets.

Non-Materiel Solution: *Training:* Establish standards and train, exercise, and evaluate the force for protection of equipment and supplies. *Leadership:* Enforce compliance with established standards for CBRN/TIM protective measures and activities for all classes of materiel.

8. **Deficiency:** There is inadequate or limited DOTMLPF to protect equipment and supplies from CBRN/TIM contamination.

Non-Materiel Solution: *Doctrine:* Promulgate doctrine, policy, and procedures addressing protection of material and supplies from CBRN/TIM contamination and the operational application of contaminated resources. *Organization:* Identify organization services and activities necessary to provide CBRND protection of equipment and supplies. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for protection of all classes of supply and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, protective measures, and exercising.

9. **Deficiency:** Doctrine addressing the protection of open stored material is limited.

Non-Materiel Solution: *Doctrine:* Establish and enforce doctrine, policies, procedures, and standards for CBRND protection of open stored materiel.

10. **Deficiency:** Certain materials used in the construction or packaging of equipment and supplies may absorb CBRN/TIM agent in vapor form. Affected assets are not generally known to the force and command staff.

Non-Materiel Solution: *Doctrine:* Restrict through doctrine and policy the application of known CBRN/TIM absorbent materials for warfighter equipment and supplies to applications with no other reasonable alternative and require, in such instances, information regarding decontamination/weathering and safe handling if contaminated. Include in TTPs identification of these materials, the assets/components they are part, and doctrine/policy required information on decontamination/weathering and safe handling when contaminated.

Organization: Identify organization services and activities necessary to effectively manage absorbent materials. *Training:* Include doctrine/policy required information in training of the force. *Leadership:* Awareness any number of assets or components used by the force may contain CBRN/TIM absorbent materials which may constitute a post-event hazard to the force.

13.9.3.2 IMA Assessment Summary

Table 13.9-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on procurement of existing systems, and development of field-expedient systems. Table 13.9-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.9-4. TASHLD 9: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Equipment and supplies protective packaging and containment systems	Investigate and develop standardized CBRN/TIM protective packaging and containment systems (includes sprays, boxes, envelopes, drapes, etc.) for the protection of equipment and supplies from contact with CBRN/TIM agents
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.9-5. TASHLD 9: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Develop and Establish Generic Unit CBRND Kits</p>	<p style="text-align: center;">Equipment and Supplies Protective Packaging and Containment Systems</p>	<p style="text-align: center;">Topical</p>
<p>Not all supplies and equipment are inherently protected or packaged to protect against CBRN/TIM contamination.</p>	X		X	X
<p>CBRN/TIM protective coverings are limited in coverage and quantities.</p>	X	X	X	
<p>CBRN/TIM protective coatings are limited to two variants of CARC.</p>	X		X	X
<p>CBRN/TIM protective packagings are limited or not identified for other than specialized functions</p>	X	X	X	X
<p>The predominant means of protection of supporting assets is generally limited to decontamination of the asset following secondary exposure/contamination.</p>	X	X	X	X

13.10 Task TASHLD 10: Employ expedient and improvised CBRN/TIM protective resources and measures

13.10.1 Functional Area Analysis

13.10.1.1 Definition

Includes the application of processes, methods, adaptive resources, available and individual ingenuity to create and provide COLPRO when COLPRO is not available. Includes the use of adaptation kits to enable structures (e.g. cave, room, building, bunker, underground chamber, vehicle, airframe, vessel, etc) to provide COLPRO. Also includes the use of plywood, dirt, tape, spray sealants, metal sheeting, etc. to create protection for personnel, supplies, and equipment.

13.10.1.2 Derivation

Joint Enabling Concept for CBRN Operations, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.10.1.2.1 Supported Task: OPSHLD 11

13.10.1.2.2 Lateral Task: TASHA 15

13.10.1.2.3 Supporting Task: N/A

13.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited deployed supplies. (C2.8.2)
6. Limited CONUS resupply. (C2.8.3)
7. No prepositioned materiel. (C2.8.4)
8. No host-nation support. (C2.8.5)
9. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.10.2 Functional Needs Analysis

13.10.2.1 Capability and Deficiency Assessment Summary

This section assesses current and projected capabilities to perform the task. The overall capabilities for current, near/mid, and far term are rated “red.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

This task recognizes limitations in existing COLPRO systems as well as circumstances not supportable by existing and projected COLPRO. These circumstances may include situations in which current systems would adversely impact operations (e.g., supporting logistics footprints, time to establish, etc.). Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM environment. Mobile COLPRO is a diversity of systems ranging from forced clean air systems to full COLPRO. However, their application is limited. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Most mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires prioritization of available assets and the application of IPE for CBRND. However, although prioritization is applied for critical activities and functions, not all such requirements can be satisfied with current COLPRO. The application of expedient COLPRO measures and systems would provide flexibility to the force to meet differing requirements and needs. Expedient COLPRO measures and systems are not addressed in DOTLPF. ECP kits, procedures, and training do not currently exist. Doctrine, policy, procedures, and TTPs do not identify commonly available materials (e.g., wraps, tarps, gels, caulks, plywood, etc.) for application in the construction of ECP by field forces. Training is not provided in the conduct of establishing and constructing ECP against the effects of CBRN/TIM agents. The potential ability does exist for ECP to address COLPRO needs not otherwise considered (e.g., USCG, hospital ships, merchant vessels, initial forced entry support, detainee housing, etc.). However, current DOTLPF is constrained to fielded COLPRO systems. The Services currently field a variety of CBRND assets providing COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. The assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs.

Projected Near/Mid-Term Capability and Deficiency

JECP is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. The P3I upgraded CBPS, JTCOPS, CP-DEPMEDS, fielding of the JSLNBCRS variants, and backfit of LHA/LHD vessels are projected to include

COLPRO in the mid term. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs. Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

The potential for COLPRO in the Future Tactical Lift Option builds upon the mid-term COLPRO capabilities. Additional changes in capabilities from the mid term are not projected.

13.10.2.2 Resource Systems

COLPRO

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCLR is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system either until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale

COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.10-1. TASHLD 10: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5
Current					
<i>Collective Protection</i>	4	4	N/A	0	4
Mobile COLPRO	3 ¹	3 ¹	N/A	0 ²	3 ³
Fixed-Site COLPRO	5 ⁴	5 ⁴	N/A	0 ²	5 ⁵
<i>Unit Staff</i>	6 ⁶	6 ⁶	0 ⁷	0 ²	3 ⁸
Near/Mid					
<i>Collective Protection</i>	4.5	4	N/A	0	4
Mobile COLPRO	3 ^{1,9}	3 ^{1,9}	N/A	0 ²	3 ³
Fixed-Site COLPRO	6 ^{4,10}	6 ^{4,10}	N/A	0 ²	5 ⁵
<i>Unit Staff</i>	6 ⁶	6 ⁶	0 ⁷	0 ²	3 ⁸
Far					
<i>Collective Protection</i>	4	4	N/A	0	4
Mobile COLPRO	3 ^{1,9,11}	3 ^{1,9}	N/A	0 ²	3 ³
Fixed-Site COLPRO	6 ^{4,10,12}	6 ^{4,10}	N/A	0 ²	5 ⁵
<i>Unit Staff</i>	6 ⁶	6 ⁶	0 ⁷	0 ²	3 ⁸
Overall					
Current Overall Capability	5	5	0	0	4
Near/Mid-Term Overall Capability	5	5	0	0	4
Far-Term Overall Capability	5	5	0	0	4

	FAA Measure	Scale
M1	Force possesses access to COLPRO including ECP sheltering.	<p>8-10: Force is adequately equipped with or have sufficient access to COLPRO for all functions and activities.</p> <p>3-7: Force is equipped with or have sufficient access to COLPRO for the performance of critical functions and activities.</p> <p>1-3: Force is equipped with or have access to COLPRO for selected functions and activities.</p> <p>0: Force is inadequately equipped and possesses insufficient access to COLPRO for support of operations.</p>
M2	Critical mission activities are accommodated by COLPRO sheltering including ECP sheltering.	<p>8-10: All critical facilities and activities are equipped with operational COLPRO.</p> <p>4-7: Selected critical facilities and activities possess are equipped or possess access to operational COLPRO.</p> <p>1-3: Selected key critical facilities and activities are equipped or possess access to COLPRO.</p> <p>0: Critical facilities and activities are not equipped or possess access to COLPRO.</p>

M3	ECP sheltering is considered in planning.	<p>8–10: ECP is an integral consideration and resource for all CBRND planning and operations.</p> <p>4–7: ECP is considered and resourced for selected operations with threat.</p> <p>1–3: Planning of selected operations with threat considers expedient COLPRO for specific activities.</p> <p>0: ECP is not considered and resourced for operations with threat.</p>
M4	Adequate ECP materials are readily available.	<p>8–10: The full range of expedient COLPRO kits and materials are readily available for application by the force.</p> <p>4–7: ECP kits and materials are generally available for force application.</p> <p>1–3: ECP kits and materials are available for selected force applications.</p> <p>0: ECP kits and materials do not exist.</p>
M5	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>

¹Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there is insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels. Selected U.S. Naval combat vessels may be equipped with full COLPRO (CITADEL). However, these systems are generally restricted to critical operations areas of the ships. The critical areas are contiguous in that they share common bulkheads and movement between areas is not prevented. CCAs are operated in areas located between the covered areas and the remainder of the ship. These areas are designated. The remainder of the interior of the vessel uses the Circle William concept. Circle William requires prior warning of the presence of a CBRN/TIM in the path of the ship or knowledge of an impending attack to be fully effective. This concept requires the shutdown of the ventilation system and sealing of hatches, bulkheads, and other such openings to seal the interior of the vessel from intrusion by a CBRN/TIM. However, the majority of these actions are performed manually and are initiated upon detection of the potential CBRN/TIM agent. There are concerns about the potential for large amounts of a CBRN/TIM agent to be drawn in by the high-velocity ventilation systems and dispersed throughout the interior of the ship during the period between agent encounter and completion of Circle William. There are concerns about the ability of the vessel to remain in Circle William until it is determined the vessel is no longer exposed to a CBRN/TIM. U.S. Naval combat vessels with full COLPRO of their critical functions currently include the DDG-51 class of destroyers, selected LSDs (vessel hulls 44 through 52), LHDs (vessel hulls 1 through 6), LHAs (vessel hulls 1 through 5), and four of the AOE-6 (vessel hulls 6 through 8 and 10) class ships. Submarines are considered fully protected so long as they remain sealed and do not take in air. The LHD and LHA Amphibious Assault Ships are undergoing a COLPRO Backfit of SCPE for their critical functions. Other areas of these ships will use the Circle William Concept. Carriers, frigates, cruisers, DD-963 class destroyers, and other vessels not discussed earlier in note, do not currently afford their critical functions full COLPRO. Naval hospital ships, U.S. Naval auxiliaries, and USCG vessels are not equipped with COLPRO. Areas critical to the safe operation of the ship may not be protected against CBRN/TIMs. Ability of these vessels to successfully incorporate a concept similar to Circle William is a concern. There are also concerns about the ability of these vessels to prevent infiltration of CBRN/TIM into their interior. Infiltration of vapors can cause a build up of concentrations within the vessel that could exceed the levels surrounding the ship. USCG vessels are under the control and direction of DoD during a declared war. The USCG, however, is under the auspices of the Department of Homeland Security during peacetime. USCG vessels are often attached to U.S. operations overseas for port security, coastal patrol, and similar functions. USCG personnel are also dispatched with military forces deploying overseas for peacekeeping and other operations. USCG vessels and personnel served in Vietnam, Haiti, Granada, and other force deployments. The ability of USCG resources to effectively integrate into DoD operations involving potential CBRN/TIM events is a concern. Mobile COLPRO are armored or soft-skinned vehicle-supported and -based systems. They include both ground and air platforms. The operation of the COLPRO may not be supported while the vehicle is in motion. They may or may not include CBRN/TIM filtration systems. Mobile COLPRO run the full range of protective capabilities from passive to fully protective COLPRO. The majority of vehicles qualify as passive COLPRO, provided the exchange of air between the interior and the exterior is limited. Mobile COLPRO systems generally do not provide protection for large numbers of personnel. Currently, the M1A1 Abrams MBT and the M93A1 FOX NBC Reconnaissance System Block I provide full COLPRO for their crews. The CBPS is a general use fully protective COLPRO system mounted on an ECV HMMWV. The CBPS may be used for C4 operations, as aid stations, or for other needs. A variety of ESRCBH CPSs exist in a small percentage aircraft and other vehicles. The majority of these provide clean filtered air through piping or hose systems. In both the ESRCBH CPS and passively protective COLPRO systems, the occupants must wear a minimum of respiratory/ocular protection. Combat-crewed vehicles are not generally

equipped with CBRN/TIM filtration systems. These vehicles are not able to provide clean filtered air to crew and passengers and thereby extend the operational capabilities of the force. Support vehicles are similar to combat vehicles in that they do not routinely have CBRN/TIM filtration systems. Operators and passengers must, as with the combat vehicles, depend upon their IPE for clean air and protection. Unlike the combat-crewed vehicles, support vehicles generally are more open for infiltration by CBRN/TIM agents. Most airframes are also not equipped with CBRN/TIM filtration systems. They are either open exchange (normally lower altitude airframes) or provide the ability to switch to bottled air (usually jet aircraft). The concern is the aircrew are dependent upon the filtration systems of their IPE to provide clean filtered air. This situation reduces the extended operational time of the aircrew to that of their IPE. A concern is the inability to conduct mobile combat operations and to move large numbers of troops throughout a CBRN/TIM hazard area without the need to maintain them in IPE. Degradation of performance is a factor after a period of time wearing IPE. Expedient COLPRO for mobile assets does not exist.

² ECP kits, procedures, and training do not currently exist. Doctrine, policy, procedures, and TTPs do not identify commonly available materials (e.g., wraps, tarps, gels, caulks, plywood, etc.) for application in the construction of ECP by field forces. Training is not provided in the conduct of establishing and constructing ECP against the effects of CBRN/TIM agents.

³ Inadequate quantities of mobile COLPRO systems exist to support highly mobile and expeditionary operations with reduced footprint. Further, there are insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. Expedient COLPRO systems and measures, as well as training, do not currently exist and are not addressed in current doctrine, policy, and TTPs.

⁴ There are insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to protect all critical activities and functions from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2 operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. Quantities are limited and are not likely to be available in any large quantity during operations against an adversary. Current COLPRO systems are not available in the quantities and types necessary to support the protection of eligible civilians and detainees. Current plans generally do not address the application of COLPRO to nonforce personnel and do not allocate the limited COLPRO resources to this activity. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and specific functions and activities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these are not present for all critical activities and functions. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities and will address COLPRO for critical activities/functions. The Guardian Program, however, is not likely to address field COLPRO operations. Expedient systems and measures for COLPRO are limited or nonexistent.

⁵ There are insufficient quantities of COLPRO to protect all critical activities and functions within the force. Prioritization is required of the available resources. Expedient COLPRO systems and measures, as well as training, do not currently exist and are not addressed in current doctrine, policy, and TTPs.

⁶ Doctrine, policy, procedures, and TTPs combined with staff experience, training, and knowledge provide the basis for prioritization of allocation of limited COLPRO resources. Not all critical activities and functions can currently be allocated COLPRO. Requirements must be balanced with operational needs, available resources, and alternative protective capabilities. The staff functions formulate the allocation collaboratively and make recommendations to the commander for decisioning. The determinations are identified in plans and disseminated to the force. Adjustments are made when necessary during operations or upon changes in available resources. Expedient COLPRO systems and measures are not addressed in doctrine, policy, and TTPs and are not included in consideration by planners and the force.

⁷ Expedient COLPRO systems and measures are not considered in planning as they are not addressed in existing doctrine, policy, and TTPs.

⁸ Current doctrine, policy, and TTPs are reliant upon existing COLPRO systems. Expedient COLPRO systems and measures are not addressed and are, therefore, not considered when planning for operations with threat.

⁹ Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term, as are two variants of the JSLNBCRS, and the M93A1 Fox NBCRS Block II.

¹⁰ JTCOPS Block I is projected for initial fielding during the mid term. The projected initial capabilities fielding of JECF is within the mid term and will include adaptive insertable COLPRO systems (including liner) for existing buildings/rooms and stand-alone COLPRO for small groups of personnel. JECF may provide the capability to provide COLPRO for critical activities and functions; however, JECF acquisition quantities have not as yet been determined.

¹¹ The projected Future Tactical Lift Option is under evaluation for the potential addition of COLPRO in the design and production specifications. A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

¹² JTCOPS Block II is projected for the far term. Continued fielding of JECF.

13.10.3 Functional Solution Analysis

13.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 2. Deficiency:** Expeditionary operations are a particular concern as most CBRND systems and associated logistics are not designed for a highly mobile force, with a reduced logistical footprint, and for the initial period of operations until the theater matures (usually the first 30–90 days).

Non-Materiel Solutions: *Doctrine:* Complete the JCIDS process and central correlation/ comparison of national and strategic plans to identify CBRND resources necessary and available to support expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization:* Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training:* Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting expeditionary operations. *Leadership:* Recognize differences and challenges associated with expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities:* Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.
- 3. Deficiency:** Inadequate COLPRO to support expeditionary and highly mobile forces.

Partial Non-Materiel Solutions: *Doctrine:* Develop and disseminate appropriate doctrine, policy, and procedures for the application of common materials for COLPRO and for COLPRO kits and components. *Organization:* Develop organizational structures, resources, staffing, and capabilities to enable effective application of available COLPRO and implementation of expedient COLPRO capabilities. *Training:* Establish initial and recurring

training of all members of the force on the conduct of expedient COLPRO. Exercises and evaluations incorporate criteria challenging this capability. *Leadership*: Recognize potential for expedient COLPRO to improve force capabilities and survivability. *Facilities*: Develop supporting infrastructure enabling expedient COLPRO and the effective application of available COLPRO.

- 4. Deficiency:** Quantities and availability of mobile COLPRO is inadequate.
Non-Materiel Solutions: *Doctrine*: Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.
- 5. Deficiency:** Not all critical facilities and activities are equipped with COLPRO.
Non-Materiel Solutions: *Doctrine*: Enforce existing doctrine and policy.
- 6. Deficiency:** Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.
Partial Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO for at-risk vessels (civilian contract and military). *Organization*: Develop organizational structures, resources, staffing, and capabilities to support COLPRO operations on vessels supporting operations and at-risk. *Training*: Train, exercise, and evaluate crews for vessel COLPRO operations for CBRND. *Leadership*: Recognize differences and challenges associated with CBRND operations by at-risk vessels (both military and contract civilian) supporting operations. *Facilities*: Develop supporting infrastructure (e.g., logistics, maintenance, power systems, etc.) for vessel COLPRO.
- 7. Deficiency:** USCG assets supporting operations are not adequately equipped with CBRND assets and resources.
Partial Non-Materiel Solutions: *Doctrine*: Establish with doctrine, policy, and procedures responsibilities for equipping, training, and supporting USCG assets supporting force operations during periods of other than declared war. *Organization*: Develop organizational structures, agreements, resources, and staffing to support and ensure survivability of supporting USCG resources. *Training*: Train, exercise, and evaluate USCG CBRND capabilities as integral component of force. *Leadership*: Recognize differences and challenges associated with CBRND operations by USCG assets and personnel; training providing skills and knowledge to managed operations involving these assets; and the ability and willingness to implement necessary changes and activities to prepare for and conduct

operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of the force, including allocated USCG assets and personnel.

8. Deficiency: Airlift assets (both tactical and strategic) are not equipped with COLPRO.

Partial Non-Materiel Solutions: *Doctrine*: Incorporate into doctrine, policy, and procedures the provision of COLPRO to aircrew and passengers in appropriate airframes (military and civilian). *Training*: Train, exercise, and evaluate aircrews and supporting entities for airframe COLPRO operations for CBRND. *Leadership*: Recognize criticality of protecting aircrew and passengers of appropriate tactical and strategic airframes from the effects of CBRN/TIM agents. *Facilities*: Develop supporting infrastructure (e.g., logistics, aircraft maintenance, etc.) for airframe COLPRO.

9. Deficiency: Current mobile COLPRO is inadequate to support operations by highly mobile forces.

Non-Materiel Solutions: *Doctrine*: Complete analysis and central correlation/comparison of national and strategic plans to identify quantities and types of mobile COLPRO (and supporting consumables) necessary and available to support highly mobile forces for envisioned plans and taskings. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct CBRND, including mobile COLPRO, of highly mobile forces. *Training*: Train, exercise, and evaluate CBRND, including mobile COLPRO, capabilities of the force in a CBRN/TIM threat during highly mobile force operations. *Leadership*: Recognize differences and challenges associated with CBRND operations by highly mobile forces, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for CBRND of highly mobile forces.

10. Deficiency: Maneuvering forces are inadequately equipped with COLPRO capabilities.

Non-Materiel Solutions: *Doctrine*: Complete the JCIDS process and central correlation/comparison of national and strategic plans to identify CBRND resources necessary and available to support maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct maneuver operations, particularly expeditionary operations during the first 30–90 days of operations following commencement of hostilities, while possessing reduced logistical footprint. *Training*: Train, exercise, and evaluate maneuver capabilities (particularly expeditionary capabilities) of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using organic, prepositioned, and planned CBRND resources supporting operations. *Leadership*: Recognize differences and challenges associated with maneuver operations, particularly expeditionary operations during the first 30–90 days following commencement of hostilities, with a reduced logistical footprint; training providing skills and knowledge to manage operations in these circumstances; and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

11. Deficiency: ECP kits, procedures, and training do not currently exist.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, procedures, and TTPs the use and application of ECP for CBRND. *Organization:* Organizational structures supporting the application of ECP for CBRND. *Training:* Develop institutional and unit-level training on the application of ECP to support operations and provide for CBRND of the force. *Leadership:* Ensure awareness and knowledge of versatility and application of ECP for operations within a CBRN/TIM environment. *Facilities:* Develop infrastructure to support ECP (e.g., logistics, training, etc.).

13.10.3.1 IMA Assessment Summary

Table 13.10-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches focus on procurement of existing systems, and development of field-expedient systems. Table 13.10-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.10-4. TASHLD 10: Materiel Approaches

Idea for Materiel Approach	Description
Develop COLPRO kits.	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits.	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Equipment and supplies protective packaging and containment systems.	Investigate and develop standardized CBRN/TIM protective packaging and containment systems (includes sprays, boxes, envelopes, drapes, etc.) for the protection of equipment and supplies from contact with CBRN/TIM agents
Field-expedient COLPRO kits.	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials.	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Topical.	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.10-5. TASHLD 10: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Equipment and Supplies Protective Packaging and Containment Systems	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Topical
Inadequate COLPRO to support expeditionary and highly mobile forces.	X	X	X	X	X	
Most naval vessels (including supply and transport vessels, carriers, and others) do not possess COLPRO.	X		X	X	X	
USCG assets supporting operations are not adequately equipped with CBRND assets and resources.	X		X	X	X	X
Airlift assets (both tactical and strategic) are not equipped with COLPRO.	X		X		X	
ECP kits, procedures, and training do not currently exist.	X	X	X	X	X	

13.11 Task TASHLD 11: Protect decontaminating personnel from decontaminants, contamination, and off-gassing

13.11.1 Functional Area Analysis

13.11.1.1 Definition

Includes standard (e.g., super tropical bleach) and nonstandard decontaminants (e.g., solvents and disinfectant chlorine). The large quantities of water and other decontaminants required for decontamination of facilities, equipment and supplies produce runoff containing both contaminants and decontaminants. Most decontaminants have negative effects on personnel skin and respiratory systems. This task includes protective measures to protect individuals charged with decontamination as well as those who come in contact with the decontaminants.

13.11.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.11.1.2.1 Supported Task: N/A

13.11.1.2.2 Lateral Task: TASHA 15

13.11.1.2.3 Supporting Task: N/A

13.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced Air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. No prepositioned materiel. (C2.8.4)

Civil. N/A

13.11.2 Functional Needs Analysis

13.11.2.1 Capability and Deficiency Assessment Summary

Table 13.11-1 discusses current and projected capabilities to accomplish this task. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

The current capabilities include both materiel and non-materiel capabilities. The Services currently field a variety of CBRND assets providing respiratory/ocular and percutaneous protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities is necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. Splash protection is afforded through the use of CBRND assets designed for this purpose or the application of wet-weather gear (including severe-weather gear). Splash protection is worn with respiratory/ocular and percutaneous CBRND assets. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. Detailed doctrine, policy, processes, and TTPs exist for the performance of this task and are effective for the protection of military personnel and selected eligible civilians (whose duties and responsibilities include decontamination operations) designated to conduct decontamination operations. Doctrine, policy, processes, and TTPs are also adequate and effective for personnel required to perform decontamination of assigned equipment and resources. However, other eligible civilians, particularly non-U.S. personnel, with potential decontamination operations responsibilities and requirements are not adequately addressed. Military decontamination unit/team personnel and selected eligible civilians (e.g., hazardous materials, firefighters, etc.) are trained using doctrine and Material Safety Data Sheet (MSDS) information on standard decontaminants to include their hazardous effects, associated protective measures, and, if necessary, Self-Aid/Buddy-Aid actions. This training is performed upon initial designation and is performed on a recurring basis. CBRND exercises and evaluations include decontamination operations and may include circumstances for implementation of Self-Aid/Buddy-Aid measures and actions.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to

reducing the logistics burden, development cost, and improved availability. The JSLIST and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection which will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Additional changes in capabilities from the mid term are not projected.

13.3.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Can be decontaminated.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.11-1. TASHLD 11: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4
Current				
<i>Individual Protection</i>	N/A	5	5	7
Respiratory/Ocular Protection	N/A	N/A	5 ¹	7 ²
Percutaneous Protection	N/A	N/A	5 ³	7 ²
Medical Protection	N/A	5 ⁴	N/A	7 ²
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	7 ⁵	N/A	7 ⁶	8 ⁷
<i>Unit Staff</i>	4 ⁸	6 ⁹	7 ¹⁰	7 ²
Near/Mid				
<i>Individual Protection</i>	N/A	5	6	7
Respiratory/Ocular Protection	N/A	N/A	6 ^{1,11}	7 ²
Percutaneous Protection	N/A	N/A	6 ^{3, 12}	7 ²
Medical Protection	N/A	5 ⁴	N/A	7 ²
<i>MOPP</i>	7 ⁵	N/A	7 ⁶	8 ⁷
<i>Unit Staff</i>	4 ⁸	6 ⁹	7 ¹⁰	7 ²
Far				
<i>Individual Protection</i>	N/A	5	7	7
Respiratory/Ocular Protection	N/A	N/A	7 ^{1,11, 13}	7 ²
Percutaneous Protection	N/A	N/A	7 ^{3,12, 14}	7 ²
Medical Protection	N/A	5 ⁴	N/A	7 ²
<i>MOPP</i>	7 ⁵	N/A	7 ⁶	8 ⁷
<i>Unit Staff</i>	4 ⁸	6 ⁹	7 ¹⁰	7 ²
Overall				
Current Overall Capability	6	6	6	7
Near/Mid-Term Overall Capability	6	6	7	7
Far-Term Overall Capability	6	6	7	7

	FAA Measure	Scale
M1	Force is trained on hazardous effects of decontaminants	<p>8–10: Force possesses and is trained using doctrine and MSDS information on hazardous effects and protective measures associated with decontaminants.</p> <p>4–8: Force possesses and is trained using doctrine and MSDS information on hazardous effects and protective measures associated with standard decontaminants.</p> <p>1–3: Selected force elements possess and are trained using doctrine and MSDS information on hazardous effects and protective measures associated with standard decontaminants.</p> <p>0: Force does not possess and are not trained using doctrine and MSDS information on hazardous effects and protective measures associated with decontaminants.</p>
M2	Self-Aid and Buddy-Aid procedures include treatment for exposure to decontaminants.	<p>8–10: Self-Aid and Buddy-Aid procedures provide specific instructions and processes for the identification of, and immediate field treatment for, exposure to hazardous decontaminants. All force members receive initial and recurring Self-Aid and Buddy-Aid training encompassing these procedures and are challenged in regularly scheduled exercises and evaluations.</p> <p>4–7: Self-Aid and Buddy-Aid procedures provide general instructions and processes for the identification of, and immediate field treatment for, exposure to hazardous decontaminants. All force members receive initial and recurring Self-Aid and Buddy-Aid training including these procedures and are periodically exercised and evaluated.</p> <p>1–3: Self-Aid and Buddy-Aid procedures provide limited guidance for the identification and field treatment of exposure to hazardous decontaminants. Force members receive initial and recurring Self-Aid and Buddy-Aid training including discussion of this guidance.</p> <p>0: Self-Aid and Buddy-Aid procedures and training do not address the identification and field treatment of exposure to hazardous decontaminants.</p>
M3	Decontamination unit/team personnel are equipped with IPE to include splash protective coverings.	<p>8–10: Decontamination unit and team personnel are equipped with adequate splash and CBRN/TIM IPE protection.</p> <p>4–7: Decontamination unit and team personnel are equipped with CBRN/TIM IPE protection and limited splash protection.</p> <p>1–3: Decontamination unit and team personnel are equipped with CBRN/TIM IPE protection and selected members are equipped with splash protection.</p> <p>0: Decontamination unit and team personnel are not equipped with CBRN/TIM IPE and splash protection.</p>
M4	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTMLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTMLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTMLPF is inadequate for accomplishment of this task.</p> <p>0: DOTMLPF does not exist for this task.</p>

¹ Personnel designated to perform decontamination operations are trained on the proper wear of protective respiratory/ocular protection as outlined in doctrine, policy, procedures, and TTPs. Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source for handling and transporting personnel and resources. The application of standard warfighter IPE to exposed/contaminated casualties provides containment of the potential contamination within the IPE, a requirement that may not be achievable for certain types of casualties. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by

personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Eligible civilians are inadequately addressed in DOTLPF.

² Detailed doctrine, policy, processes, and TTPs exist for the performance of this task and are effective for the protection of military personnel and selected eligible civilians (whose duties and responsibilities include decontamination operations) designated to conduct decontamination operations. Doctrine, policy, processes, and TTPs are also adequate and effective for personnel required to perform decontamination of assigned equipment and resources. However, other eligible civilians, particularly non-U.S. personnel, with potential decontamination operations responsibilities and requirements are not adequately addressed.

³ Personnel designated to perform decontamination operations are trained on the proper wear of percutaneous protective protection as outlined in doctrine, policy, procedures, and TTPs. Military personnel performing decontamination operations are required to wear CBRND percutaneous protection against the potential for secondary exposure/contamination. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing decontamination operations in the AO. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Decontamination units/teams apply the CB Protective Boot (similar to firefighter boots) for decontamination operations. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

⁴ Military decontamination unit/team personnel and selected eligible civilians (e.g., hazardous materials, firefighters, etc.) are trained using doctrine and MSDS information on standard decontaminants to include their hazardous effects, associated protective measures, and, if necessary, Self-Aid/Buddy-Aid actions. This training is performed upon initial designation and is performed on a recurring basis. CBRND exercises and evaluations include decontamination operations and may include circumstances for implementation of Self-Aid/Buddy-Aid measures and actions.

⁵ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND actions, activities, and requirements to mitigate or prevent the effects of CBRN/TIM agents.

⁶ MOPP instructions for personnel performing decontamination operations include appropriate adjustments to include provisions addressing splash protective equipment worn by military personnel over CBRND individual protective equipment to preclude saturation and potential secondary exposure/contamination.

⁷ Unit plans, SOPs, and guidance incorporate MOPP levels and methodologies under existing doctrine, policy, and TTPs. Adjustments for local threat and requirements, such as decontamination operations, are addressed and disseminated.

⁸ Unit SOPs, processes, and guidelines address the performance of decontamination of contaminated resources. Military decontamination units/team personnel and selected eligible civilians (e.g., hazardous materials, firefighters, etc.) designated to perform decontamination operations are trained based upon doctrine and MSDS data for standard decontaminants to include their hazardous effects and associated protective measures. Other military force members are provided training for the conduct of field decontamination of their equipment and assigned resources.

⁹ Unit SOPs, processes, and guidelines include treatment instructions for exposure to decontaminants in Self-Aid/Buddy-Aid for personnel designated to perform decontamination operations. Initial and recurring training is performed and tracked of training. Unit exercises and evaluations are conducted to maintain expertise and readiness to perform decontamination operations.

¹⁰ Unit command staff plan, allocate, position, and provide individual protective equipment assets to protect the force. These actions include the identification, acquisition, readiness, and application of assets required to protect Decontamination Unit/Team personnel, including splash protection. Doctrine, however, does not adequately address the provision of protective assets to nonmilitary personnel, particularly non-U.S. personnel, with decontamination operations responsibilities and tasks.

¹¹ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

¹² Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/ facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

¹³ The next-generation series of nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

¹⁴ The next-generation series of nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

13.11.3 Functional Solution Analysis

13.11.3.1 DOTLPF Assessment Summary

- 1. Deficiency:** The command staff do not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to eligible civilians, detainees, evacuees, and other non-U.S. military identified groups.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing civilian personnel, detainees, non-U.S. personnel, and other groups and operations for CBRND. *Organization:* Identify organizational services and activities supporting the mission performed by civilian personnel and operations. Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians, detainees, evacuees, and other identified groups. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians, detainees, and other designated personnel. Conduct CBRN/TIM training, exercises, and evaluations including these groups, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians, detainees, and other designated personnel. *Personnel:* Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities:* Develop supporting infrastructure for eligible civilian, detainees, and other designated group CBRND (e.g., logistics, medical, training, communications, security, etc.).

13.11.3.2 IMA Assessment Summary

Not required. No materiel deficiencies identified.

13.12 Task TASHLD 12: Implement large-scale medical CBRN operations

13.12.1 Functional Area Analysis

13.12.1.1 Definition

Establish and implement the efficient and consistent application of medical care and measures preparing and protecting the force against the debilitating effects of CBRN/TIM hazards (threat or actual). Includes the identification, movement, application, and management of resources to perform immunizations of the force and eligible civilians. Also includes the isolation of infected or contaminated personnel and/or MWA until risk is resolved, the restriction of movement to, and the conduct of quarantine to prevent the spread of infectious disease, and the evacuation of casualties to medical facilities. Addresses the full range of necessary resources required to attend to and resolve the circumstances.

13.12.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.12.1.2.1 Supported Task: OPSHLD 13

13.12.1.2.2 Lateral Tasks: TASHA 15, TASHA 24

13.12.1.2.3 Supporting Task: N/A

13.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Poor personnel nutrition and health. (C2.2.4.1)
5. Good personnel physical conditioning. (C2.2.4.3)
6. Poor mission-essential government-service civilian physical conditioning. (C2.2.4.3 – NEW)

7. Poor mission-essential contract-service civilian physical conditioning. (C2.2.4.3 – NEW)
8. Negligible personnel experience. (C2.2.4.5)
9. Some interoperability. (C2.2.6)
10. Partial multinational integration. (C2.3.1.2)
11. Limited staff expertise. (C2.3.1.3)
12. Limited deployed supplies. (C2.8.2)
13. Limited CONUS resupply. (C2.8.3)
14. No prepositioned materiel. (C2.8.4)
15. No host-nation support. (C2.8.5)
16. Negligible to limited commercial procurement (C2.8.6)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Uncertain international organization support. (C3.1.2.5)
4. Poor civil health. (C3.3.1.4)
5. High health risk. (C3.3.1.5)
6. Moderate to severe refugee impact. (C3.3.2)

13.12.2 Functional Needs Analysis

13.12.2.1 Capability and Deficiency Assessment Summary

Table 13.12-1 discusses current and projected capabilities to accomplish this task. The task requires the application of the full range of Shield CBRND activities and resources for successful accomplishment. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Limited capabilities currently exist for large-scale medical operations, particularly circumstances involving unanticipated threats/hazards within the AOR once military operations have commenced. Preplanning for large-scale medical operations is performed when the need is anticipated upon evaluation of adversary threat capabilities. However, preplanning for the conduct of these operations within the AOR for unanticipated threats/hazards is generally not performed until there is a determination of need. The ability to adequately respond to circumstances improves as operations are established, resources are applied, and supporting structures are in place. However, the initial period of operations is expected to be a reflection of attempts to ascertain the scope of the situation, identify resources, and coordinate necessary actions. Resources within the AOR are initially applied, in these circumstances, until additional resources are allocated and in place. Close coordination and cooperation between operational and medical services units/elements are essential to the rapid and accurate response and support of necessary large-scale medical operations. DOTLPF for the protection of U.S. military personnel

is adequate when involving contaminated casualties. However, DOTLPF is inadequate to address large numbers of eligible civilians, particularly non-U.S. personnel such as indigenous populations, third-party nationals, detainees, and others. Additionally, DOTLPF does not adequately address the protection of casualties unable to wear CBRND protection and the application of negative-pressure COLPRO for the transport and mass sheltering of infectious/contaminated casualties. DOTLPF is inadequate to address force actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.). The distinction between medical infectious disease control equipment and measures by medical care providers and MOPP application to supporting force members is not identified in MOPP DOTLPF. Training for large-scale medical operations involving CBRN/TIM agents is inadequate. AMEDD institutional training for the treatment of contaminated/infectious casualties is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the command staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements prior to deployment. Generally, until completion of decontamination, casualty care is performed by medical corpsmen and not medical practitioners. Mass medical operations may not be possible until the theater matures or additional resources are allocated to force. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The force staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWA. Current doctrine and policy do not adequately address sustained operations within a CBRN/TIM environment. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and collective protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. The assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Existing Service-specific IPE is limited on the period and scope of protection afforded the warfighter. Physiological and psychological encumbrances increase with prolonged wear. This tendency requires regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities. Current site COLPRO generally requires extensive site preparation and resources to erect, operate, and strike but cannot be erected/struck in a CBRN/TIM environment. Mobile COLPRO runs a diversity from forced clean air systems to full COLPRO, but are limited on their application. In general, current COLPRO is limited in quantity and does not adequately support expeditionary and highly mobile maneuver operations, particularly those in an austere environment with reduced logistical footprints. Many mobile platforms (including land, sea, and air) are not equipped with COLPRO. This circumstance requires the application of IPE to offset the situation. Medical prophylaxes do exist for the protection of the warfighter against a limited number of biological and chemical agents. However, few are FDA approved. A number possess IND authorization for application. Medications are considered for their potential prophylactic value, but are not always approved for this purpose by the FDA. Not all threat CBRN agents are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians and MWAs are not adequately addressed by DOTLPF for CBRND. Clear DOTLPF addressing the provisioning and training of eligible civilians with CBRND is inadequate. MWAs are not

afforded protection against the effects of CBRN/TIM agents, including COLPRO. MOPP DOTLPF is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reduce the logistics burden, development cost and improve availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be fielded during the mid term. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the fielding of the joint systems of IPE. Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents. JECF is projected to initially field during the mid term with three COLPRO systems primarily addressing expeditionary operations. These systems, depending upon the quantity fielded, may provide additional COLPRO to address critical needs.

Projected Far-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services which will reduce the logistics burden, development cost and improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of IPE until complete fielding to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time.

13.12.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): USAF combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: USN/USMC system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes CB filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaced M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Medical Barrier Assets: Standard barrier assets applied by Medical Services personnel against contact with biohazards. May provide a degree of additional barrier protection against CBRN hazards when applied with IPE.

Patient Protective Wrap (PPW): Enclosed casualty bag made of CBRN protective materials. Incorporates small flexible transparent window positioned over casualties face for viewing by medical practitioners. Uses cardboard stays to maintain separation of bag from casualty's face. Does not permit head-to-toe viewing of casualty. Supports limited medical assistance. Requires the wear of standard warfighter respiratory/ocular protection. Two wraps currently in stock. Legacy system provides protection up to 3 hours and newer system up to 6 hours.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

3. Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

COLPRO

1. Mobile COLPRO

CBPS: M1113 HMMWV-mounted COLPRO system consisting of a hardshell filtration, power, and transport and expandable softshell tentage with contamination control area/entry. The COLPRO unit is designated the Lightweight Multipurpose shelter (LMS).

Crewed Combat Vehicles (Ground): Two types of COLPRO. First supplies filter air using forced clean air supply system. Requires wear of IPE and connection to crew mask. This is the type of system in the M1A1 Abrams MBT. Second system is incorporates full COLPRO and permits reduction of IPE during operation. JSLNBCLR is an example of the second type of system.

Airframe Air Supply System: Provides clean air from compressed air storage system until aircraft is outside of contamination and airframe interior is flushed of vapor contaminants or throughout flight operations.

CITADEL: System of protection installed with USN vessels to afford protection to selected connected spaces including C4ISR, medical, and R2.

2. Fixed-Site COLPRO

MGPTS: USMC Medium General Purpose Tent System (MGPTS) with CB Protective Liner System designed for support of USMC operational C4ISR and R2.

CP-DEPMEDS: Component-based system of tentage, connective corridors, ISO containers, etc., with COLPRO liners for configuration into field hospitals and includes supporting power and utility systems, lighting, engine control units, and filtration systems. Large system requiring extensive use of resources to prepare location, erect/strike, operate, and maintain.

JTCOPS: Similar to CP-DEPMEDS, but for critical functions and activities of the force (e.g., staff operations, aircrew housing and briefing, etc.).

CP-EMEDS: USAF air-transportable system similar to CP-DEPMEDS on a smaller scale and configurable from one medical shelter to a 25-bed field hospital.

CP-SSS: USAF small-scale COLPRO transportable system designed to support C2 functions.

JECP: Projected program of COLPRO designed for application in highly mobile operations, expeditionary operations, forced-entry operations, and/or to supplement larger-scale COLPRO systems in support of operations. Consists of building/room and tentage insert kits and small-unit stand-alone COLPRO kits.

M20/M20A1 SCPE: Lightweight and modular COLPRO system consisting of an inflatable liner for insert into rooms or buildings.

Building integrated COLPRO systems: COLPRO systems designed and installed into buildings as integral systems, usually facility construction. Post-construction installation is based upon building design and COLPRO requirements. Varies between buildings based upon applied technology, date of construction/installation, system engineering, facility function, etc. Most existing facility COLPRO was established during Cold War period.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.12-1. TASHLD 12: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current											
<i>Individual Protection</i>	2	5.7	4	8	N/A	3	6	6.7	5.5	5	3
Respiratory/Ocular Protection	2 ¹	6 ²	N/A	N/A	N/A	N/A	5 ³	7 ²	5 ³	5 ⁴	3 ⁵
Percutaneous Protection	2 ¹	6 ⁶	N/A	N/A	N/A	N/A	5 ⁷	7 ⁶	5 ⁷	5 ⁴	3 ⁵
Medical Protection	2 ¹	5 ⁸	4 ⁸	8 ⁹	N/A	3 ¹⁰	7 ¹⁰	6 ¹⁰	6 ¹⁰	5 ⁴	3 ⁵
<i>Collective Protection</i>	3	3	N/A	N/A	N/A	N/A	2	5.5	5.5	5	2
Mobile COLPRO	3 ¹¹	3 ¹²	N/A	N/A	N/A	N/A	2 ¹³	5 ¹²	5 ¹²	5 ⁴	2 ¹⁴
Fixed-Site COLPRO	3 ¹¹	3 ¹⁵	N/A	N/A	N/A	N/A	N/A	6 ¹⁵	6 ¹⁵	5 ⁴	2 ¹⁵
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	3 ¹⁶	6 ¹⁷	4 ¹⁸	7 ¹⁸	N/A	4 ¹⁸	5 ¹⁹	8 ¹⁷	8 ¹⁷	6 ¹⁷	3 ²⁰
<i>Unit Staff</i>	3 ²¹	4 ²²	4 ²³	8 ²⁴	5 ²⁵	4 ²⁶	3 ²⁷	7 ²⁸	6 ²⁹	5 ³⁰	3 ³⁰
Near/Mid											
<i>Individual Protection</i>	2	5.7	4	8	N/A	3	6	6.7	5.5	5	3
Respiratory/Ocular Protection	2 ¹	6 ^{2,31}	N/A	N/A	N/A	N/A	5 ³	7 ^{2,31}	5 ³	5 ⁴	3 ⁵
Percutaneous Protection	2 ¹	6 ^{6,32}	N/A	N/A	N/A	N/A	5 ⁷	7 ^{6,32}	5 ⁷	5 ⁴	3 ⁵
Medical Protection	2 ¹	5 ^{8,33}	4 ^{8,33}	8 ⁹	N/A	3 ¹⁰	7 ¹⁰	6 ¹⁰	6 ¹⁰	5 ⁴	3 ⁵
<i>Collective Protection</i>	3	3	N/A	N/A	N/A	N/A	2	5.5	5.5	5	2
Mobile COLPRO	3 ¹¹	3 ^{12,34}	N/A	N/A	N/A	N/A	2 ¹³	5 ^{12,34}	5 ^{12,34}	5 ⁴	2 ¹⁴
Fixed-Site COLPRO	3 ¹¹	3 ^{15,35}	N/A	N/A	N/A	N/A	N/A	6 ¹⁵	6 ¹⁵	5 ⁴	2 ¹⁵
<i>MOPP</i>	3 ¹⁶	6 ¹⁷	4 ¹⁸	7 ¹⁸	N/A	4 ¹⁸	5 ¹⁹	8 ¹⁷	8 ¹⁷	6 ¹⁷	3 ²⁰
<i>Unit Staff</i>	3 ²¹	4 ²²	4 ²³	8 ²⁴	5 ²⁵	4 ²⁶	3 ²⁷	7 ²⁸	6 ²⁹	5 ³⁰	3 ³⁰
Far											
<i>Individual Protection</i>	2	5.7	4	8	N/A	3	6	6.7	5.5	5	3
Respiratory/Ocular Protection	2 ¹	6 ^{2,31,36}	N/A	N/A	N/A	N/A	5 ³	7 ^{2,31,36}	5 ³	5 ⁴	3 ⁵
Percutaneous Protection	2 ¹	6 ^{6,32,37}	N/A	N/A	N/A	N/A	5 ⁷	7 ^{6,32,37}	5 ⁷	5 ⁴	3 ⁵
Medical Protection	2 ¹	5 ^{8,33,38}	4 ^{8,33,38}	8 ⁹	N/A	3 ¹⁰	7 ¹⁰	6 ¹⁰	6 ¹⁰	5 ⁴	3 ⁵
<i>Collective Protection</i>	3	3	N/A	N/A	N/A	N/A	2	5.5	5.5	5	2
Mobile COLPRO	3 ¹¹	3 ^{12,34,39}	N/A	N/A	N/A	N/A	2 ¹³	5 ^{12,34,39}	5 ^{12,34,39}	5 ⁴	2 ¹⁴
Fixed-Site COLPRO	3 ¹¹	3 ^{15,35,40}	N/A	N/A	N/A	N/A	N/A	6 ^{15,35,40}	6 ^{15,35,40}	5 ⁴	2 ^{15,35,40}
<i>MOPP</i>	3 ¹⁶	6 ¹⁷	4 ¹⁸	7 ¹⁸	N/A	4 ¹⁸	5 ¹⁹	8 ¹⁷	8 ¹⁷	6 ¹⁷	3 ²⁰

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
<i>Unit Staff</i>	3 ²¹	4 ²²	4 ²³	8 ²⁴	5 ²⁵	4 ²⁶	3 ²⁷	7 ²⁸	6 ²⁹	5 ³⁰	3 ³⁰
Overall											
Current Overall Capability	3	5	4	8	5	4	4	7	6	5	3
Near/Mid-Term Overall Capability	3	5	4	8	5	4	4	7	6	5	3
Far-Term Overall Capability	3	5	4	8	5	4	4	7	6	5	3

	FAA Measure	Scale
M1	Plans address large-scale medical operations resulting from CBRN/TIM exposure/contamination.	<p>8–10: Detailed plans exist and are coordinated between operational and medical services staffs for large-scale CBRN/TIM medical operations within the AO involving the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>4–7: Plans exist and are coordinated between operational and medical services staffs for Medical Services support of operations within the AO involving CBRN/TIM threat and address large-scale medical operations involving the force and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>1–3: Plans exist and are coordinated between operational and medical services staffs for Medical Services support of operations within the AO involving CBRN/TIM threat and address large-scale medical operations involving the force.</p> <p>0: Operational and Medical Services staff coordinated plans do not exist for the AO addressing large-scale medical operations involving CBRN/TIM threats.</p>
M2	Tactical medical facilities are able to treat and isolate contaminated/infectious casualties.	<p>8–10: All tactical medical facilities are equipped and exercised for the reception, decontamination, treatment, and protection of contaminated/infectious casualties. All assigned medical practitioners and medical support personnel (including EMS, medical aides, etc.) are formally trained, receive recurring training, and are equipped with CBRND protective assets/materials, for the evaluation/care and protection of contaminated/infectious casualties safely and effectively. Medical provider medical treatment is provided, when needed, throughout the medical process.</p> <p>4–7: Tactical medical facilities are equipped and exercised for the reception, decontamination, treatment, and protection of contaminated/infectious casualties. Formal training and CBRND protective assets/materials are available for the evaluation/care and protection of contaminated/infectious casualties. Medical support personnel are trained on the evaluation, decontamination, care, and protection of contaminated/infectious casualties.</p> <p>1–3: Tactical medical facilities are equipped for the reception, decontamination, limited treatment, and COLPRO protection of contaminated/infectious casualties. Medical personnel are equipped with CBRND protective assets/materials to conduct the evaluation/care and COLPRO protection of contaminated/infectious casualties. General medical training of medical practitioners and medical support staff is the basis for the performance of evaluation, decontamination, and treatment of contaminated/infectious casualties.</p> <p>0: Tactical medical facilities are not adequately equipped to conduct reception, decontamination, treatment, and protection of contaminated/infectious casualties.</p>

M3	Forces are immunized against threat agents.	<p>8–10: Medical CBRND countermeasures and preventative medical measures exist and are employed for all threat agents and encompass all eligible at-risk populations.</p> <p>4–7: Medical CBRND countermeasures and preventative medical measures exist and are employed for the protection of U.S. military and eligible civilians supporting the mission for threat agents.</p> <p>1–3: Medical CBRND countermeasures and preventative medical measures exist and are employed for the protection of U.S. military personnel for threat agents.</p> <p>0: Medical CBRND countermeasures and preventative medical measures are not employed for threat agents.</p>
M4	Forces completed deployment medical preparation.	<p>8–10: All eligible at-risk force populations are medically prepared for operations with threat.</p> <p>4–7: U.S. military and eligible civilians supporting the mission are medically prepared for operations with threat.</p> <p>1–3: U.S. military personnel are medically prepared for operations with threat.</p> <p>0: Forces are not medically prepared for operations with threat.</p>
M5	In-place system is operational for tracking status of personnel and MWA immunizations, pre-treatments, antidotes, and medical treatment.	<p>8–10: Tactical Medical Information Systems (MISs) incorporate automated tracking of the status, issuance, and administration of vaccines, pretreatments, antidotes, and medical treatment for all force personnel (U.S. military, MWAs, and eligible civilians). Systems are integrated and interoperable with higher-echelon MISs.</p> <p>4–7: Tactical MISs and/or manual processes provide for the tracking of the status, issuance, and administration of vaccines, pretreatments, antidotes, and medical treatment for U.S. military and eligible civilians.</p> <p>1–3: Predominantly manual processes are applied for the tracking of the status, issuance, and administration of vaccines, pretreatments, antidotes, and medical treatment for U.S. military personnel.</p> <p>0: Processes and systems do not exist to track the status, issuance, and administration of vaccines, pretreatments, antidotes, and medical treatment to the force.</p>
M6	Disease and CBRN/TIM countermeasures are issued.	<p>8–10: Medical CBRND countermeasures exist for all threat CBRN and high-risk TIM agents and encompass all eligible at-risk populations.</p> <p>4–7: Medical CBRND countermeasures exist for selected high-threat CBRN and high-risk TIM agents for U.S. military and eligible civilian members.</p> <p>1–3: Medical CBRND countermeasures are inadequate for high-threat CBRN and/or high-risk TIM agents and/or application by U.S. military and/or eligible civilian members.</p> <p>0: Medical CBRND countermeasures do not exist for high-threat CBRN and/or high-risk TIM agents and/or application by U.S. military and/or eligible civilian members.</p>
M7	Contaminated/infectious personnel and MWAs are safely transported	<p>8–10: In-place doctrine, protective assets, and training provide for the safe handling and transport of exposed, infectious, or contaminated personnel/MWAs without potential for secondary exposure, infection, or contamination of personnel, activities, transport assets, and resources performing the handling and transport.</p> <p>4–7: Doctrine and training address the safe handling and transport of exposed, infectious, or contaminated personnel/MWAs and protective assets are applied to prevent secondary exposure, infection, or contamination of personnel and assets performing the handling and transport.</p> <p>1–3: Doctrine generally addresses the safe handling and transport of exposed or contaminated casualties and protective assets are applied to prevent secondary exposure or contamination of personnel performing the handling and transport.</p> <p>0: Doctrine and assets do not exist to safely handle and transport exposed, infectious, or contaminated personnel/MWAs.</p>

M8	Large-scale quarantine sheltering and treatment operations are established in accordance with medical plans	<p>8–10: Plan identified coordination and required directions are accomplished, policies, and processes appropriately implemented, resources are in place, and operations are established and maintained for large-scale quarantine sheltering and treatment as outlined in established coordinated medical plans for the AO.</p> <p>4–7: Plan identified coordination and directives are accomplished, policies, and processes are adjusted to reflect available and in-place resources, and operations are established for large-scale quarantine sheltering and treatment using prior established and coordinated medical plans for the AO as guidance.</p> <p>1–3: Coordination and directives are accomplished, policies, and processes are developed, available resources are applied, and limited operations are established for initial large-scale quarantine sheltering and treatment based upon general guidance in medical plans for the AO.</p> <p>0: Large-scale medical operations are not established in accordance with medical plans or medical plans for the AO do not exist for quarantine sheltering and treatment operations.</p>
M9	Large-scale quarantine sheltering and treatment operations possess sufficient capability to meet needs.	<p>8–10: Detailed plans exist and are coordinated between operational and medical services staffs for large-scale CBRN/TIM medical operations within the AO involving the forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.). Planned operations are developed to address reasonable expectations of needs and are scalable to support unanticipated demands.</p> <p>4–7: Plans exist and are coordinated between operational and medical services staffs for Medical Services support of operations within the AO involving CBRN/TIM threat and address large-scale medical operations involving the force and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.). Planned operations are developed to address reasonable expectations of needs and are scalable to support unanticipated demands.</p> <p>1–3: Plans exist and are coordinated between operational and medical services staffs for Medical Services support of operations within the AO involving CBRN/TIM threat and address large-scale medical operations involving the force. Planned operations are developed to address expectations of needs and are scalable to support unanticipated demands.</p> <p>0: Operational and Medical Services staff coordinated plans do not exist for the AO addressing large-scale medical operations involving CBRN/TIM threats.</p>
M10	Required resources are available to perform mass medical operations.	<p>8–10: Plans, taskings, and resources exist and are available for the effective implementation and support of large-scale CBRN/TIM medical operations within the AO involving forces and non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).</p> <p>4–7: Plans exist and identify taskings and resources for the implementation and support of large-scale medical operations within the AO.</p> <p>1–3: Plans exist and generally identify taskings and resources for the implementation and/or support of large-scale medical operations within the AO.</p> <p>0: Plans do not exist identifying taskings and resources for the implementation and support of large-scale medical operations within the AO.</p>
M11	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTLPPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations.</p> <p>4–7: Most critical aspects of DOTLPPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPPF is inadequate for accomplishment of this task.</p> <p>0: DOTLPPF does not exist for this task.</p>

¹ Plans for operations with threat incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND individual protective equipment and measures to mitigate or prevent the effects of CBRN/TIM agents upon critical functions, activities, and operations. However, preplanning for the conduct of large-scale medical operations within the AO for unanticipated threats/hazards is generally not performed. Planning and operations addressing events of this nature occur upon determination of need.

² Medical personnel are trained on the proper wear of protective respiratory/ocular protection as outlined in doctrine, policy, procedures, and TTPs. Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source for handling and transporting personnel and resources. The application of standard warfighter IPE to exposed/contaminated casualties provides containment of the potential contamination within the IPE, a requirement that may not be achievable for certain types of casualties. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection. Eligible civilians are inadequately addressed in DOTLPF.

³ Doctrine, policy, procedures, and TTPs exist for the movement of infectious/contaminated casualties to medical treatment. Military personnel performing handling and transport are required to wear CBRND ocular/respiratory protection against the potential for secondary exposure/contamination. Casualties able to wear standard IPE are not placed into PPWs. Doctrine requires the individual's unit of assignment provide individual protective assets when the individual is received. However, the ability of any unit to pull and transfer equipment with each casualty, especially during operations, is generally not considered. Medical units, however, are not equipped with additional protective material for existing patients and replacement assets for casualties. Noninfectious/uncontaminated casualties unable to wear standard IPE are placed into PPWs to protect against exposure/contamination when moving through a hazard/contaminated area. Contaminated casualties must be able to wear standard IPE to protect against secondary contamination by transporting and handling personnel, a requirement that may not be achievable for certain types of casualties. Standard warfighter respiratory/ocular protection is worn by the casualty and requires the ability to provide a seal and obtain a draw against filter resistance. Further, military personnel handling and transporting casualties in PPWs, whether infectious/contaminated or not, are required to wear CBRND IPE. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving infectious/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed.

⁴ Doctrine, policy, and procedures are adequate for planning, movement, management, and positioning of materiel (including CBRND materiel) in support of operations. CBRND materiel for an operation addresses the identified threat. The allocation and dissemination of CBRND materiel is managed by the staff based upon plans, operational requirements, anticipated or experienced threat, available resources, and the maturity of the theater. However, preplanning for the allocation, positioning, and tasking of resources for the conduct of large-scale medical operations within the AO for unanticipated threats/hazards is generally not performed. Planning and operations addressing events of this nature occur upon determination of need and are coordinated with the JTF and Medical Services staffs.

⁵ DOTLPF does not adequately address the provision of individual protection of non-U.S. military personnel supporting or are otherwise addressed by this task. Additionally, DOTLPF does not adequately address the protection of casualties unable to wear respiratory/ocular CBRND protection. Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source for handling and transporting personnel and resources. The application of PPW to exposed/contaminated casualties provides containment of the potential contamination within the wrap.

⁶ Medical personnel are trained on the proper wear of percutaneous protective protection as outlined in doctrine, policy, procedures, and TTPs. Doctrine, policy, procedures, and TTPs exist for the handling of contaminated casualties for medical treatment. Military personnel performing handling and transport are required to wear CBRND percutaneous protection against the potential for secondary exposure/contamination. Casualties able to wear standard IPE are not placed into PPWs. Uncontaminated/noninfectious casualties unable to wear standard IPE are placed into PPWs to protect against exposure/contamination when moving through a contaminated area. Contaminated casualties must be able to wear standard IPE to protect against secondary contamination by transporting and handling personnel, a requirement that may not be achievable for certain types of casualties.

Further, military personnel handling and transporting casualties in PPWs, whether infectious/contaminated or not, are required to wear CBRND IPE. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving infectious/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids. Protective measures and application of medical protective resources are applied by medical practitioners and supporting staff during treatment and quarantine/isolation operations. These measures and resources generally follow standard medical requirements and guidance for infectious disease control medical practices and are not applicable to MOPP and CBRND. Standard warfighter individual protection may continue to be applied by medical unit personnel during treatment and management of isolated/quarantined personnel but is the decision of the conducting medical services unit commander. Nonmedical personnel supporting these operations (e.g., security, transport, administration, etc.), are considered subject to MOPP methodologies and level requirements. The distinction is not adequately addressed in existing DOTLPF between protection for medical care and supporting activities.

⁷ Doctrine, policy, procedures, and TTPs require the application of percutaneous protection by handling and transporting personnel against the potential for secondary exposure/contamination. Standard warfighter percutaneous protection is worn by military personnel performing these functions. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing handling and transport activities potentially involving infectious/contaminated personnel. However, OSHA and CDC requirements may apply and should be addressed, as applicable. Non-U.S. personnel subject to these functions are not addressed. Infectious and contaminated casualties (human and MWA) unable to wear percutaneous protection are not adequately addressed in doctrine, policy and standards. Protective equipment is not available for these casualties. The PPW may not be medically advisable for all casualties. Standard warfighter respiratory/ocular protection is worn by the casualty and requires the ability to provide a seal and obtain a draw against filter resistance. Further, the PPW is limited in the number of hours of afforded protection, depending upon date of manufacture. PPWs in stock prior to 2004 have a maximum protection time period of 3 hours. PPWs obtained for stockage in 2004 and subsequently provide protection up to 6 hours. This period is considered adequate for most initial casualty movements within the AO. Casualties able to wear standard percutaneous protection assets are required to apply the equipment outside of CPSs. However, medical units are not provided stocks of this equipment for use by patients. Medical policy is the patient's unit is responsible for providing the material to the medical unit for use by the patient. Operationally involved units may be delayed, at best, in providing the assets.

⁸ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Military personnel are administered and/or issued CBRND medical countermeasures for operations with threat. Vaccines for selected biological agents, topicals, and preexposure and/or post-exposure/presymptomatic medications are applied to mitigate or preclude the effects of specific CBRN/TIM agents. Currently, preexposure prophylaxis is available for nerve agents (G and V series), and vesicants (H, HD, HN, L, CX), topical only. SERPACWA is the preexposure countermeasure for vesicants and one nerve agent. TSP is approved by the FDA as a supplement for SERPACWA. Post-exposure prophylaxis is available for pulmonary (CG) agent, but is not FDA approved. Radioprotective steroids and neutraceuticals may be effective as pre- and post-exposure prophylactics. 5-androstenediol is an IND preexposure treatment for radiological exposure. Iodide/potassium iodide is FDA approved for application against Iodine 131, 132, 134, and 135. Post-exposure radiological

exposure prophylaxis consists of neutraceuticals, plant isoflavone genistein, and alpha tocopherol (Vitamin E) but are not approved by the FDA for prophylaxis against radiation. FDA-approved preexposure medical countermeasures are available for anthrax, cholera, HFRS (Haantan), Rift Valley fever, yellow fever, HFRS (Haantan), and smallpox. IND status vaccines are currently available for Q-fever, tularemia (although use has been placed on hold by the FDA), Botulinum, Junin hemorrhagic fever, and VEE/WEE/EEE. Antiviral/bacterial medications may be administered and/or issued to provide a level of protection against biological agents. Medical prophylaxes are developed for the military force. Prophylaxes for MWAs are virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as long-term health issues and legal implications.

⁹ Medical screening and preparation of deploying personnel include the administration of immunizations addressing the anticipated threats. Military members tasked to participate in operations with threat are briefed on the threat agents and associated CBRND measures, including medical prophylaxes. If pre- and/or post-exposure/presymptomatic prophylaxes are issued, the force is trained on the use of the medication. However, CBRND prophylaxes for MWAs do not exist, and DOTLPF is inadequate for the training of non-U.S. military personnel for prophylactic treatment of CBRN/TIM agent exposure.

¹⁰ CBRND medical countermeasures are issued/administered to address the threat. Military members tasked to participate in operations with threat are briefed on the threat agents and associated CBRND measures, including medical prophylaxes. If pre- and/or post-exposure/presymptomatic prophylaxes are issued, the force is trained on the use of the CBRND medical countermeasures. However, CBRND prophylaxes for MWAs do not exist, and DOTLPF is inadequate for the training of non-U.S. military personnel for prophylactic treatment of CBRN/TIM agent exposure.

¹¹ Plans for operations with threat incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND COLPRO to mitigate or prevent the effects of CBRN/TIM agents upon critical functions, activities, and operations. However, preplanning for the conduct of large-scale medical operations within the AO for unanticipated threats/hazards is generally not performed. Planning and operations addressing events of this nature occur upon determination of need.

¹² Negative-pressure COLPRO with filtered expelled air does not exist within the inventory for the transport and housing of numbers of infectious/contaminated casualties. Hospital ships are not equipped with COLPRO. All current COLPRO systems in land, air, and sea assets are not designed for the containment and transport of infectious/contaminated casualties. Casualties must be decontaminated before entry into COLPRO. COLPRO, however, may be applied for the protection of noninfectious/uncontaminated casualties against exposure/contamination to CBRN/TIM agents. Current mobile COLPRO systems are predominantly integrated into selected combat vehicles/vessels and do not support transport of exposed/contaminated casualties. The only currently fielded land-based mobile COLPRO is CBPS. The CBPS system is available on a mobile platform and can provide a limited number of people protection. The CBPS consists of a dedicated M1113 HMMWV with an LMS mounted on the back and provides a highly mobile, contamination-free, environmentally controlled work area for forward deployed medical units. The CBPS has been fielded to treatment squads, forward surgical teams, and medical companies. Four personnel are required to operate the CBPS. However, these systems are limited in supply and cannot provide COLPRO during movement. Selected U.S. Naval combat vessels may be equipped with full COLPRO (CITADEL). However, these systems are generally restricted to critical operations areas of the ships. The critical areas are contiguous in that they share common bulkheads and movement between areas is not prevented. The application of these COLPRO systems for the treatment and isolation/quarantine of infectious/contaminated casualties is not operationally acceptable. Naval hospital ships, U.S. Naval auxiliaries, and USCG vessels are not equipped with COLPRO. None of the identified COLPRO systems provide negative pressure environments with filtered exhausting air exchange.

¹³ Mobile casualty COLPRO does not exist for the transport of infectious/contaminated casualties precluding or mitigating the potential for secondary exposure/contamination of handling and transport personnel and resources. Handling and transport personnel must wear IPE and the transporting resource is considered contaminated until decontaminated and verified.

¹⁴ DOTLPF does not adequately address the application of negative-pressure COLPRO for the transport and mass sheltering of infectious/contaminated casualties.

¹⁵ The USMC MGPTS with CB Protective Liner System provides a positive-pressure, filtered-air, toxic-free shelter for protection against CBRN agents. However, there are insufficient quantities to meet all operational requirements for protection from CBRN/TIM effects. The CP-DEPMEDS provides a clean, toxic-free, environmentally controlled, patient treatment area and the components are designed to integrate as field hospitals. They are packaged as a set for deployment to threat areas for hospital operations. The entire composite hospital consists of expandable tentage, passageways, environmental control units, and ISO shelters. The CP-DEPMEDS exist in very limited quantities. Although it could be applied to provide COLPRO to the task identified groups, its designed and primary function is that of medical care. A similar COLPRO is the USAF's CP-EMEDS, which is an air-transportable medical facility deployable in various configurations from a single shelter to a 25-bed patient hospital. The CP-EMEDS is in a very limited number and, like the CP-DEPMEDS, is designed for its primary function of the provision of medical care. The USAF CP-SSS is a small-scale CPS applied for the conduct of C2

operations, maintenance of critical equipment, force beddown, and the provision of R2 for sortie generators and key leadership. This shelter is in limited supply and unlikely sufficient quantities would be available to support a group of any size, especially during operations against an adversary. The M20/M20A1 SCPE is a lightweight, modular system involving a liner designed for inflation within a room or building. The M20A1 serves to bridge the gap between the M20 SCPE and CBPS. These systems are designed for standard room configurations and, like other COLPRO systems, are in limited number. Fixed-site COLPRO within the United States and its territories is predominantly designed for nuclear fallout and does not address other CBRN/TIM hazards and threats arising after September 11, 2001. Selected critical key facilities are equipped with CBRN COLPRO, but are not available to other than designated personnel and are not installed in medical treatment facilities. Fixed-site CBRN COLPRO is installed in facilities housing selected activities and functions within HTAs. However, these facilities are dedicated to critical operational requirements and restricted to assigned and designated personnel and do not generally include medical treatment facilities. However, the Guardian Program is reviewing FP protective measures at U.S. installations and facilities will be addressing these issues. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy all COLPRO requirements. Prior planning and prioritization of COLPRO allocation is critical. However, none of these systems provide negative pressure environments with filtered exhausting air exchange.

¹⁶ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND actions, activities, and requirements to mitigate or prevent the effects of CBRN/TIM agents.

¹⁷ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies outlined in doctrine, policy, procedures, and TTPs require levels of protection readiness based upon the threat and/or presence of contaminants. Full protection is required in the presence of CBRN/TIM agents/contamination. This includes protective measures and the wear of protective equipment when the possibility exists for secondary exposure/contamination to personnel and equipment, such as the movement of infectious/contaminated casualties. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Plans within HTAs may incorporate this perception. However, doctrine, policy, procedures, and TTPs do not address their application to nonmilitary personnel. Protective measures and application of medical protective resources are applied by medical practitioners and supporting staff during treatment and quarantine/isolation operations. These measures and resources generally follow standard medical requirements and guidance for infectious disease control medical practices and are not applicable to MOPP and CBRND. Standard warfighter individual protection may continue to be applied by medical unit personnel during treatment and management of isolated/quarantined personnel but is the decision of the conducting medical services unit commander. Nonmedical personnel supporting these operations (e.g., security, transport, administration, etc.), are considered subject to MOPP methodologies and level requirements. The distinction is not adequately addressed in existing DOTLPF between protection for medical care and supporting activities.

¹⁸ Plans incorporate MOPP levels and methodologies and are adjustable to meet local operations and threat needs. MOPP levels and methodologies apply to military personnel and are generally considered to apply to equipped nonmilitary personnel (although doctrine, policy, procedures, and TTPs do not address application to these personnel). The MOPP methodologies in planning and operations include CBRND medical countermeasures, including vaccination/immunization to mitigate or prevent the effects of CBRN/TIM agents.

¹⁹ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies outlined in doctrine, policy, procedures, and TTPs require levels of protection readiness based upon the threat and/or presence of contaminants. Full protection is required in the presence of CBRN/TIM agents/contamination. This includes protective measures and the wear of protective equipment when the possibility exists for secondary exposure/contamination to personnel and equipment, such as the movement of infectious/contaminated casualties. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Plans within HTAs may incorporate this perception. However, doctrine, policy, procedures, and TTPs do not address their application to nonmilitary personnel.

²⁰ DOTLPF adequately addresses MOPP methodologies and levels for military force members. DOTLPF does not address the application of MOPP to eligible civilians. The distinction between medical infectious disease control equipment and measures by medical care providers and MOPP application to supporting force members is not identified in MOPP DOTLPF.

²¹ Command staff plans include predeployment medical screening and the stockpiling, allocation, and distribution of CBRND protective resources. Unit plans address medical activities by referring to appropriate JTF and medical plans, policies, and procedures. Medical Service unit staff plan and develop associated plans and policies addressing medical activities and procedures to support force operations within the AO. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The command staff provides support as defined in the coordinated and appropriate medical (AO and JOA) and JTF plans. DOTLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or command staff and Medical Services action associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).

²² Existing medical facilities within an HTA exercise the reception and treatment of contaminated/infectious casualties. Voluntary institutional training for the treatment contaminated/infectious casualties is available through AMEDD. Periodic exercises are performed with medical activities, but on a limited basis, to provide training opportunities

and to assess capabilities. Treatment of casualties is currently performed following completion of casualty decontamination. AMEDD institutional training for the treatment of contaminated/infectious casualties is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat. The ability of the command staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements prior to deployment. Generally, casualty care, until completion of decontamination, is performed by medical corpsmen and not medical practitioners. Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTLPF and current medical operations are limited in their isolation abilities.

²³ Force protection using medical prophylaxis is dependent upon identification of the threat, preplanning for the threat, positioning of stocks for issue and administration, timing of notification to administer/issue prophylaxis, availability of medical personnel to perform administration (if required), ongoing operational requirements, and the available quantity of sufficient medical prophylaxis to meet requirements. Vaccination to achieve acquired immunity by force personnel prior to entry into the theater or completion of an adequate level of acquired immunity prior to adversary biological agent employment is a function of the preplanning and deployment operations. The command staff directs the implementation of these measures when and as appropriate based upon established plans and JTF/Medical Services guidance. Medical prophylaxis does not exist for all threat biological agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. The application of medical prophylaxis is not adequately addressed for eligible civilians and MWAs within the force.

²⁴ JTF and unit plans include the medical review of personnel identified against deployment taskings. Screenings of deployable personnel are periodically performed for potential limitations. Often, these are associated with annual medical physicals. The routine rotation and movement of personnel to and from units require the application of screenings to ensure personnel are qualified for deployment. The unit and Medical Services staff plans attempt to provide for early (prior to deployment notice) and continued medical screening of the force. Plans also include provisions for the conduct of predeployment screenings by medical personnel upon notification of deployment. Often, a record review is conducted of the period following the physical for indications of issues precluding deployment. Predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat. Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings. Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings. However, annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment.

²⁵ Automated systems to track medical treatment and the movement of casualties exist at Echelon 3 and higher levels of care. Unit reporting includes CBRND readiness. Reliance is placed upon the individual's vaccination and health records (both manual records) to reflect the most recent status of the individual. Current medical systems are stovepiped and require manual intervention to share information. Medical treatment recording below Echelon 3 is limited and not linked to higher-echelon systems. Outpatient care is not generally recorded and aggregate information is reported. Unit reporting is not linked to medical information systems. Individual manual vaccination and health records are not always available or complete.

²⁶ Medical prophylaxis is issued/administered for identified CBRN/TIM threats to the military force. The administration and issuance of prophylaxis is addressed by the command and Medical Services staffs during the planning and support for operations. Prophylaxis for MWAs is virtually nonexistent. Prophylaxis for eligible civilians is not adequately addressed in current doctrine, policy, and procedures.

²⁷ Existing standards and procedures provide adequate protection of handling and transporting personnel against secondary exposure/contamination and require the application of protective equipment and measures if the potential exists for contamination/exposure. Casualties able to wear standard IPE are required to apply the equipment outside of CPSs. Medical policy is the patient's unit is responsible for providing the equipment to the medical unit for use by the patient. Unit-level training is limited to the movement of casualties to the medical facility/station and is predominantly reliant upon tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties. Exposed and contaminated casualties (human and MWA) unable to wear IPE are not adequately addressed in doctrine, policy, and standards. Protective equipment is not available for these casualties. However, medical units are not provided stocks of standard IPE for use by patients. Operationally involved units may be delayed, at best, in providing the equipment. Large-scale medical activities and actions are not adequately addressed in DOTLPF, especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

²⁸ Operational warfighter unit plans address medical activities by referring to appropriate medical plans, policies, and procedures. The staff of the Medical Services unit plans and develops associated policies addressing medical activities and procedures to support force operations. The invocation of quarantine and enforcement of medical isolation are within the purview of medical authorities. The operational warfighter unit provides support as defined in the coordinated and appropriate medical plans. The Medical Services unit staff coordinates with the operational warfighter unit command and JTF staffs for Medical Services support requirements and associated tasking and their inclusion in force planning.

DOTLPP is inadequate to address force actions associated with medical quarantine and/or enforcement of medical isolation involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc).

²⁹ Operational warfighter unit plans address medical activities by referring to appropriate medical plans, policies, and procedures. The staff of the Medical Services unit plans and develops associated policies addressing medical activities and procedures to support force operations. The implementation and operation of large-scale quarantine sheltering and treatment operations are in the purview of medical authorities. The operational warfighter command staff provides support and resources as defined in the coordinated and appropriate medical plans and as adjusted and requested by appropriate medical authorities, with JTF concurrence, to meet specific circumstances. Large-scale medical activities and actions are not adequately addressed in DOTLPP, especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³⁰ The unit staff, in coordination with the JTF and Medical Services staffs, conduct coordinated planning for operations for the potential threat. Equipping the force and Medical Services elements are an integral part of planning preparation. The combination of established force and Medical Services element organic assets, material acquisitions, prepositioned material, and movement of identified CBRND resources from unit designated stockpiles and reallocation activities are pursued by the command staff with the JTF and Medical Services staff to prepare and support the force as outlined by the appropriate plan. Mass medical operations may not be possible until the theater matures or additional resources are allocated to force. Additionally, deploying eligible civilians and MWAs (particularly MWDs) are not equipped and trained to survive a CBRN/TIM environment. The force staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to deploying eligible civilians and MWAs. Current doctrine and policy does not adequately address sustained operations within a CBRN/TIM environment. Large-scale medical activities and actions are not adequately addressed in DOTLPP, especially those involving large numbers of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

³¹ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

³² Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

³³ Cell Culture Derived Vaccinia is projected for production during the near-term. Clostridium Botulinum Toxin Medical Defense System is projected for availability during the mid term for Serotypes A, B, C, E, and F. The SERPACWA Active TSP is also projected for production during the late mid term.

³⁴ Fielding of the P3I upgraded CBPS for heavy/airborne use is projected for the mid term.

³⁵ The projected initial fielding of JECF within the mid term provides additional capabilities for the COLPRO protection of casualties within CBRN/TIM contaminated areas. JECF includes COLPRO adaptive inserts for buildings/rooms and legacy tentage and stand-alone COLPRO sheltering for small units. The projected mid-term fielding of JECF may alleviate COLPRO shortages but will likely be insufficient to satisfy all COLPRO requirements. Quantities to be fielded of these systems have not been determined. JTCOPS Block I is projected for initial fielding during the mid term. Prior planning and prioritization of COLPRO allocation is critical.

³⁶ The next-generation series of nonaviator respiratory/ocular protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

³⁷ The next-generation series of nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

³⁸ Active TSPs are projected for replacement of SERPACWA TSP and SERPACWA Active TSP in the far term. The Chemical Agent Prophylaxis and Cyanide Pretreatment are also projected for the far term. The Multivalent VEE Vaccine is projected to begin production in FY2013. The Next-Generation Anthrax Vaccine, Tularemia Vaccine, and Plague Vaccine are projected for production beginning in FY2010. Serotypes A and B are addressed in the Recombinant Bivalent Botulinum Vaccine projected for production in FY2012. A number of R&D efforts are under way for the development of pre- and post-exposure prophylaxes. Potentially, these efforts may produce viable prophylaxes within the mid and far term resulting in fielded material. However, possible resulting prophylaxes cannot be predicted at this time.

³⁹ A decision on the inclusion of COLPRO in the LHA(R) is expected in the mid term.

⁴⁰ JTCOPS Block II is projected for the far term. Continued fielding of JECF.

13.12.3 Functional Solution Analysis

13.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
- 2. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWDs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWDs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWDs.
- 3. Deficiency:** Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source or handling and transporting personnel and resources.

Partial Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing the safe management of potentially hazardous expelled air by exposed/contaminated casualties wearing standard ocular/respiratory protection to preclude the potential for secondary exposure/contamination of handling/transporting personnel and resources. *Training:* Establish institutional, recurring, and unit training, exercise, and evaluation criteria and programs addressing potentially hazardous expelled air by exposed/contaminated casualties wearing standard ocular/respiratory protection.
- 4. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 5. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 6. Deficiency:** Medical units are not equipped with additional protective material for existing patients and replacement assets for casualties.
Non-Materiel Solutions: *Doctrine:* Adjust joint doctrine to require force planning of IPE support and resupply of Medical Services for patients and casualties. Disconnect requirement with operational unit. *Organization:* Develop organizational structures, resources, staffing, and stock management capabilities to support IPE requirements for patients and casualties.
- 7. Deficiency:** Casualties unable to wear respiratory/ocular protection are not addressed.
Partial Non-Materiel Solutions: *Doctrine:* Establish alternative procedures and processes within doctrine, policy, and procedures for casualties unable to wear respiratory/ocular protection and who must be moved within or through a CBRN/TIM contaminated zone. *Organization:* Develop organizational structures, resources, staffing, and stock management capabilities to support casualties unable to wear respiratory/ocular protection. *Training:* Implement institutional, recurring, and unit training on established procedures and processes (see Doctrine) for the protection of casualties unable to wear respiratory/ocular protection.
- 8. Deficiency:** Distinction between MOPP and medical protection requirements not adequately addressed in existing DOTLPF.
Non-Materiel Solution: *Doctrine:* Clarify in doctrine, policy, and procedures the distinction between MOPP and medical protection requirements as relates to this task.
- 9. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.
Partial Non-Materiel Solutions: *Doctrine:* Requirement for development of CBRND protective equipment and measures to protect against all CBRN/TIM agents, particularly high-risk/high-threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 10. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

- 11. Deficiency:** Current doctrine, the *UJTL*, and operational planning do not adequately address sustained operations within a CBRN/TIM environment.
Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations within a CBRN/TIM environment. *Training:* Train, exercise, and evaluate the force for sustained operations within a CBRN/TIM environment. *Leadership:* Recognize criticality of readiness of the force for potential sustained operations within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply the force.
- 12. Deficiency:** Prophylaxes against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established metrics for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.
- 13. Deficiency:** Efficacy of existing prophylaxes varies widely.
Non-Materiel Solutions: *Doctrine:* Establish overarching single common standard for prophylaxes efficacy.
- 14. Deficiency:** Not all prophylaxes are FDA approved.
Non-Materiel Solutions: *Doctrine:* Require FDA approval of all prophylaxes, including medications potentially applied as prophylaxes. The latter requires specific approval as prophylactic treatment.
- 15. Deficiency:** Prophylaxis for eligible civilians is not addressed.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of resources and increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.
- 16. Deficiency:** Prophylaxis for MWAs is not addressed.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures for MWAs, particularly MWDs. *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to MWAs. *Training:* Include MWA

handlers in CBRND training, exercises, and evaluations. *Leadership*: Ensure leadership awareness of criticality of MWA resources.

- 17. Deficiency:** The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

- 18. Deficiency:** Prophylaxis for MWAs is virtually nonexistent.

Partial Non-Materiel Solutions: *Doctrine*: Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization*: Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training*: Establish institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership*: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

- 19. Deficiency:** Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.

Partial Non-Materiel Solutions: *Doctrine*: Promulgate doctrine, policy, and procedures addressing negative-pressure COLPRO and the safe management of potentially hazardous exhausted air to preclude the potential for secondary exposure/contamination of uncontaminated/unexposed personnel and resources. *Training*: Establish institutional, recurring, and unit training, exercise, and evaluation criteria and programs addressing the operation and application of negative-pressure COLPRO and management of potentially hazardous exhaust air.

- 20. Deficiency:** Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.

Partial Non-Materiel Solutions: *Doctrine*: Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources (if casualties are contaminated) or exposure/contamination of casualties (if casualties are uncontaminated). *Training*: Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple casualties.

- 21. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 22. Deficiency:** DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.

- 23. Deficiency:** DOTLPF is inadequate to address large-scale medical CBRN/TIM operations, particularly sustained operations within a CBRN/TIM environment and/or command staff and Medical Services action associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* sustained operations (medical and nonmedical) within a CBRN/TIM environment. Include command and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available to plan and perform sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing command and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate the force for sustained operations (medical and nonmedical) within a CBRN/TIM environment and/or operations addressing command and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Recognize criticality of readiness of the force for potential sustained operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel:* Eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM

environment. *Facilities*: Develop supporting infrastructure for sustained operations within a CBRN/TIM environment and operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

24. Deficiency: Timing of notice of deployment and the availability of medical personnel impact the conduct of predeployment screenings.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures requirements for ongoing automated and manual medical screenings to ensure baseline standards are maintained in support of potential deployment taskings. *Leadership*: Enforce compliance with established requirements for predeployment medical screenings.

25. Deficiency: Short-notice operations and reallocated taskings may also impact the conduct of predeployment medical screenings.

Non-Materiel Solutions: *Doctrine*: Enforce doctrinal requirements for alternative planning and unit readiness for potential deployment taskings. *Leadership*: Enforce compliance with established requirements for planning for predeployment medical screenings.

26. Deficiency: Annual physicals, when used to meet deployment screening requirements, may be conducted several months before a deployment.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures requirements for ongoing automated and manual medical screenings to ensure baseline standards are maintained in support of potential deployment taskings. *Leadership*: Enforce compliance with established requirements for predeployment medical screenings.

27. Deficiency: Current medical systems are stovepiped and require manual intervention to share information.

Non-Materiel Solutions: *Doctrine*: Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

28. Deficiency: Medical treatment recording below Echelon 3 is limited and not linked to higher echelon systems.

Non-Materiel Solutions: *Doctrine*: Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

29. Deficiency: Outpatient care is not generally recorded and aggregate information is reported.

Non-Materiel Solutions: *Doctrine*: Enforce doctrine, policy, and procedures for integrated automated systems, application of data systems standards, and the timely and accurate reporting of medical treatment information.

30. Deficiency: Unit reporting is not linked to medical information systems.

Non-Materiel Solutions: *Doctrine*: Enforce doctrine, policy, and procedures for integrated automated systems and application of data systems standards.

31. Deficiency: Individual manual vaccination and health records are not always available or complete.

Non-Materiel Solutions: *Doctrine:* Enforce doctrine, policy, and procedures for integrated automated systems, application of data systems standards, and the timely and accurate reporting of medical treatment information.

- 32. Deficiency:** The AMEDD training for the treatment of contaminated/exposed casualties is not mandatory for medical practitioners identified for deployment or assignment where there exists a CBRN/TIM threat.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures the application of institutional and unit training standards for the handling of exposed and contaminated casualties/MWAs. *Training:* Establish training, exercise, and evaluation standards for the safe handling of exposed and contaminated casualties/MWAs. *Leadership:* Implement and manage training and equipping of functions and activities handling exposed and contaminated casualties/MWAs.

- 33. Deficiency:** The ability of the command and Medical Services staff to ensure medical capabilities for CBRND is limited by routine medical operations and requirements.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 34. Deficiency:** Generally, casualty care, until completion of decontamination, is performed by medical corpsmen, not medical practitioners.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and

functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 35. Deficiency:** Generally, MWA casualty care, until completion of decontamination, is performed by medical corpsmen, not veterinary/medical practitioners.

Non-Materiel Solutions: *Doctrine:* Incorporate the safe handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties into doctrine, policy and procedures and requires specific exercising and evaluation for these operations and activities that includes all activities and functions conducting these functions including nonmedical activities and functions. *Organization:* Ensure resources, taskings, and trained personnel are in place or available to support the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions. *Training:* Train, exercise, and evaluate the handling, transport, protective measures, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions, including the prevention of secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe handling, transport, medical reception and triage, and treatment of contaminated MWA casualties by all activities and functions conducting these functions including nonmedical activities and functions.

- 36. Deficiency:** Medical Services doctrine, policy, and procedures are inadequate for the provision of medical care by medical providers in a CBRN/TIM environment.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing the provision of medical care by medical providers within a CBRN/TIM environment (both with and without CPSs). *Organization:* Identify organization services and activities necessary to support the provision of medical care by medical providers within a CBRN/TIM environment (both with and without CPSs). *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for medical care by medical providers within a CBRN/TIM environment (both with and without CPSs) and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of medical providers and supporting medical staff. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

- 37. Deficiency:** Isolation of large-scale numbers of contaminated/infectious casualties is not adequately addressed in DOTMLPF and current medical operations are limited in their isolation abilities.

Non-Materiel Solutions: *Doctrine:* Include in doctrine, policy, procedures, and *UJTL* combatant command (COCOM) and Medical Services activities associated with the planning, coordination, implementation, operation, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians,

third-party nationals, displaced persons, detained persons, etc.). *Organization*: Ensure resources, taskings, and staff are in place or available for operations addressing COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training*: Train, exercise, and evaluate the force for COCOM and Medical Services actions associated with the planning, coordination, implementation, operation, support, and termination of large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership*: Recognize criticality of readiness of the force for potential operations (medical and nonmedical) within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare the force and appropriately support large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Personnel*: Eligible civilian personnel and operations supporting the mission/military operations (medical and nonmedical) are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for operations associated with large-scale medical operations involving non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

- 38. Deficiency:** Predeployment medical screenings do not consider prior presymptomatic low-dose CBRN/TIM exposures, associated potential cumulative long-term effects, and the potential threat.

Non-Materiel Solutions: *Doctrine*: Establish in doctrine, policy, and procedures the application of low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings. *Leadership*: Enforce compliance with established doctrine, policy, and procedures for low-dose exposure limits and cumulative long-term low-dose exposures in predeployment medical screenings.

- 39. Deficiency:** Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated casualties.

Partial Non-Materiel Solutions: *Doctrine*: Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air and sea of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Organization*: Organizational resources, taskings, and trained personnel are in place or available to support the safe air and sea transport of exposed and contaminated casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training*: Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple contaminated casualties. Develop institutional and unit-level training for application of standards for the safe transport by air and sea of

exposed and contaminated casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership*: Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air/sea transport of exposed and contaminated casualties. *Facilities*: Develop supporting infrastructure for the safe air transport of contaminated casualties, including the prevention of secondary exposure/contamination to airframe/vessel and crews.

- 40. Deficiency:** Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated MWA casualties.

Partial Non-Materiel Solutions: *Doctrine*: Promulgate and implement doctrine, policy, standards, and procedures for the safe transport by air and sea of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. Establish in doctrine methods and processes enabling the transport of multiple casualties safely and without risk of secondary exposure/contamination by transporting personnel and resources. *Organization*: Organizational resources, taskings, and trained personnel are in place or available to support the safe air and sea transport of exposed and contaminated MWA casualties, including the prevention of secondary exposure/contamination of the airframe and aircrew. *Training*: Implement institutional, recurring, and unit training of the safe transport (see Doctrine) of multiple contaminated casualties. Develop institutional and unit-level training for application of standards for the safe transport by air and sea of exposed and contaminated MWA casualties. Exercising and evaluations to assess capabilities and prepare for the conduct of safe transport by air of exposed and contaminated MWA casualties. Training, exercising, and evaluation include measures to prevent secondary exposure/contamination of the airframe and aircrew. *Leadership*: Recognize criticality for the protection of air transport resources from secondary contamination/exposure to CBRN/TIM agents while providing safe air/sea transport of exposed and contaminated MWA casualties. *Facilities*: Develop supporting infrastructure for the safe air transport of contaminated MWA casualties, including the prevention of secondary exposure/contamination to airframe/vessel and crews.

- 41. Deficiency:** Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR. **Partial Non-Materiel Solutions:** *Doctrine*: Complete the JCIDS process and central correlation/comparison of operations plans to identify CBRND resources necessary and available to support expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint. *Organization*: Develop organizational structures, resources, staffing, and capabilities to conduct expeditionary medical operations while possessing reduced logistical footprint and during the first 30–90 days of operations following commencement of hostilities. *Training*: Train, exercise, and evaluate expeditionary capabilities of the force in a CBRN/TIM threat with reduced logistical footprint during the initial 30–90 days of operations using CBRND resources supporting

expeditionary medical operations. *Leadership*: Recognize differences and challenges associated with expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint, training providing skills and knowledge to manage operations in these circumstances, and ability and willingness to implement necessary changes and activities to prepare for and conduct expeditionary medical operations with a CBRN/TIM threat. *Facilities*: Develop supporting infrastructure for expeditionary medical operations during the first 30–90 days following commencement of hostilities and with a reduced logistical footprint.

- 42. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to eligible civilians. **Non-Materiel Solutions:** *Doctrine*: Promulgate doctrine, policy, and procedures addressing civilian personnel and operations for CBRND. *Organization*: Identify organizational services and activities supporting the mission performed by civilian personnel and operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of eligible civilians. *Personnel*: Ensure that eligible civilians supporting the mission/military operations are qualified in CBRND and capable of performing their responsibilities in a CBRN/TIM environment. *Facilities*: Develop supporting infrastructure for eligible civilian CBRND (e.g., logistics, medical, training, communications, etc.).
- 43. Deficiency:** The command staff does not possess clear guidance for planning and providing CBRN/TIM protection training and CBRND protection resources to MWA. **Non-Materiel Solutions:** *Doctrine*: Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, and operations for CBRND. *Organization*: Identify organizational services and activities supporting MWA survivability and CBRN/TIM environment operations. *Training*: Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership*: Implement and manage CBRND training, equipping, and protection of MWAs. *Facilities*: Develop supporting infrastructure for MWA CBRND (e.g., logistics, medical, veterinary surveillance, training, communications, etc.).

13.12.3.2 IMA Assessment Summary

Table 13.12-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches primarily focus on adapting currently fielded equipment/systems and technology studies to determine specific requirements. Also identifies the need for Battle Management systems to assist in tracking CBRN casualties. Table 13.12-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.12-2. TASHLD 12: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Casualty protective system with integrated pseudomask	Develop a new-generation PPWs with an integrated mask area that is contact-free of the face area and applies positive air flow.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Contaminated casualty transport system	Develop/adapt clear, head-to-toe view of casualty, medical systems supporting, airtight and self-flushing system with positive/negative pressure capabilities and access ports for medical treatment.
COTS sample containers and equipment	Adapt/modify (as necessary) COTS sample containers and equipment for the containment of CBRN/TIM samples and material for their safe handling, storage, and transport.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. FDA testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Develop CBRN/TIM samples and material containment packaging/systems	Investigate and develop CBRN/TIM containment packaging and systems for the safe containment, handling, storage, and transport of CBRN/TIM samples and material.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Develop/adapt MWA transport system with pressure/filtration	Develop or adapt MWA transport systems to provide COLPRO protection from CBRN/TIM agents.

Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.
Disposable IPE	Develop low-cost disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.

Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.
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Table 13.12-3. TASHLD 12: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Broad-Application Above-the-Neck Respiratory Protection</p>	<p style="text-align: center;">Casualty Protective System with Integrated Pseudomask</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Chemical Treatment</p>	<p style="text-align: center;">Combinatorial Prophylaxes</p>	<p style="text-align: center;">Contaminated Casualty Transport System</p>	<p style="text-align: center;">COTS Sample Containers and Equipment</p>	<p style="text-align: center;">Current Prophylaxes</p>	<p style="text-align: center;">Develop CBRN/TIM Samples and Material Containment Packaging/Systems</p>
<p>Expelled air from an exposed/contaminated casualty equipped with standard ocular/respiratory protection is not filtered and may present a potential secondary hazard or contamination source or handling and transporting personnel and resources.</p>	X	X	X	X	X		X			
<p>Casualties unable to wear respiratory/ocular protection are not addressed.</p>	X	X	X	X	X		X			
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X	X	X	X	X	X	X	X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>						X			X	
<p>Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.</p>						X			X	
<p>Prophylaxis for MWAs is virtually nonexistent.</p>						X			X	
<p>Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.</p>	X		X							X

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Broad-Application Above-the-Neck Respiratory Protection</p>	<p style="text-align: center;">Casualty Protective System with Integrated Pseudomask</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Chemical Treatment</p>	<p style="text-align: center;">Combinatorial Prophylaxes</p>	<p style="text-align: center;">Contaminated Casualty Transport System</p>	<p style="text-align: center;">COTS Sample Containers and Equipment</p>	<p style="text-align: center;">Current Prophylaxes</p>	<p style="text-align: center;">Develop CBRN/TIM Samples and Material Containment Packaging/Systems</p>
<p>Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.</p>	X									
<p>Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties.</p>	X		X					X		X
<p>Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR.</p>	X							X		X

Table 13.12-3. TASHLD 12: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	Develop COLPRO Kits	Develop and Establish Generic Unit CBRND Kits	Develop/Adapt MWA Transport System With Pressure/Filtration	Disposable COLPRO	Disposable IPE	Field-Expedient COLPRO Kits	Field-Expedient COLPRO Materials	Filtration System Lowering Inhalation Pressure Requirement	Future Prophylaxes	Improved IPE Garments and Accessories
Casualties unable to wear respiratory/ocular protection are not addressed.	X	X	X	X	X	X	X	X		X
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X	X	X	X	X	X	X	X	X	X
Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.									X	
Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.									X	
Prophylaxis for MWAs is virtually nonexistent.									X	
Negative-pressure COLPRO with filtered expelled air does not exit within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.	X	X		X		X	X			
Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.	X	X		X		X	X			

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Develop COLPRO Kits</p>	<p style="text-align: center;">Develop and Establish Generic Unit CBRND Kits</p>	<p style="text-align: center;">Develop/Adapt MWA Transport System With Pressure/Filtration</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Disposable IPE</p>	<p style="text-align: center;">Field-Expedient COLPRO Kits</p>	<p style="text-align: center;">Field-Expedient COLPRO Materials</p>	<p style="text-align: center;">Filtration System Lowering Inhalation Pressure Requirement</p>	<p style="text-align: center;">Future Prophylaxes</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>
<p>Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties.</p>	X	X		X		X	X			
<p>Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR.</p>	X	X		X	X	X	X	X	X	X

Table 13.12-3. TASHLD 12: IMA Assessment (continued)

<p>Identified Gaps</p>	<p>Ideas for Material Approaches (IMA)</p>	<p>Integrate CBRN/TIM Protective Features into Functional Garments</p>	<p>Topical</p>
<p>Casualties unable to wear respiratory/ocular protection are not addressed.</p>			<p>X</p>
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents</p>		<p>X</p>	<p>X</p>
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>			<p>X</p>
<p>Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.</p>			<p>X</p>
<p>Prophylaxis for MWAs is virtually nonexistent.</p>			<p>X</p>
<p>Negative-pressure COLPRO with filtered expelled air does not exist within the inventory for the transport and sheltering of numbers of exposed, infectious, and/or contaminated casualties.</p>			
<p>Mobile COLPRO that operates and provides protection while moving is not available for the protection of casualties.</p>			
<p>Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Air and sea transport resources are inadequately equipped and prepared to transport exposed and contaminated human and MWA casualties.</p>			<p>X</p>
<p>Expeditionary operations are a particular concern. Mass medical operations may not be possible until the theater matures or additional resources are allocated to the AOR.</p>		<p>X</p>	<p>X</p>

13.13 Task TASHLD 13: Perform mortuary activities for CBRN/TIM contaminated remains

13.13.1 Functional Area Analysis

13.13.1.1 Definition

Contaminated remains of personnel and animals may require storage and transport to another location. The safe handling, storage, and movement of contaminated remains require they be fully and completely sealed to minimize the potential for release of contaminants. Contaminated remains IPE must be impermeable and not permit release of the contaminants. The design must be functional and easy to transport, store, support, and dispose. Decontamination capability is required at all points where contaminated remains may be located.

13.13.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.13.1.2.1 Supported Task: OPSHLD 14

13.13.1.2.2 Lateral Task: TASHA 24

13.13.1.2.3 Supporting Task: N/A

13.13.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. No prepositioned materiel. (C2.8.4)
8. No host-nation support. (C2.8.5)

9. Negligible to limited commercial procurement. (C2.8.6)

Civil. N/A

13.13.2 Functional needs Analysis

13.13.2.1 Capability and Deficiency Assessment Summary

Table 13.13-1 discusses current and projected capabilities to accomplish this task. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

This task encompasses the extent of operations involving remains from collection to final internment and involves a range of force elements and resources. The primary actors are Mortuary Affairs units/elements. These personnel are trained and equipped to decontaminate and process human remains. Existing Service CBRND assets are worn to protect against secondary exposure/contamination of personnel and resources. However, this task is not limited to Mortuary Affairs. Personnel performing transport and handling of remains throughout the process are considered in the task. Splash protection is afforded through the use of COTS mortuary and CBRND assets designed for this purpose or the application of wet-weather gear (including severe-weather gear). Splash protection is worn with respiratory/ocular and percutaneous CBRND assets. The Services currently field a variety of CBRND assets providing respiratory/ocular, percutaneous, and COLPRO protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. Existing Service-specific IPE is limited in the period and scope of protection afforded the warfighter. Respiratory/ocular and percutaneous CBRND assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Physiological and psychological encumbrances increase with prolonged wear. Regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities is necessary and performed to reduce the impact of encumbrances and subsequent degradation of performance. Medical prophylaxes do exist for the protection of the warfighter against a limited number of biological and chemical agents. However, few are FDA approved. A number possess IND authorization for application. Medications are considered for their potential prophylactic value, but are not always FDA approved for this purpose. Not all threat CBRN agents are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians are not adequately addressed by DOTLPP for CBRND. Clear DOTLPP addressing the CBRND provisioning and training of eligible civilians is inadequate. MOPP DOTLPP is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S.

and non-U.S. civilians. MOPP DOTLPPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE. DOTLPPF is adequate for the application of CBRND respiratory/ocular and percutaneous personal protection by personnel transporting, handling, decontaminating, or otherwise potentially at risk for secondary exposure/contamination from infectious/contaminated remains. However, DOTLPPF is inadequate to address the containment of contaminated/infectious remains for transport out of the AOR for final internment. DOTLPPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.). Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination. The predominant means is decontamination of the asset following secondary exposure/contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Decontaminated and contained remains may not be considered a secondary risk by air asset managers. However, containment systems providing adequate protection and safeguards against secondary contamination/exposure of personnel and resources during storage, handling, transport, and potentially through final internment do not exist.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents and high-threat/high risk TIMs (particularly TICs). Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time. Additional changes in capabilities from the mid term are not projected.

13.13.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolescent warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): USAF combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: USN/USMC system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes CB filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaced M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN): Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination

or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Decontaminable.

Patient Protective Wrap (PPW): Enclosed casualty bag made of CBRN protective materials. Incorporates small flexible transparent window positioned over casualties face for viewing by medical practitioners. Uses cardboard stays to maintain separation of bag from casualty's face. Does not permit head-to-toe viewing of casualty. Supports limited medical assistance. Requires the wear of standard warfighter respiratory/ocular protection. Two wraps currently in stock. Legacy system provides protection up to 3 hours and newer system up to 6 hours.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

3. Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.13-1. TASHLD 13: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current									
<i>Individual Protection</i>	4.7	4.7	4.7	4.7	N/A	5	0	5.5	4.7
Respiratory/Ocular Protection	5 ¹	5 ¹	5 ¹	5 ²	N/A	5 ¹	N/A	5 ¹	6 ³
Percutaneous Protection	5 ⁴	5 ⁴	5 ⁴	5 ⁵	N/A	6 ⁴	0 ⁶	6 ⁴	3 ⁷
Medical Protection	4 ⁸	4 ⁸	4 ⁸	4 ⁸	N/A	4 ⁸	N/A	N/A	5 ⁹
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	5 ¹⁰	6 ¹⁰	6 ¹⁰	N/A	N/A	6 ¹⁰	N/A	6 ¹⁰	6 ¹¹
<i>Unit Staff</i>	6 ¹²	8 ¹³	7 ¹⁴	3 ¹⁵	0 ¹⁶	8 ¹⁷	0 ¹⁸	7 ^{14,17}	3 ¹⁹
Near/Mid									
<i>Individual Protection</i>	5.3	5.3	5.3	5.3	N/A	5.3	0	6	4.7
Respiratory/Ocular Protection	6 ^{1,20}	6 ^{1,20}	6 ^{1,20}	6 ^{2,21}	N/A	6 ^{1,20}	N/A	6 ^{1,20}	6 ⁶
Percutaneous Protection	6 ^{4,22}	6 ^{4,22}	6 ^{4,22}	6 ^{5,23}	N/A	6 ^{4,22}	0 ⁶	6 ^{4,22}	3 ⁷
Medical Protection	4 ^{8,24}	4 ^{8,24}	4 ^{8,24}	4 ^{8,24}	N/A	4 ^{8,24}	N/A	N/A	5 ⁹
<i>MOPP</i>	5 ¹⁰	6 ¹⁰	6 ¹⁰	N/A	N/A	6 ¹⁰	N/A	6 ¹⁰	6 ¹¹
<i>Unit Staff</i>	6 ¹²	8 ¹³	7 ¹⁴	3 ¹⁵	0 ¹⁶	8 ¹⁷	0 ¹⁸	7 ^{14,17}	3 ¹⁹
Far									
<i>Individual Protection</i>	6	6	6	6	N/A	6	0	7	4.7
Respiratory/Ocular Protection	7 ^{1,20,25}	7 ^{1,20,25}	7 ^{1,20,25}	7 ^{2,21,26}	N/A	7 ^{1,20,25}	N/A	7 ^{1,20,25}	6 ⁶
Percutaneous Protection	7 ^{4,22,27}	7 ^{4,22,27}	7 ^{4,22,27}	7 ^{5,23,28}	N/A	7 ^{4,22,27}	0 ⁶	7 ^{4,22,27}	3 ⁷
Medical Protection	4 ^{8,24,29}	4 ^{8,24,29}	4 ^{8,24,29}	4 ^{8,24,29}	N/A	4 ^{8,24,29}	N/A	N/A	5 ⁹
<i>MOPP</i>	5 ¹⁰	6 ¹⁰	6 ¹⁰	N/A	N/A	6 ¹⁰	N/A	6 ¹⁰	6 ¹¹
<i>Unit Staff</i>	6 ¹²	8 ¹³	7 ¹⁴	3 ¹⁵	0 ¹⁶	8 ¹⁷	0 ¹⁸	7 ^{14,17}	3 ¹⁹
Overall									
Current Overall Capability	5	6	6	4	0	6	0	6	5
Near/Mid-Term Overall Capability	5	6	6	4	0	6	0	6	5
Far-Term Overall Capability	6	7	6	5	0	7	0	6	5

	FAA Measure	Scale
M1	Coordination is performed with Mortuary Affairs for handling, decontaminating, and transporting of human and MWA remains.	<p>8–10: Mortuary Affairs units/activities coordinate with the command and Medical Services staffs to facilitate the recovery, handling, decontamination, and internment of human remains.</p> <p>4–7: Mortuary Affairs units/activities coordinate with the command with the command and Medical Services staffs to facilitate the recovery, decontamination, and internment of human remains.</p> <p>1–3: Mortuary Affairs units/activities coordinate with the command staff to facilitate the recovery and internment of human remains.</p> <p>0: Mortuary Affairs units/activities do not coordinate with command and Medical Services staffs for the recovery and internment of human remains.</p>
M2	Mortuary Affairs is rapidly prepared upon notification to handle contaminated remains.	<p>8–10: Mortuary Affairs units/activities maintain readiness to implement operations involving CBRN/TIM exposed/contaminated remains; possess in-place operational CBRN systems, components, and consumables; have detailed doctrine, policies, procedures, and TTPs; and are trained (formal and recurring) to commence coordination and operations upon notification by command staff or receipt of CBRN event alerting/warning.</p> <p>4–7: Mortuary Affairs units/activities possess access to CBRN systems, components, and consumables; have guiding doctrine, policies, procedures, and TTPs; and are trained (formal and recurring) to establish and conduct operations involving CBRN/TIM exposed/contaminated remains upon notification by command staff.</p> <p>1–3: Mortuary Affairs units/activities possess access to CBRN systems, components, and consumables through the command staff; possess limited doctrine, policy, and procedures; and are trained by their assigned units for the conduct of operations involving CBRN/TIM exposed/contaminated remains.</p> <p>0: Mortuary Affairs units/activities do not possess access to necessary CBRND resources, training, and do not possess adequate doctrine, policy, and procedures to establish and conduct operations involving CBRN/TIM exposed/contaminated remains.</p>
M3	Mortuary Affairs personnel are trained in handling contaminated remains.	<p>8–10: Detailed doctrine, policy, procedures, processes, and training (formal and recurring) exist for the safe handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel and activities.</p> <p>4–7: General doctrine, policy, procedures, and training exist for the handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel.</p> <p>1–3: Limited doctrine, policy, and procedures exist for the handling of CBRN/TIM exposed/contaminated remains by Mortuary Affairs personnel. Training is limited to unit-based training program.</p> <p>0: Doctrine, policy, procedures, and training do not exist for the handling of CBRN/TIM exposed/contaminated remains.</p>
M4	Contaminated/infections human and MWA remains are safely processed, transported, and disposition completed.	<p>8–10: Doctrine, policy, procedures, TTPs, training, and plans address the application of protective assets and the safe handling and transport of exposed or contaminated human/MWA remains, and specify requirements and measures for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>4–7: Doctrine, policy, procedures, TTPs, training, and plans address the safe handling and transport of exposed or contaminated remains and identify general measures and resources for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>1–3: Doctrine, policy, procedures, TTPs, training, and plans provide general instructions and guidance for the handling and transport of exposed or contaminated remains and provides limited information on measures and resources to apply for the protection of personnel, activities, and resources performing the handling and transport.</p> <p>0: Doctrine, policy, procedures, TTPs, training, and plans do not address the handling and transport of exposed or contaminated remains and the measures and resources necessary for the protection of personnel, activities, and resources performing the handling and transport.</p>

M5	Mortuary Affairs units/activities are trained and equipped to operate CBRN/TIM detection and monitoring devices.	<p>8–10: Mortuary Affairs units and activities are equipped and trained to operate CBRN/TIM detection devices and sensors for application to remains.</p> <p>4–7: Mortuary Affairs units and activities are trained and equipped to apply radiation detection, identification, and computation and standard individual CBRN/TIM detection/monitoring devices for application to remains.</p> <p>1–3: Mortuary Affairs units and activities are trained and equipped to apply standard individual CBRN detection devices for application to remains.</p> <p>0: Training and equipping Mortuary Affairs units and activities to perform CBRN/TIM detection and monitoring of remains is nonexistent.</p>
M6	Mortuary Affairs personnel possess IPE and splash protective coverings.	<p>8–10: Mortuary Affairs personnel are equipped with adequate splash and CBRN/TIM IPE protection.</p> <p>4–7: Mortuary Affairs personnel are equipped with CBRN/TIM IPE protection and limited splash protection.</p> <p>1–3: Mortuary personnel are equipped with CBRN/TIM IPE protection and selected members are equipped with splash protection.</p> <p>0: Mortuary Affairs personnel are not equipped with CBRN/TIM IPE and splash protection.</p>
M7	Mortuary Affairs possess sufficient containment IPE for contaminated remains.	<p>8–10: Adequate types and quantities of CBRN/TIM containment IPE, storage, and transport containers for contaminated remains are on hand and readily available for the sealed containment of CBRN/TIM exposed/contaminated remains.</p> <p>4–7: CBRN/TIM exposed/contaminated remains containment IPE, storage, and transport containers are available for the sealed containment of CBRN/TIM exposed/contaminated remains.</p> <p>1–3: CBRN/TIM exposed/contaminated remains containment IPE, storage, and transport containers are available in limited quantities for the sealed containment of CBRN/TIM exposed/contaminated remains.</p> <p>0: CBRN/TIM exposed/contaminated remains containment IPE, storage, and transport containers are not available or are nonexistent.</p>
M8	Adequate decontamination supplies and equipment are on hand	<p>8–10: CBRND systems, resources, and consumables are available and in place in plan-identified quantities and types to conduct decontamination of CBRN/TIM exposed/contaminated remains.</p> <p>4–7: CBRND systems, components, and consumables are available and in place supporting operations but reflect adjusted plan quantities and types for limitations and constraints in availability. Adjustments to operations are made without serious impact.</p> <p>1–3: Limitations and constrains upon available CBRND systems, components, and consumable quantities and types require changes and delays in the conduct of decontamination of CBRN/TIM exposed/contaminated remains.</p> <p>0: Systems, components, and consumables availability and allocation do not support remains decontamination activities.</p>
M9	There is effective DOTMLPF in place to conduct task	<p>8–10: DOTLPP exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTLPP for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTLPP is inadequate for accomplishment of this task.</p> <p>0: DOTLPP does not exist for this task.</p>

¹ Mortuary Affairs personnel designated to perform handling and decontamination of human remains activities are trained on the proper wear of protective respiratory/ocular protection as outlined in doctrine, policy, procedures, and TTPs. Respiratory/ocular protection is diverse across the Services and performed functions. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the

standard M40A1, M42A2, or MCU-2A/P masks. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Eligible civilians are inadequately addressed in DOTLPF.

² CBRND IPE is currently Service-specific. Respiratory/ocular protection is diverse across the Services and performed functions. USAF combat aircrews conduction operations within a CBRN environment are equipped with the MBU-19/P Chemical-Biological AERP that includes protective hood, MBU-12/P mask, C-2 filter canister, an intercom for ground communications, and a blower assembly. The AERP provides protection whether or not supplemental oxygen is present. USN and USMC aviators use the A/P22P-14(V) Respirator Assembly that is a self-contained protective system deployed for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN and USMC) aircrews. The system incorporates a CB filter, dual air/oxygen supply, and a crossover manifold with dual protective capabilities for flight and ground protection. The A/P 22P-14(V) 1 is not compatible with aircraft with oxygen delivery systems and supports helicopter crew use. Version 2 is used for the EA-6B and F-18A, Version 3 for AV-8B and F-18C/D, and Version 4 is applied for C-130 aircrews. The M17 series mask is obsolete and is relegated to NEO support in selected HTAs. The mask is designed for the military standard profile (ground) and does not adequately protect all potential nonmilitary populace members, for which is retained. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M43 CB Aircraft Mask is applied by U.S. Army aircrew members and applies a motor blower unit with C-2 canister for filtration. The system is a stand-alone system that accompanies the user. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The M48 CB Apache Aviator Mask protects AH-64 Apache helicopter aviators and flight support personnel. The blower assembly uses the C-2 filter canister to provide filtered, breathable air. The M-48 replaces the M43 Type 1 mask. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection.

³ DOTLPF is adequate for the application of CBRND respiratory/ocular protection by personnel transporting, handling, decontaminating, or otherwise potentially at risk for secondary exposure/contamination from infectious/contaminated remains.

⁴ Mortuary Affairs personnel designated to perform handling and decontamination of human remains activities are trained on the proper wear of percutaneous protective protection as outlined in doctrine, policy, procedures, and TTPs. Military personnel performing decontamination operations are required to wear CBRND percutaneous protection against the potential for secondary exposure/contamination. Doctrine, policy, procedures, and TTPs do not adequately address the protection of nonmilitary personnel performing decontamination operations in the AO. However, OSHA and CDC requirements may apply and should be addressed as applicable. Non-U.S. personnel subject to these functions are not addressed. Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. Decontamination units/teams apply the CB Protective Boot (similar to firefighter boots) for decontamination operations. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and

sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc.

⁵ Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The USN, USAF, and USMC use the disposable aircrew protective cape to protect aircrew between sheltering and the combat aircraft. The cape drapes over the wearer and is removed during entry into the aircraft to prevent transfer of contamination into the aircraft interior. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. The disposable aircrew boot cover is worn by USAF, USN, and USMC aviators over aircrew footwear while en route and mounting combat aircraft. The covers are removed during aircraft entry and are designed to prevent contamination transfer into the aircraft. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. Disposable aircrew hand protection is applied by the USAF, USMC, and USN for aviators over their gloves (and may be worn between glove layers for additional protection) during movement between shelter and aircraft. When used as an overglove, the gloves are removed during aircraft mounting during aircraft entry to preclude the potential for transfer of contamination into the aircraft interior. Medical Services practitioners performing treatment The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and EOD personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

⁶ Containment CBRND individual protective systems do not currently exist for the storage and transport of contaminated/ infectious remains.

⁷ DOTLPF is adequate for the application of CBRND percutaneous personal protection by personnel transporting, handling, decontaminating, or otherwise potentially at risk for secondary exposure/contamination from infectious/contaminated remains. However, DOTLPF is inadequate to address the containment of contaminated/infectious remains for transport out of the AOR for final internment.

⁸ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Military personnel are administered and/or issued CBRND medical countermeasures for operations with threat. Vaccines for selected biological agents, topicals, and preexposure and/or post-exposure/presymptomatic medications are applied to mitigate or preclude the effects of specific CBRN/TIM agents. Currently, preexposure prophylaxis is available for nerve agents (G and V series), and vesicants (H, HD, HN, L, CX), topical only. SERPACWA is the preexposure countermeasure for vesicants and one nerve agent. TSP is approved by the FDA as a supplement for SERPACWA. Post-exposure prophylaxis is available for pulmonary (CG) agent, but is not FDA approved. Radioprotective steroids and neutraceuticals may be effective as pre- and post-exposure prophylactics. 5-androstenediol is an IND preexposure treatment for radiological exposure. Iodide/potassium iodide is FDA approved for application against Iodine 131, 132, 134, and 135. Post-exposure radiological exposure prophylaxis consists of neutraceuticals, plant isoflavone genistein, and alpha tocopherol (Vitamin E) but are not approved by the FDA for prophylaxis against radiation. FDA-approved preexposure medical countermeasures are available for anthrax, cholera, HFRS (Haantan), Rift Valley fever, yellow fever, HFRS (Haantan), and smallpox. IND status vaccines are currently available for Q-fever, tularemia (although use has been placed on hold by the FDA), Botulinum, Junin hemorrhagic fever, and VEE/WEE/EEE. Antiviral/bacterial medications may be administered and/or issued to provide a level of protection against biological agents. Medical prophylaxes are developed for the military force. Prophylaxes for MWAs are virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration

to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as long-term health issues and legal implications.

⁹ DOTLPF is adequate for the application of CBRND medical countermeasures by personnel transporting, handling, decontaminating, or otherwise potentially at risk for secondary exposure/contamination from infectious/contaminated remains.

¹⁰ Plans incorporate MOPP levels and methodologies are adjustable to meet local operations and threat needs. MOPP levels and methodologies outlined in doctrine, policy, procedures, and TTPs require levels of protection readiness based upon the threat and/or presence of contaminants. Full protection is required in the presence of CBRN/TIM agents/contamination. This includes protective measures and the wear of protective equipment when the possibility exists for secondary exposure/contamination to personnel and equipment, such as the movement, handling, decontamination, and preparation of contaminated remains. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Plans within HTAs may incorporate this perception. However, doctrine, policy, procedures, and TTPs do not address their application to nonmilitary personnel.

¹¹ DOTLPF is adequate for the protection of personnel handling, transporting, and decontaminating remains.

¹² Mortuary Affairs units/activities coordinate with the JTF/JOA Medical Services and unit Command/AOR Medical Services staffs to facilitate the recovery, preparation, and final internment of human remains. MWA remains are not processed by these units; rather, they are managed by the respective Services Veterinary support elements. However, DOTLPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nationals, etc.).

¹³ Mortuary Affairs units/elements establish readiness to conduct operations upon arrival within the AOR. Operations are established in field and site locations as necessary to support operations. Unit planned, allocated, and positioned resources are placed into readiness for operations as outlined in established doctrine, policies, procedures, and TTPs. Personnel are formally trained in the performance of their tasks and responsibilities and possess doctrinal materials for reference upon activation by command staff or receipt of CBRN event alerting/warning.

¹⁴ Primary duty mortuary affairs personnel possess adequate doctrine, policy, procedures, and training to reduce the potential for secondary exposure/contamination. Existing doctrine, policy, and procedures provide adequate protection of personnel against secondary exposure/contamination. Doctrine, policy, and procedures require the application of protective equipment and measures if the potential exists for contamination/exposure.

¹⁵ Doctrine, policy, and procedures exist for Mortuary Affairs activities within the AOR. Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination. The predominant means is decontamination of the asset following secondary exposure/contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport. Decontaminated and contained remains may not be considered a secondary risk by air asset managers.

¹⁶ Mortuary Affairs units/activities are not equipped and trained to operate and apply CBRN/TIM detection and monitoring devices other than standard individual warfighter detection devices (e.g., M9 paper, etc.).

¹⁷ Mortuary Affairs unit/element planning and preparations includes the provision of protection to personnel performing unit activities and operations. Existing protective equipment provides adequate protection of personnel against secondary exposure/contamination. The application of protective equipment and measures if the potential exists for contamination/exposure is a standard practice and incorporated into unit plans and procedures. Mortuary personnel performing decontamination and remains preparation require splash protection against decontaminants and body fluids. Unit planning addresses splash protection for these personnel.

¹⁸ Mortuary Affairs doctrine, policies, TTPs, plans, and processes require the full decontamination of remains, cremation, or final internment within the AOR; each of which are no longer considered acceptable by DoD. However, containment systems providing adequate protection and safeguards against secondary contamination/exposure of personnel and resources during storage, handling, transport, and potentially through final internment do not exist.

¹⁹ Mortuary Affairs doctrine, policy, and TTPs are adequate for within AOR actions and activities for operations involving contaminated/infectious remains. However, DOTLPF is inadequate for the containment of remains and for transport from the AOR to CONUS and internment within CONUS.

²⁰ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

²¹ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

²² Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities.

²³ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

²⁴ Cell Culture Derived Vaccinia is projected for production during the near-term. Clostridium Botulinum Toxin Medical Defense System is projected for availability during the mid term for Serotypes A, B, C, E, and F. The SERPACWA Active TSP is also projected for production during the late mid term.

²⁵ The next-generation series of nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

²⁶ The next-generation series of aviator and nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

²⁷ The next-generation series of nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

²⁸ The next-generation series of aviator and nonaviator percutaneous protective assets is in R&D. The capabilities and fielding of these assets are not as yet determined.

²⁹ Active TSPs are projected for replacement of SERPACWA TSP and SERPACWA Active TSP in the far term. The Chemical Agent Prophylaxis and Cyanide Pretreatment are also projected for the far term. The Multivalent VEE Vaccine is projected to begin production in FY2013. The Next-Generation Anthrax Vaccine, Tularemia Vaccine, and Plague Vaccine are projected for production beginning in FY2010. Serotypes A and B are addressed in the Recombinant Bivalent Botulinum Vaccine projected for production in FY2012. A number of R&D efforts are under way for the development of pre- and post-exposure prophylaxes. Potentially, these efforts may produce viable prophylaxes within the mid and far term resulting in fielded material. However, possible resulting prophylaxes cannot be predicted at this time.

13.13.3 Functional Solution Analysis

13.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for eligible civilians.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.
- 2. Deficiency:** Existing DOTLPF is inadequate, or nonexistent, for MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWAs, particularly MWDs, for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 3. Deficiency:** MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.
Partial Non-Materiel Solution: *Doctrine:* Establish doctrine, policy, and procedures for CBRND protection of MWD and training enabling CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWD CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of MWD handlers and MWDs for CBRND measures and activities. Integrate into CBRND exercises and evaluations. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWD survivability. *Facilities:* Develop supporting infrastructure for MWD CBRND (e.g., logistics, veterinary surveillance, communications, training, etc.).
- 4. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.
Partial Non-Materiel Solutions: *Doctrine:* Requirement for development of CBRND protective equipment and measures to protect against all CBRN/TIM agents, particularly high-risk/high-threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 5. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents.

Training: Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

6. **Deficiency:** Current prophylaxes and supporting DOTLPP do not address presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for eligible civilians, non-U.S. forces. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for eligible civilians, non-U.S. forces. *Training:* Train, potential eligible civilians on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of eligible civilians within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of eligible civilians.
7. **Deficiency:** Current prophylaxes and supporting DOTLPP do not address presymptomatic medical CBRND protective countermeasures for MWAs.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for MWA, particularly MWD. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for MWAs. *Training:* Train, potential MWA handlers on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of MWAs within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of MWAs.
8. **Deficiency:** Efficacy of existing prophylaxes varies widely.
Non-Materiel Solutions: *Doctrine:* Establish overarching single common standard for prophylaxes efficacy.
9. **Deficiency:** Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.
Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of metrics for standards and criteria for protection against all high-threat TIM agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce

compliance with established metrics for standards and criteria. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

10. Deficiency: Not all prophylaxes are FDA approved.

Non-Materiel Solutions: *Doctrine:* Require FDA approval of all prophylaxes, including medications potentially applied as prophylaxes. The latter requires specific approval as prophylactic treatment.

11. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

12. Deficiency: Prophylaxis for MWAs is virtually nonexistent.

Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWA CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of handlers and MWAs for CBRND measures and activities. *Leadership:* Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

13. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

14. Deficiency: Availability of prophylaxis is questionable for issue and administration to eligible civilians.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of CBRND standards and prophylaxis for protection of eligible civilians addressing the variation within a potential protected population. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct

CBRN/TIM training, exercises, and evaluations, where appropriate. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilians.

15. Deficiency: DOTLPF is inadequate for the processing of non-U.S. personnel (e.g., indigenous civilians, third-party nations, etc.).

Non-Materiel Solutions: *Doctrine:* Address in doctrine, policy, and procedures Mortuary Affairs operations and activities involving CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Organization:* Ensure resources, taskings, and staff are in place or available for Mortuary Affairs operations and activities addressing CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Training:* Train, exercise, and evaluate Mortuary Affairs activities and supporting force elements addressing CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.). *Leadership:* Ensure awareness of international and national implications of transport of contaminated or exposed remains and the public desire for final internment in homeland. *Facilities:* Develop supporting infrastructure for operations associated with Mortuary Affairs involving CBRN/TIM contaminated or exposed remains of non-U.S. personnel (e.g., indigenous civilians, third-party civilians, third-party nationals, displaced persons, detained persons, etc.).

16. Deficiency: Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination.

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains.

17. Deficiency: Air transport is limited to tactical rotary-wing as a last resort. Tactical and strategic fixed-wing is generally not considered an acceptable means of transport. These are due to concerns about asset contamination.

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed for exposed/contaminated remains (as well as other alternative methods to preclude secondary exposure/contamination of resources) in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to preclude secondary exposure/contamination of airframes and aircrew. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains to preclude secondary exposure/contamination of airframe and aircrew.

18. Deficiency: Mortuary Affairs units/activities are not equipped and trained to operate and apply CBRN/TIM detection and monitoring devices other than standard individual warfighter detection devices (e.g., M9 paper, etc.).

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing CBRN/TIM detection and monitoring of human remains. *Training:* Establish CBRN/TIM detection/monitoring training, exercise, and evaluation criteria and programs for Mortuary Affairs and conduct training, exercises, and evaluations. *Leadership:* Implement and manage CBRN/TIM detection/monitoring training, equipping, and protection of Mortuary Affairs personnel.

19. Deficiency: Protective containment systems are inadequate or nonexistent.

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternatives designed for exposed/contaminated remains in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives for exposed/contaminated remains. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems for exposed/contaminated remains.

20. Deficiency: DOTMLPF is inadequate for the containment and transport of contaminated remains for final internment outside the AOR.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Organization:* Organization structures, resources, taskings, and trained staff availability to enable and support the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Training:* Develop institutional and unit-level training for the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties. *Leadership:* Recognize importance of the safe handling, preparation, transport, protective measures, mortuary activities, storage, and final disposition of CBRN/TIM exposed/contaminated casualties and ensure personnel are properly equipped, adequately trained, fully comply with requirements, and are prepared and ready to perform the necessary tasks and activities. *Facilities:* Develop supporting infrastructure for the handling, movement, storage, and final disposition of exposed/contaminated remains resulting from a CBRN/TIM agent.

13.13.3.2 IMA Assessment Summary

Table 13.13-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches primarily focus on adapting current detectors and developing new detectors based on current and future threat agents. Table 13.13-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.13-2. TASHLD 13: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Contaminated material/equipment protective packaging and containment systems	Investigate and develop CBRN/TIM protective packaging and containment systems for contamination/exposed material and equipment which must be stored, handled, and/or transported in a contaminated/exposed state.
Contaminated remains containment systems	Investigate and develop sealable containment system for CBRN/TIM remains permitting their safe handling, storage, transport, and internment by unprotected personnel and equipment.
COTS CBRND IPE materiel for MWD protection	Adapt COTS protective equipment, where necessary and desirable, for CBRND of MWDs.
COTS sample containers and equipment	Adapt/modify (as necessary) COTS sample containers and equipment for the containment of CBRN/TIM samples and material for their safe handling, storage, and transport.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. FDA testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Develop and establish generic unit CBRND kits	Develop, preposition, and maintain reserve stocks of generic CBRND kits for a standard unit. Components are adjusted as necessary for specific operations involving threat.
Develop CBRN/TIM samples and material containment packaging/systems	Investigate and develop CBRN/TIM containment packaging and systems for the safe containment, handling, storage, and transport of CBRN/TIM samples and material.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.

Disposable IPE	Develop low-cost disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Field-expedient COLPRO materials	Identify commonly available materials (duct tape, plastic sheeting, wooden crate, plywood, tarps, coverings, wraps, caulk, sealant gels/sprays, etc.) for application in the construction of expedient COLPRO needed to construct field-expedient COLPRO when COLPRO availability is limited or not advantageous.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of pre- to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
GOTS CBRND IPE materiel for MWD protection	Adapt existing GOTS CBRND materiel (e.g., PPW, etc.) for application to CBRND of MWDs.
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.

Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
MWA prophylaxes	Develop or adapt CBRND medical countermeasures and Veterinary Medicine for preexposure and post-exposure/presymptomatic protection of MWD from CBRN/TIM. Develop topical that is easy to apply and provides shielding from CBRN/TIM, preventing agent absorption through hair or skin.
Prepositioned/reserve CBRN medical resources	Establish and maintain sufficient stocks of prepositioned and reserve CBRND medical resources identified in plans and required to support multiple operations with threat and ensure availability for expeditious movement to the and within the AO in the event of a CBRN event.
Prophylactic administration to diverse groups	Prophylaxes address dosage range for eligible civilians (e.g., children, elderly, overweight, underweight subjects, etc.). Stabilize prophylactic effects over a wide range of dosages to address diverse applications of targeted populations.
Rebreathing	Closed circuit mechanism to permit an individual's exhaled air to be filtered, CO ₂ removed and recirculated for breathing, allowing user to make use of all available oxygen in a closed environment.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Respiratory protection for MWAs	Modify existing technology for application by MWAs to provide some protection from CBRN/TIM. Specific masks would be desirable that are comparable to the human form factor.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.13-3. TASHLD 13: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	Assess CBRND Material	Broad-Application Above-the-Neck Respiratory Protection	Chemical Air Generation	Chemical Treatment	Combinatorial Prophylaxes	Contaminated Material/Equipment Protective Packaging and Containment Systems	Contaminated Remains Containment Systems	COTS Sample Containers and Equipment	Current Prophylaxes	Develop CBRND/TIM Samples and Material Containment Packaging/Systems
MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.	X	X	X	X	X				X	
CBRND protective equipment and measures do not protect against all CBRN/TIM agents.	X		X	X	X	X	X	X	X	X
Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.					X				X	
Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.					X				X	
Prophylaxis for MWA is virtually nonexistent.					X				X	
Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination.	X	X	X	X	X	X	X	X	X	X
Air transport is limited to tactical rotary-wing as a last resort. Tactical and strategic fixed-wing is generally not considered an acceptable means of transport. These are due to concerns about asset contamination.	X					X				
Protective containment systems are inadequate or nonexistent.						X	X	X		X

Table 13.13-3. TASHLD 13: IMA Assessment (continued)

Identified Gaps	Ideas for Material Approaches (IMA)										
	Develop and Establish Generic Unit CBRND Kits	Disposable IPE	Filtration System Lowering Inhalation Pressure Requirement	Future Prophylaxes	Improved IPE Garments and Accessories	Integrate CBRN/TIM Protective Features Into Functional Garments	Prepositioned/Reserve CBRN Medical Resources	Prophylactic Administration to Diverse Groups	Rebreathing	Regenerative Filtration	Topical
MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment	X	X	X	X	X		X		X	X	X
CBRND protective equipment and measures do not protect against all CBRN/TIM agents	X	X	X	X	X	X	X	X	X	X	X
Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents				X			X				X
Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat				X			X				X
Prophylaxis for MWA is virtually nonexistent				X			X				X
Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination	X	X	X	X	X	X		X	X	X	X
Air transport is limited to tactical rotary-wing as a last resort. Tactical and strategic fixed-wing is generally not considered an acceptable means of transport. These are due to concerns about asset contamination	X	X									X
Protective containment systems are inadequate or nonexistent	X	X					X				

Table 13.13-3. TASHLD 13: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">COTS CBRND IPE Materiel for MWD Protection</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Field-Expedient COLPRO Kits</p>	<p style="text-align: center;">Field-Expedient COLPRO Materials</p>	<p style="text-align: center;">GOTS CBRND IPE Materiel for MWD Protection</p>	<p style="text-align: center;">Integrated Mobile COLPRO</p>	<p style="text-align: center;">MWA Prophylaxes</p>	<p style="text-align: center;">Respiratory Protection for MWAs</p>
<p>MWDs are not equipped, trained, and prepared to survive a CBRN/TIM environment.</p>	X	X	X	X	X	X	X	X
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents</p>	X	X	X	X	X	X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>							X	
<p>Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat.</p>							X	
<p>Prophylaxis for MWA is virtually nonexistent.</p>							X	
<p>Prior decontamination of exposed/contaminated remains is the only identified means for protecting transportation assets against secondary contamination.</p>		X	X	X		X		
<p>Air transport is limited to tactical rotary-wing as a last resort. Tactical and strategic fixed-wing is generally not considered an acceptable means of transport. These are due to concerns about asset contamination.</p>		X	X	X		X		
<p>Protective containment systems are inadequate or nonexistent.</p>			X	X				

13.14 Task TASHLD 14: Ensure containment of samples and residues to prevent spread of contamination**13.14.1 Functional Area Analysis****13.14.1.1 Definition**

Provides safe, efficient, and consistent collection and handling of all CBRN/TIM samples, including those taken from personnel and MWAs following exposure. Samples and residues must be identified, marked, segregated, transported, and handled to ensure no contamination is inadvertently spread.

13.14.1.2 Derivation

Joint Enabling Concept for CBRN Operations, An Operational Concept for Biological Defense, Protection Joint Functional Concept, UJTL (TA 7, TA 7.1).

13.14.1.2.1 Supported Task: N/A

13.14.1.2.2 Lateral Task: TASHA 24

13.14.1.2.3 Supporting Task: N/A

13.14.1.3 Condition

Perform this task under conditions of:

Physical

1. Undeveloped to highly developed land. (C1.1.1)
2. Riverine to open sea. (C1.2)
3. Natural and induced air. (C1.3)
4. Immediate to delayed danger, and potential long-term health hazard of atmospheric weapons effects. (C1.3.3)

Military

1. Partially completed mission preparation. (C2.1.3)
2. Marginal forces. (C2.2)
3. Marginal to adequate forces allocated. (C2.2.3)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited staff expertise. (C2.3.1.3)
6. Limited deployed supplies. (C2.8.2)
7. No prepositioned materiel. (C2.8.4)

Civil. N/A

13.14.2 Functional Needs Analysis

13.14.2.1 Capability and Deficiency Assessment Summary

This task deals with ensuring the containment of samples and residues to prevent the spread of contamination. It is concerned with the safe, efficient, and consistent collection and handling of all CBRN/TIM samples. The overall capabilities for current, near/mid, and far term are rated “yellow.” Although improvements between the periods occur for specific capabilities and are reflected in the associated identified values, the improved capabilities are not sufficient to change the overall assessed color ratings for this task.

Current Capability and Deficiency

Selected specialized functions and activities exist and are trained, equipped, and prepared to perform these activities. They include field laboratory and medical services personnel, among others. Specialized containment systems for the movement of hazardous samples and residues for these functions and activities exist. However, these systems and materials are not available to the force for application to reduce the potential for secondary exposure/contamination resulting from retained contaminated assets or for the collection and transport of directed samples and residues. This task covers the full spectrum of protective requirements of personnel and resources involved in the collection, handling, storage, processing, and transport of potentially contaminated/infectious samples and residues. Services currently field a variety of CBRND assets providing respiratory/ocular and percutaneous protection. This diversity of assets complicates the logistical support of operations with threat for joint operations. The assets protect against known chemical and biological warfare agents and particulate radiologicals. Protection is afforded to a select number of TIMs. Existing Service-specific IPE is limited on the period and scope of protection afforded the warfighter. Physiological and psychological encumbrances increase with prolonged wear. This tendency requires regular exercising and wear to acclimate and adjust the wearer to enable performance of assigned functions and activities. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at-risk for contact with fluids. COTS assets may be applied meeting requirements for the protection of personnel performing the handling and processing of high-risk samples and materials. Medical prophylaxes do exist for the protection of the warfighter against a limited number of biological and chemical agents. However, few are FDA approved. A number possess IND authorization for application. Medications are considered for their potential prophylactic value, but are not always approved for this purpose by the FDA. Not all threat CBRN agents are addressed by CBRND medical countermeasures. Efficacy, time to achieve a level of protection, and the number of administrations vary between prophylaxes. COTS protective assets are applied for selected eligible civilians such as hazardous materials, firefighters, EMS, etc. However, eligible civilians and MWAs are not adequately addressed by DOTLPP for CBRND. Clear DOTLPP addressing the provisioning and training of eligible civilians with CBRND is inadequate. MWAs are not afforded protection against the effects of CBRN/TIM agents. MOPP DOTLPP is adequate for military personnel and operations. The establishment of adjustable MOPP levels, reflective of local operations and threat, are well

defined, as are continuing evaluation for change/adjustments. However, operations increasingly involve U.S. and non-U.S. civilians. MOPP DOTLPF does not adequately address their presence and inclusion into MOPP methodologies and levels, particularly when these personnel may (or may not) be equipped with nonstandard IPE. DOTLPF does support the general movement and transport of hazardous materials within the logistics system. DOTLPF incorporates requirements detailed by the U.S. Department of Transportation (DOT), OSHA, and CDC regulations and requirements. The correct packaging, containment, marking, and identification are dependent upon notification and initial material/sample packaging/containment, marking, and identification actions by the preparing activity. These personnel may, or may not, be trained in required packaging, containment, handling, marking, and identification of collected material and samples. DOTLPF incorporates requirements detailed by DOT, OSHA, and CDC regulations and requirements. However, only primary duty personnel performing these functions are trained, knowledgeable, and able to apply the standards. Primary duty personnel whose field does not include these tasks in their specialty description may not be trained to perform these functions. Training to recognize a potential hazard through identification of standard markings is not provided to the general force. Training of augmentation and additional duty personnel to accomplish these tasks is generally minimal and inadequate.

Projected Near/Mid-Term Capability and Deficiency

Future configurations focus on reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all services to reducing the logistics burden, development cost, and improved availability. The JPACE, JSLIST, JSAM, and JSGPM are projected to be initially fielded during the mid term. The JSLIST is under review for NIOSH certification for compliance with OSHA protective standards. The certification will permit application of the garment for AT/FP installation activities within CONUS and selected OCONUS. The possibility exists for potential application by requiring eligible civilians. Legacy Service-specific IPE will remain in the inventory throughout the mid term and into the far term during the transition to the joint IPE systems. Ongoing R&D into medical prophylaxes will provide additional prophylactic measures but still fail to address all threat CBRN agents and high-threat/high risk TIMs (particularly TICs). Otherwise, changes from current capabilities and deficiencies are not projected.

Projected Far-Term Capability and Deficiency

Future configurations focus upon reducing psychological and physiological stresses associated with the wearing of IPE, as well as striving for commonality of form factor among all Services. The standardization of CBRND respiratory/ocular and percutaneous protection which will reduce the logistics burden and development cost and subsequently improve availability. Legacy Service-specific IPE will continue to be replaced by the joint systems of CBRND protective equipment until fielding is complete to all Service units, including Guard and Reserve, early in the far term. Next-generation IPE assets are in R&D and are expected to be fielded sometime in the far term. However, specifics of design, characteristics, and protective capabilities are not as yet determined for these systems. Continued R&D into potential medical prophylaxes may result in additional protective measures for the force. However, specifics are unknown at this time. Additional changes in capabilities from the mid term are not projected.

13.14.2.2 Resource Systems

Individual Protection

1. Respiratory/Ocular Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

M17 Series Masks w/M13 Series Filters: Obsolete warfighter system of protection. Retained in selected HTAs for NEO application. Designed for adults.

MBU-19/P Chemical-Biological Aircrew Eye/Respiratory Protection (AERP): USAF combat aircrew protection. Includes protective hood, MBU-12/P mask, C-2 canister, intercom for ground communications, and blower assembly.

A/P22P-14(V) Respirator Assembly: USN/USMC system for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN/USMC) aircrews. Includes CB filter, dual air/oxygen supply, and crossover manifold for dual protective capabilities in air or on ground. Version 1 is not compatible with aircraft oxygen supply systems; Version 2 applied to EA-6B and F18A airframes; Version 3 to AV-8B and F-18C/D aircraft; and Version 4 is used for C-130 airframes.

M40/M42 CB Protective Mask: U.S. Army mask system designed for military standard profile and uses standard C-2 canister. M42 integrates with combat vehicle clean air supply system and has a connectable dynamic microphone for combat vehicle intercom system.

M43 CB Aircraft Mask: U.S. Army aircrew system, is a stand-alone portable system, and uses motor blower unit with C-2 filter.

M45 Aircrew Aviator Mask: Replaces M42 and M49 systems for U.S. Army. Available with a canister-compatible hose assembly and a valve cassette that enables use of supplied air (from aircraft, SCBA or PAPR). The M45 is used by military personnel who cannot fit the M40A1, M42A2, or MCU-2/P masks.

M48 CB Apache Aviator Mask: Used by Apache aviator and flight support personnel. Replaces M43 Type 1 mask system and uses blower assembly with C-2 filter canister.

MCU-2A/P: Mainstay USAF and USN system for nonaviator personnel and aircrew personnel not performing flight operations, except for aircrew personnel not issued aviator systems and noncombat platforms/airframes without clean air supply systems. Applies C-2 filter for filter air.

Joint Service Aviator Mask (JSAM): Initial fielding projected in the mid term replacing Service-specific aviator respiratory/ocular protective systems. Provides CBRN protection under high-G conditions, compatible with existing and projected aviator CBRN IPE, flame and thermal protective, reduces stress associated with existing aviator IPE, and may be donned/doffed during flight.

Joint Service General Purpose Mask (JSGPM): Initial fielding projected in the mid term replacing Service-specific standard respiratory/ocular protective systems. Provides respiratory/ocular protection from CBRN agents and selected TIMs. Improves field-of-vision and encumbrances associated with existing Service systems.

Joint Service Chemical Environment Survival Mask (JCESM): COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording two hours of protection in low-level CBRN vapor, aerosol, and particulate environments. Selected force element application only.

2. Percutaneous Protection:

COTS: Commercially available systems of protection, manufactured and tested meeting OSHA standards for the United States or equivalent organization in other nations.

Battle Dress Overgarment (BDO): U.S. Army/USAF two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Saratoga: USMC two-piece camouflage-patterned garment (top and trousers) providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Launderable for hygiene.

CPOG: Legacy two-piece green garment currently in use with USN providing limited-term protection against CBRN agents in vapor, liquid, droplet, and particulate forms.

Chemical Protective Undergarment (CPU): Worn under standard IPE as additional layer of protection against contact with CBRN agents.

CWU-66/P: One-piece USAF green flightsuit providing 24-hour protection against CBRN agents in vapor, liquid, droplet, and particulate forms. Available in tan as CWU-77/P flightsuit.

Disposal Aircrew Protective Cape: Transparent disposable cape covering head and shoulders of aviator during periods between aircraft mounting/dismounting and shelter.

BVO/GVO: Vinyl overboots (VO) worn over wearer's standard footwear and protects against contact with CBRN agents. Available in black (BVO) and green (GVO).

Chemical Protective Footwear Cover (CPFC): Legacy system of CBRN protective footwear cover in use by USN. Requires wearer to pull protective sole tabs up and wrap/tie laces around cover to secure over footwear.

Disposable Aircrew Footwear Cover: Transparent disposable footwear covers worn over aviator footwear to protect aviator during periods between aircraft mounting/dismounting and shelter.

Chemical Protective Glove (CPG): Standard CBRN protective glove. Available in 7-, 14-, and 25-mil thicknesses addressing functional requirements for durability, dexterity, and tactile sensitivity.

Disposable Aircrew Hand Protection: Transparent disposable hand coverings applied by USAF, USN, and USMC over aviator gloves during periods between aircraft mounting/dismounting and shelter. Also applied as between aviator inner and outer gloves enabling essential functional requirements for dexterity and tactile sensitivity.

Chemical Protective Helmet System (CPHS): CBRN protective camouflage-patterned helmet cover to protect helmet from contact with CBRN contaminants.

SCALP: Disposable, lightweight, impermeable overgarment designed for wear over IPE for additional protection in grossly contaminated environments. Applied by personnel required to leave protective sheltering in these environments to perform mission-critical tasks. Also applied by decontamination units/teams and medical personnel performing decontamination or potentially at risk for prolonged contact with liquids.

Wet-Weather Gear: Includes Severe-Weather Gear (USN). Provides barrier against contact with liquids potentially damaging to protective abilities of IPE.

M-2 Apron: Butyl rubber-coated sleeved apron worn over IPE and applied by decontamination units/teams and other designated personnel performing decontamination or potentially at risk for contact with liquids. Provides barrier against contact with liquids potentially damaging to protective abilities of IPE. Can be decontaminated.

Joint Service Lightweight Integrated Suit Technology (JSLIST): Two-piece (jacket and trousers) CBRN risk-taking protective garment with integrated hood. Affords protection against selected TIM agents. Reduces physiological and psychological encumbrances associated with existing Service-specific systems it replaces with initial fielding in the mid term. Under review for NIOSH certification for OSHA protection standards.

Joint Protective Aircrew Ensemble (JPACE): CBRN protective aviator flightsuit projected for initial fielding in the mid term and replacing Service-specific CBRN protective flightsuits. Provides JSLIST equivalent protection and provides protection when subject to rotor, propeller, and jetwash. Flame-retardant and self-extinguishing properties. Supports escape and evasion requirements.

Joint Block I/II Glove Upgrade (JB1/2GU): Projected fielding in near mid term replacing CPG for designated force elements requiring increased tactility/durability for mission performance. Various configurations under consideration.

Joint Firefighter Integrated Response Ensemble (JFIRE): Incorporates JSLIST into firefighter bunker gear, permitting firefighters to conduct firefighting operations within a CBRN/TIM environment.

Multi-purpose Overboot (MULO): Projected initial fielding in mid term and replacing legacy CBRN footwear covers.

3. Medical Protection:

Vaccines: Immunizations providing a level of acquired immunity against the effects of CBRN agents.

Topicals: Protective barrier products applied to the skin to enhance protection of wear against contact with CBRN/TIM agents. Includes both inert and reactive materials.

Medications: Medical materials taken to mitigate or prevent the effects of exposure to CBRN/TIM agents. Includes medications taken routinely or upon exposure (but prior to symptom display) to build resistance/immunity or to mitigate/resolve medical impacts of CBRN/TIM agent exposure/contamination.

MOPP Methodology: Stepped level of CBRND protective measures. Standardized levels permit the rapid increase or decrease of unit MOPP level.

Unit Staff: The application of DOTLPF for all phases of operations with threat from preplanning to post-force return to home stations. Includes all aspects of C2 and supporting staff activities/functions (e.g., logistics, intelligence, etc.) enabling mission and task accomplishment.

Table 13.14-1. TASHLD 14: Capability and Deficiency Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
<i>Individual Protection</i>	4.7	4.7	2	4.7	2	3
Respiratory/Ocular Protection	5 ¹	5 ^{1,2}	N/A	5 ^{1,2}	N/A	3 ³
Percutaneous Protection	5 ⁴	5 ^{2,4}	2 ⁵	5 ^{2,4}	2 ⁵	3 ³
Medical Protection	4 ⁶	4 ⁶	N/A	4 ⁶	N/A	3 ³
<i>Mission-Oriented Protective Posture (MOPP) Methodology</i>	4 ⁷	5 ⁷	4 ⁷	4 ⁷	5 ⁷	5 ⁷
<i>Unit Staff</i>	5 ⁸	4 ⁸	3 ⁸	8 ⁸	6 ⁸	6 ⁸
Near/Mid						
<i>Individual Protection</i>	5.3	5.3	2	5.3	2	3
Respiratory/Ocular Protection	6 ^{1,9}	6 ^{1,2,9}	N/A	6 ^{1,2,9}	N/A	X ³
Percutaneous Protection	6 ^{4,10}	6 ^{2,4,10}	2 ⁵	6 ^{2,4,10}	2 ⁵	X ³
Medical Protection	4 ^{6,11}	4 ^{6,11}	N/A	4 ^{6,11}	N/A	X ³
<i>MOPP</i>	4 ⁷	5 ⁷	4 ⁷	4 ⁷	5 ⁷	5 ⁷
<i>Unit Staff</i>	5 ⁸	4 ⁸	3 ⁸	8 ⁸	6 ⁸	6 ⁸
Far						
<i>Individual Protection</i>	5.3	5.3	2	5.3	2	3
Respiratory/Ocular Protection	6 ^{1,9,12}	6 ^{1,2,9,12}	N/A	6 ^{1,2,9,12}	N/A	X ³
Percutaneous Protection	6 ^{4,10,13}	6 ^{2,4,10,13}	2 ⁵	6 ^{2,4,10,13}	2 ⁵	X ³
Medical Protection	4 ^{6,11,14}	4 ^{6,11,14}	N/A	4 ^{6,11,14}	N/A	X ³
<i>MOPP</i>	4 ⁷	5 ⁷	4 ⁷	4 ⁷	5 ⁷	5 ⁷
<i>Unit Staff</i>	5 ⁸	4 ⁸	3 ⁸	8 ⁸	6 ⁸	6 ⁸
Overall						
Current Overall Capability	5	5	3	6	4	5
Near/Mid-Term Overall Capability	5	5	3	6	4	5
Far-Term Overall Capability	5	5	3	6	4	5

	FAA Measure	Scale
M1	Forces are trained on hazards associated with CBRN/TIM samples and materials.	<p>8–10: Forces are trained on the application of protective barrier materials and assets, identification and marking, associated hazards, and the safe handling and transport of CBRN/TIM samples and material.</p> <p>4–7: Personnel assigned specific functions are trained on the application of protective barrier materials and assets, identification and marking, associated hazards, and the safe handling and transport of CBRN/TIM samples and material.</p> <p>1–3: Primary duty personnel assigned specific functions are trained on the application of protective barrier materials and assets, identification and marking, associated hazards, and the safe handling and transport of CBRN/TIM samples and material.</p> <p>0: Personnel are not trained on the application of protective barrier materials and assets, identification and marking, associated hazards, and the safe handling and transport of CBRN/TIM samples and material.</p>
M2	Specific designated personnel/teams are trained to handle samples.	<p>8–10: Force activities and functions with responsibilities to prepare, store, handle, transport, or in any manner may be in proximity to or contact with CBRN/TIM samples and materials (contained and uncontained) maintain designated and fully trained, equipped, and prepared teams/personnel for the safe conduct of their responsibilities and duties.</p> <p>4–7: Force activities and functions with responsibilities to prepare, store, handle, transport, or in any manner may be in proximity to or contact with CBRN/TIM samples and materials (contained and uncontained) maintain designated, trained, and equipped teams/personnel for the safe conduct of their responsibilities and duties</p> <p>1–3: Force activities and functions with responsibilities to prepare, store, handle, transport, or in any manner may be in proximity to or contact with CBRN/TIM samples and materials (contained and uncontained) maintain designated trained individuals with augmenting unit personnel drawn upon need, and equipment for the accomplishment of essential related activities.</p> <p>0: Force activities and functions possessing the potential for contact with or proximity to CBRN/TIM samples and materials (contained and uncontained) do not maintain trained designated personnel and equipment for the safe accomplishment of their tasks.</p>
M3	CBRN/TIM protective packaging materials (e.g., wraps, envelopes, bags, etc.) are available to wrap or otherwise contain CBRN/TIM samples and materials to prevent secondary contamination/exposure.	<p>8–10: Adequate types and quantities of effective CBRN/TIM material protective packaging and containment resources are readily available to the force for the packaging and containment of CBRN/TIM samples and materials and to preclude the potential for secondary contamination/exposure of handling, storing, and transporting resources/activities.</p> <p>4–7: CBRN/TIM material protective packaging and containment resources are readily available to selected force elements for the packaging and containment of CBRN/TIM samples and materials to prevent secondary contamination/exposure of handling and transporting resources/activities.</p> <p>1–3: Selected force elements possess access to CBRN/TIM material protective packaging and containment resources for CBRN/TIM samples and materials reducing the potential for secondary contamination/exposure of handling and transporting resources/activities.</p> <p>0: CBRN/TIM material protective packaging and containment resources do not exist for the safe handling and transport of CBRN/TIM samples and materials.</p>

M4	Procedures detail the handling and processing of CBRN/TIM samples and materials.	<p>8–10: Doctrine, policy, procedures, TTPs, and processes provide detailed requirements and guidance for the identification, accounting, packaging, containment, monitoring, protective equipment, and associated actions for the safe handling and processing of CBRN/TIM samples and materials.</p> <p>4–7: Doctrine, policy, procedures, TTPs, and processes provide general requirements and guidance for the identification, accounting, packaging, containment, monitoring, protective equipment, and associated actions for the safe handling and processing of CBRN/TIM samples and materials.</p> <p>1–3: Doctrine, policy, procedures, TTPs, and processes provide limited guidance for the identification, accounting, packaging, containment, monitoring, protective equipment, and associated actions for the safe handling and processing of CBRN/TIM samples and materials.</p> <p>0: Doctrine, policy, procedures, TTPs, and processes do not address the identification, accounting, packaging, containment, monitoring, protective equipment, and associated actions for the safe handling and processing of CBRN/TIM samples and materials.</p>
M5	CBRN/TIM protective packages and containers are available to safely package and contain CBRN/TIM samples and materials for safe handling and transport.	<p>8–10: CBRN/TIM protective barrier movement and storage materials (e.g., packaging, containers, etc.) are readily available for the safe movement of hazardous or contaminated material and samples.</p> <p>4–7: CBRN/TIM protective barrier movement and storage materials (e.g., packaging, containers, etc.) are available for the movement of selected material and samples.</p> <p>1–3: Limited CBRN/TIM protective barrier and storage materials (e.g., packaging, containers, etc.) are available for the movement of specific material and samples.</p> <p>0: CBRN/TIM protective barrier and storage materials (e.g., packaging, containers, etc.) are nonexistent.</p>
M6	There is effective DOTMLPF in place to conduct task.	<p>8–10: DOTMLPF exists and is adequate for this task. Task can be effectively performed with little or no direct impact upon operations</p> <p>4–7: Most critical aspects of DOTMLPF for this task are addressed. Task can be performed with limitations requiring work-arounds.</p> <p>1–3: DOTMLPF is inadequate for accomplishment of this task.</p> <p>0: DOTMLPF does not exist for this task.</p>

¹ CBRND IPE is currently Service-specific. Respiratory/ocular protection is diverse across the Services and performed functions. USAF combat aircrews conduction operations within a CBRN environment are equipped with the MBU-19/P Chemical-Biological AERP that includes protective hood, MBU-12/P mask, C-2 filter canister, an intercom for ground communications, and a blower assembly. The AERP provides protection whether or not supplemental oxygen is present. USN and USMC aviators use the A/P22P-14(V) Respirator Assembly that is a self-contained protective system deployed for rotary-wing (Version 1 for USN) and fixed-wing (Versions 2–4 for USN and USMC) aircrews. The system incorporates a CB filter, dual air/oxygen supply, and a crossover manifold with dual protective capabilities for flight and ground protection. The A/P 22P-14(V) 1 is not compatible with aircraft with oxygen delivery systems and supports helicopter crew use. Version 2 is used for the EA-6B and F-18A, Version 3 for AV-8B and F-18C/D, and Version 4 is applied for C-130 aircrews. The M17 series mask is obsolete and is relegated to NEO support in selected HTAs. The mask is designed for the military standard profile (ground) and does not adequately protect all potential nonmilitary populace members, for which is retained. The M40/M42 CB Protective Mask is in service with the U.S. Army. The mask uses the C-2 canister for filtration of CBRN contaminants. The M42 integrates with combat vehicle filtration protection system and has a dynamic microphone with cable for connection to vehicle communications systems. The M43 CB Aircraft Mask is applied by U.S. Army aircrew members and applies a motor blower unit with C-2 canister for filtration. The system is a stand-alone system that accompanies the user. The M45 Aircrew Aviator Mask replaced the U.S. Army M43 Type II and M49 Mask Systems. The system uses a low-profile canister compatible hose assembly for both hose and face-mounted configurations. The mask system incorporates selectable filtration for support both during aircraft systems activation and using the connectable filter pack. The mask also is applied to personnel who cannot be fitted with the standard M40A1, M42A2, or MCU-2A/P masks. The M48 CB Apache Aviator Mask protects AH-64 Apache helicopter aviators and flight support personnel. The blower assembly uses the C-2 filter canister to provide filtered, breathable air. The M-48 replaces the M43 Type 1 mask. The MCU-2A/P is the mainstay USAF and USN mask employed by personnel not equipped with aircrew

masks and by aircrew when not performing flight operations. The MCU-2A/P is also used by aircrew during flight operations who are not equipped with aircrew masks. COTS equipment meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Limited quantities of COTS may be available within HTAs for known NEO requirements for the protection of populace members unable to wear the M17 series or standard warfighter respiratory/ocular protective devices. MWAs are not afforded respiratory/ocular protection.

² COTS assets may be applied meeting requirements for the protection of personnel performing the handling and processing of high-risk samples and materials.

³ DOTLPF does adequately address the requirement for individual protection (including application of CBRN medical prophylaxis when appropriate and available) whenever there is a potential for secondary exposure or contamination. DOTLPF does address, for select specialized functions and activities, the application of specialized COTS individual protection when handling and preparing certain high-risk category samples and materials. However, DOTLPF is inadequate for the protective packaging and containment systems for enclosing and containing potential hazards associated with the contained samples and material throughout the line of communications process (includes handling, storing, transporting, etc.).

⁴ Service-specific CBRND percutaneous protection is currently applied for the protection of the force. The BDO, used by the USAF and U.S. Army, is a two-piece garment providing protection for a 24-hour period against chemical agent vapors, liquids, and droplets; biological agents and toxins and contact with radioactive particles. The BDO's protective abilities are lost if the suit is torn, ripped, splashed with POL, or is saturated with water and is designed for a one-time use and is worn by ground and most flight personnel (non-high-performance aircraft). The USMC uses the Saratoga COLPRO suit similar in design to the BDO, but launderable for personnel hygiene. The CPOG is a legacy two-piece garment for protection against CBRN agents. The CPOG is in use with the USN. The CPU is designed to provide an additional layer of protection for the warfighter and is worn under standard IPE. The USAF CWU-66/P (and 77/P) is a one-piece flightsuit providing protection for a 24-hour period against standard CBRN agents and is designed for compatibility with aircrew lift support equipment. The USN, USAF, and USMC use the disposable aircrew protective cape to protect aircrew between sheltering and the combat aircraft. The cape drapes over the wearer and is removed during entry into the aircraft to prevent transfer of contamination into the aircraft interior. The BVO/GVO overboots are applied over the wearer's standard footwear to protect against contact with CBRND. The USN uses the CPFC, commonly called the "fishtail" for its design, to protect the wearer's footwear. The CPFC, considered obsolete, does provide a measure of antislip protection shipboard. The disposable aircrew boot cover is worn by USAF, USN, and USMC aviators over aircrew footwear while en route and mounting combat aircraft. The covers are removed during aircraft entry and are designed to prevent contamination transfer into the aircraft. Hand protection is provided by the CPG in 7-, 14-, and 25-mil thicknesses to meet warfighter hand protection and dexterity needs. Disposable aircrew hand protection is applied by the USAF, USMC, and USN for aviators over their gloves (and may be worn between glove layers for additional protection) during movement between shelter and aircraft. When used as an overglove, the gloves are removed during aircraft mounting during aircraft entry to preclude the potential for transfer of contamination into the aircraft interior. Medical Services practitioners performing treatment The CPHS is designed to prevent contact of the warfighter's helmet with liquid contamination which may be absorbed, impact helmet integrity, and/or constitute a potential secondary hazard to the wearer. SCALP provides a disposable, lightweight, impermeable layer of protection for personnel against gross liquid contamination and is worn over the warfighter's protective ensemble. SCALP is commonly applied to protect armor and EOD personnel who may be required to leave sheltering to perform duties and functions. SCALP is also applied by units performing decontamination operations where personnel may become soaked by decontaminants and Medical Services personnel with potential for prolonged contact with body fluids. Standard wet-weather gear (e.g., poncho, rain parka, rain suit, etc.) is also applied as a barrier against saturation of the warfighter's protective ensemble by contact with liquids such as rain, sea spray, etc. The M-2 apron is applied by personnel performing decontamination aprons and is worn over the ensemble. The apron is full length and sleeve to maximize coverage, although the back is open. COTS assets meeting OSHA requirements (and NFPA for firefighters) is applied by selected civilian personnel performing specific functions such as firefighting, EMS, hazardous materials, etc. Medical barrier impermeable barrier protective assets may also be applied by Medical Services practitioners potentially at risk for contact with fluids.

⁵ COTS assets may be applied for the containment of these samples for shipment. However, these are not identified for use by other than specialized functions and teams. Otherwise, containment and packaging systems to preclude the potential for secondary exposure/contamination of resources are not addressed in DOTLPF and are not identified and available for force use.

⁶ Forces are not protected against all identified threat CBRN/TIM capabilities. Medical prophylaxis does not exist for all threat CBRN/TIM agents. Current prophylaxis and supporting doctrine, policy, and procedures do not address presymptomatic medical CBRND protective countermeasures by other than U.S. forces, excluding MWAs and eligible civilians. Prophylaxis against most high-threat TIMs are not currently available due to the relatively recent consideration of these agents as a potential threat. Additionally, the efficacy of existing prophylaxis, particularly vaccines, widely varies. Military personnel are administered and/or issued CBRND medical countermeasures for operations with threat. Vaccines for selected biological agents, topicals, and preexposure and/or post-exposure/presymptomatic medications are applied to mitigate or preclude the effects of specific CBRN/TIM agents. Currently, preexposure prophylaxis is available for nerve agents (G and V series), and vesicants (H, HD, HN, L, CX), topical only. SERPACWA is the preexposure countermeasure for vesicants and one nerve agent. TSP is approved by the FDA as a supplement for SERPACWA. Post-exposure prophylaxis is available for

pulmonary (CG) agent, but is not FDA approved. Radioprotective steroids and neutraceuticals may be effective as pre- and post-exposure prophylactics. 5-androstenediol is an IND preexposure treatment for radiological exposure. Iodide/potassium iodide is FDA approved for application against Iodine 131, 132, 134, and 135. Post-exposure radiological exposure prophylaxis consists of neutraceuticals, plant isoflavone genistein, and alpha tocopherol (Vitamin E) but are not approved by the FDA for prophylaxis against radiation. FDA-approved preexposure medical countermeasures are available for anthrax, cholera, HFRS (Haantan), Rift Valley fever, yellow fever, HFRS (Haantan), and smallpox. IND status vaccines are currently available for Q-fever, tularemia (although use has been placed on hold by the FDA), Botulinum, Junin hemorrhagic fever, and VEE/WEE/EEE. Antiviral/bacterial medications may be administered and/or issued to provide a level of protection against biological agents. Medical prophylaxes are developed for the military force. Prophylaxes for MWAs are virtually nonexistent. Prophylaxis for eligible civilians is not addressed. Availability of prophylaxis is questionable for issue and administration to eligible civilians. The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as long-term health issues and legal implications.

⁷ DOTLPP incorporate MOPP levels, methodologies, and requirements and require levels of protection readiness based upon the potential for exposure/contamination (including secondary). Full protection is required in the presence of contamination. This includes protective measures and the wear of protective equipment when the possibility exists for secondary exposure/contamination to personnel and equipment, such as the processing, handling, and movement of CBRN/TIM samples and materials. MOPP levels and methodologies are generally considered to apply to equipped nonmilitary personnel. Nonmilitary personnel often perform tasks associated with these activities. DOTLPP does not address the application of MOPP to nonmilitary personnel.

⁸ Specialized activities, including medical, are identified for the collection, handling, and processing of hazardous materials and samples. These include, but are not limited to, activities such as laboratory, hazardous materials, forensics, evidentiary, Technical Escort Units (TEUs), selected R&D, and similar designated functions and activities. Units with these responsibilities designate, train, and equip these functions and activities to perform their tasks. Planning, resource identification, preparations, and operations are performed by the responsible unit command/Medical Services staff for taskings related to operations with threat. DOTLPP for these specialized functions and activities is adequate to support their operations. Specific resources are applied and are often limited in availability and type. Medical Services DOTLPP provides specific instructions and detailed training for most activities, predominantly those performed routinely. However, other functions and activities potentially performing sample and detection activities, particularly those related to operations involving local events of a possible criminal nature or when directed by proper authorities, are often not prepared, trained, and equipped to perform these functions. DOTLPP does support the general movement and transport of hazardous materials within the logistics system. Training standards exist for primary duty personnel performing cargo movement activities. However, primary packaging and safe containment of hazardous material and samples is the responsibility of the initiating activity (e.g., TEUs, Medical, CBRN/TIM survey and sampling, field laboratories, etc.). The correct packaging, containment, marking, and identification is dependent upon notification and initial material/sample packaging/containment, marking, and identification actions by the preparing activity. These personnel may or may not be trained in required packaging, containment, handling, marking, and identification of collected material and samples. DOTLPP incorporates requirements detailed by DOT, OSHA, and CDC regulations and requirements. However, only primary duty personnel performing these functions are trained, knowledgeable, and able to apply the standards. Primary duty personnel whose field does not include these tasks in their specialty description may not be trained to perform these functions. Specialized packaging and containment materials are generally available for designated specialized functions and activities whose primary function includes the preparation of these materials for safe handling and transport. These assets are specialized, limited in availability, and not generally available to other functions and activities with potential need. Training to recognize a potential hazard through identification of standard markings is not provided to the general force. Training of augmentation and additional duty personnel to accomplish these tasks is generally minimal and inadequate.

⁹ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of respiratory/ocular protection as they are fielded. The JSAM replaces the Service-specific systems. When incorporated with anti-G protection of high-performance aircraft aviators, the JSAM will provide simultaneous CBRN and anti-G protection. The JSAM is compatible with existing and programmed CBRN IPE, provides flame and thermal protection, and reduces the heat stress associated with existing systems of ocular/respiratory protection. Further, the JSAM may be donned and doffed during flight. The JSGPM also replaces current Service-specific ocular/respiratory protection. The system provides respiratory and ocular protection from CBRN agents and selected TIMs. The field-of-vision is improved and encumbrances associated with legacy systems are reduced. The JSGPM incorporates state of the art technology and is designed to integrate with future warfighter CBRND IPE and function equipment/assets. The JCESM is a COTS one-time use, one-size-fits-all, respiratory/ocular protective system affording 2 hours of protection and is lightweight and disposable. The system is designed to provide low-level CBRN vapor, aerosol, and particulate protection to the wearer for egressing the contaminated environment. The JCESM is projected for use when standard respiratory/ocular protection is not practical. The JCESM is not programmed for general dissemination. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for respiratory/ocular protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA respiratory/ocular protection is not programmed or forecasted.

¹⁰ Legacy systems will remain in the inventory throughout the mid term. These systems will be gradually replaced by new joint systems of percutaneous protection as they are fielded. The JSLIST NBC Protective Garment is a two-piece, risk-taking, overgarment with integrated hood affording protection against CBRN agents and selected TIMs. The garment reduces the physiological and psychological encumbrances associated with legacy systems. The JSLIST is under evaluation by NIOSH for application to OSHA protection requirements. The JPACE replaces the Service-specific systems. The JPACE provides aircrew members with equivalent protection to the JSLIST ensemble. The JPACE is designed to not interfere with emergency ejection from a combat aircraft and continues to provide CBRN percutaneous protection following ejection and during escape and evasion operations. The ensemble is both flame-retardant and self-extinguishing to permit emergency egress from a burning aircraft. Further, the ensemble provides CBRN protection when subject to rotor, propeller, and jet wash. Joint Service glove upgrades are provided under the Joint Block 1 and 2 Glove Upgrade Program (JB1/2GU) in the near and mid term. The JB1GU responds to an urgent need by designated elements of the force for increased tactility/durability supporting mission requirements. The JFIRE addresses protection of military firefighters within a CBRN/TIM environment conducting firefighting operations involving structural and crash/firefighting/rescue. The JFIRE incorporates the JSLIST into firefighter bunker gear. The JB1GU is expected to meet most of the requirements within the JSLIST ORD and is viewed as an evolutionary approach in the development of the JB2GU. Versions under consideration include a protective inner glove worn under existing warfighter gloves, a replacement glove for existing hand wear, or a combination of glove shell and liner affording CBRN protection of the legacy gloves they are projected to replace. The MULO is projected to replace legacy footwear covers. The ability of the MULO to provide adequate antislip protection for USN personnel asea is under review. The Guardian Program is projected to review, assess, and implement protection for critical members of the installation/facility populace during the mid term. This will predominantly be COTS-based assets for percutaneous protection. However, the Guardian Program is not expected to address eligible civilian protection within the AO for other than existing U.S. military installations and facilities. MWA percutaneous protection is not programmed or forecasted.

¹¹ Cell Culture Derived Vaccinia is projected for production during the near-term. Clostridium Botulinum Toxin Medical Defense System is projected for availability during the mid term for Serotypes A, B, C, E, and F. The SERPACWA Active TSP is also projected for production during the late mid term.

¹² The next-generation series of aviator and nonaviator masks is in R&D. The capabilities and fielding of these masks are not as yet determined.

¹³ The next-generation series of aviator and nonaviator percutaneous protective assets are in R&D. The capabilities and fielding of these assets are not as yet determined.

¹⁴ Active TSPs are projected for replacement of SERPACWA TSP and SERPACWA Active TSP in the far term. The Chemical Agent Prophylaxis and Cyanide Pretreatment are also projected for the far term. The Multivalent VEE Vaccine is projected to begin production in FY2013. The Next-Generation Anthrax Vaccine, Tularemia Vaccine, and Plague Vaccine are projected for production beginning in FY2010. Serotypes A and B are addressed in the Recombinant Bivalent Botulinum Vaccine projected for production in FY2012. A number of R&D efforts are under way for the development of preexposure and post-exposure prophylaxes. Potentially, these efforts may produce viable prophylaxes within the mid and far term resulting in fielded material. However, possible resulting prophylaxes cannot be predicted at this time.

13.14.3 Functional Solution Analysis

13.14.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** CBRN/TIM protective packagings are limited or not identified for other than specialized functions.

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems designed to contain contamination and prevent secondary exposure/contamination during handling, storage, and transport. *Organization:* Identify organizational resources and support requirements for the application of CBRN/TIM containment packaging/systems. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems.
- 2. Deficiency:** Movement of CBRN/TIM contaminated material is generally limited initially to tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport.

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternative methods to preclude secondary exposure/contamination in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives precluding secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives to contain contamination and preclude secondary exposure/contamination.
- 3. Deficiency:** CBRND protective equipment and measures do not protect against all CBRN/TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Requirement for development of CBRND protective equipment and measures to protect against all CBRN/TIM agents, particularly high-risk/high-threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection.
- 4. Deficiency:** Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards for prophylactic CBRND protection against all threat agents. *Training:* Train, exercise, and evaluate personnel (military and eligible civilians) on the use of prophylactic CBRND protection against threat agents. *Leadership:* Enforce compliance with established standards (see Doctrine) for prophylactic CBRND protection. Implement and ensure training is adequate and conduct exercises and evaluations to ensure readiness.

- 5. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for eligible civilians and non-U.S. forces. *Training:* Train, potential eligible civilians and non-U.S. forces on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of eligible civilians and non-U.S. forces within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of eligible civilians and non-U.S. forces.
- 6. Deficiency:** Current prophylaxes and supporting DOTLPF do not address presymptomatic medical CBRND protective countermeasures for MWAs.
Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and TTPs guidance and instructions for the application of presymptomatic medical CBRND protective countermeasures for MWAs. *Organization:* Ensure resources, taskings, and staff are in place or available to plan, disseminate/administer, and monitor presymptomatic medical CBRND protective countermeasures for MWAs. *Training:* Train potential MWA handlers on presymptomatic medical CBRND protective countermeasures. *Leadership:* Recognize criticality of protection of MWAs within a CBRN/TIM environment, training providing the skills to manage the force in these circumstances, and willingness and ability to implement necessary changes and activities to prepare and appropriately apply force resources. *Facilities:* Develop supporting infrastructure to support presymptomatic medical CBRND protective countermeasures of MWAs.
- 7. Deficiency:** Efficacy of existing prophylaxes varies widely.
Non-Materiel Solutions: *Doctrine:* Establish overarching single common standard for prophylaxes efficacy.
- 8. Deficiency:** Not all prophylaxes are FDA approved.
Non-Materiel Solutions: *Doctrine:* Require FDA approval of all prophylaxes, including medications potentially applied as prophylaxes. The latter requires specific approval as prophylactic treatment.
- 9. Deficiency:** Prophylaxis for MWA is virtually nonexistent.
Partial Non-Materiel Solutions: *Doctrine:* Establish doctrine, policy, and procedures CBRND protection of MWAs, particularly MWDs, and training for CBRN/TIM environment survival. *Organization:* Ensure organizational consideration for maintenance and support of MWD CBRND protective equipment, measures, and activities. *Training:* Establish institutional and unit training of handlers and MWAs for CBRND measures and activities.

Leadership: Ensure awareness and planning for CBRND measures and requirements for MWA survivability. *Facilities:* Develop supporting infrastructure for MWA CBRND (e.g., logistics, veterinary surveillance, etc.).

10. Deficiency: Prophylaxis for eligible civilians is not addressed.

Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures requirement to address the administration, provision, and application of medical CBRND protective countermeasures by other than U.S. forces (e.g., civilians, non-U.S. forces, etc.). *Organization:* Address organizational issues (e.g., who provides the equipment, support forces to train and equip, etc.) related to the provision of CBRN/TIM protection to eligible civilians and non-U.S. forces. *Training:* Include eligible civilians in CBRND training, exercises, and evaluations. Identify training requirements and responsibilities for non-U.S. forces. *Leadership:* Ensure leadership awareness of criticality of increased dependence of military operations upon civilians. *Personnel:* Require eligible civilians supporting the mission to meet minimum standards for safe use of CBRND resources.

11. Deficiency: The predominant means of protection of supporting assets is decontamination of the asset following secondary exposure/contamination

Partial Non-Materiel Solutions: *Doctrine:* Include the application of CBRN/TIM containment packaging/systems and other alternative methods to preclude secondary exposure/contamination of resources in doctrine, policy, and procedures. *Training:* Train, exercise, and evaluate the application of CBRN/TIM containment packaging/systems and other alternatives precluding secondary exposure/contamination. *Leadership:* Implement and manage training, equipping, protective measures, and exercising for the safe application of CBRN/TIM containment packaging/systems and other alternatives to contain contamination and preclude secondary exposure/contamination.

12. Deficiency: The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.

Partial Non-Materiel Solutions: *Doctrine:* Establish in doctrine, policy, and procedures the application of standards and measures for protection of eligible civilians addressing the variation within the potential protected population. *Leadership:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians and conduct CBRN/TIM training, exercises, and evaluations.

13. Deficiency: DOTLPF for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of eligible civilians.

Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing eligible civilian personnel for CBRND. *Organization:* Identify organization services and activities necessary to support survivability of eligible civilian personnel within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for eligible civilians; and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of eligible civilian personnel.

- 14. Deficiency:** DOTLPP for Protective Posture Protocols is inadequate or nonexistent addressing CBRND of MWAs.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine, policy, and procedures addressing MWA, particularly MWD. *Organization:* Identify organization services and activities necessary to support survivability of MWAs within a CBRN/TIM environment. *Training:* Establish CBRND training, exercise, and evaluation criteria and programs for MWAs and conduct CBRND training, exercises, and evaluations. *Leadership:* Implement and manage CBRND training, equipping, and protection of MWAs.
- 15. Deficiency:** Non-primary-duty personnel may or may not be trained in required packaging, containment, marking, and identification of collected material and samples.
Non-Materiel Solutions: *Training:* Personnel performing augmentation or direct support functions (e.g., storing, moving, handling, transporting, etc.) of hazardous, contaminated, or infectious material require training commensurate with their responsibilities. *Leadership:* Ensure all personnel identified in “Training” are trained and knowledgeable.
- 16. Deficiency:** Generally, only primary duty personnel performing packing, containerization, storing, transporting, marking, and identification of hazardous or contaminated material and samples functions are trained, knowledgeable, and able to apply the standards.
Non-Materiel Solutions: *Training:* Train, exercise, and evaluate all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material are trained to standards. *Leadership:* Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel are trained and comply with requirements.
- 17. Deficiency:** Personnel in a field possessing a task to pack, containerize/package, handle, and transport hazardous and contaminated material and samples in their specialty description may not be trained and equipped to accomplish the task.
Non-Materiel Solutions: *Training:* Train, exercise, and evaluate all personnel and activities performing tasks and functions, regardless of whether primary responsibility or support, associated with the preparation, storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material are trained to standards. *Leadership:* Recognize criticality for the safe preparation (including marking and identification), storage, movement, handling, transport, and other tasks associated with hazardous, contaminated, or infectious material and ensure personnel are trained and comply with requirements.
- 18. Deficiency:** General knowledge DOTMLPP for recognition of a potential hazard using international markings is not provided to the general force.
Non-Materiel Solutions: *Training:* Recognition training of all force personnel of international markings identifying hazardous, contaminated, or infectious material. *Leadership:* Ensure all subordinate personnel are trained, knowledgeable, and are able to

correctly interpret international markings identifying hazardous, contaminated, or infectious material.

19. Deficiency: The correct marking and identification is dependent upon notification and initial marking/identification actions by the preparing activity.

Non-Materiel Solutions: *Doctrine:* Enforce existing doctrine, policies, and procedures for marking and identification actions by preparing activities. *Training:* Personnel performing preparation, storage, movement, handling, transport, etc., of hazardous, contaminated, or infectious material are fully trained and evaluated for correct marking and identification of these materials. *Leadership:* Ensure compliance with standards, procedures, and requirements for the preparation, storage, movement, handling, transport, and other associated actions for hazardous, contaminated, or infectious material, including marking and identification.

13.14.3.2 IMA Assessment Summary

Table 13.14-2 is a list of ideas for material approaches and a corresponding description of each idea. Approaches vary from use of current kit, or those under current development, development of new kits from those under commercial development. Table 13.14-3 identifies which of the material approaches might address specific materiel deficiencies identified in the DOTMLPF assessment.

Table 13.14-2. TASHLD 14: Materiel Approaches

Idea for Materiel Approach	Description
Assess CBRND material	Test and assess all CBRND material for protective abilities against future threat agents, including TIM.
Broad-application above-the-neck respiratory protection	Develop above-the-neck respiratory protection with broad application for the general population, including MWAs.
Chemical air generation	Integrated compounds within warfighter's IPE applying chemical reaction to generate oxygen without reliance upon external sources.
Chemical treatment	Develop solution for treatment of existing MOPP suit and other warfighter clothing fabric that neutralizes or block the effect of CBRN/TIM agents, including future agents.
Combinatorial prophylaxes	Develop prophylaxes affording protection or minimizing the impact from a broad range of CBRN/TIM agents.
Contaminated material/equipment protective packaging and containment systems	Investigate and develop CBRN/TIM protective packaging and containment systems for contamination/exposed material and equipment which must be stored, handled, and/or transported in a contaminated/exposed state.
Contaminated remains containment systems	Investigate and develop sealable containment system for CBRN/TIM remains permitting their safe handling, storage, transport, and internment by unprotected personnel and equipment.
COTS sample containers and equipment	Adapt/modify (as necessary) COTS sample containers and equipment for the containment of CBRN/TIM samples and material for their safe handling, storage, and transport.
Current prophylaxes	There currently exists a variety of prophylaxes used for protection against CBRN. FDA testing and necessary modifications of prophylactics must be made to obtain FDA approval. Review available medical material and prophylaxes for application to high-risk TIMs.
Develop CBRN/TIM samples and material containment packaging/systems	Investigate and develop CBRN/TIM containment packaging and systems for the safe containment, handling, storage, and transport of CBRN/TIM samples and material.
Develop COLPRO kits	Develop COLPRO kits containing all necessary supplies to construct field-expedient COLPRO that is easily stored and maintained in ready condition, easily and safely erected, operated, maintained, and struck within a CBRN/TIM environment by IPE-encumbered personnel using minimal resources and supports COLPRO requirements.
Disposable COLPRO	Develop one-time-use COLPRO that is rapidly erected with little instruction, training, and effort and affords term protection for critical activities and functions, maintenance and repair activities, prelocated consumables, as well as personnel associated with this task.

Disposable IPE	Develop low-cost disposable IPE providing protection for transport aircrew members and/or determine available COTS protection to support air operations in a contaminated environment or while carrying contaminated cargo.
Equipment and supplies protective packaging and containment systems	Investigate and develop standardized CBRN/TIM protective packaging and containment systems (includes sprays, boxes, envelopes, drapes, etc.) for the protection of equipment and supplies from contact with CBRN/TIM agents.
Field-expedient COLPRO kits	Develop field-expedient COLPRO kits designed to adapt existing structures, tentage, etc., for the expansion of COLPRO field capabilities and mission support and the provision of collective protection to the force, critical functions and activities, maintenance and repair activities and functions, resources, etc.
Filtration system lowering inhalation pressure requirement	Improve current mask systems by reducing the inhalation effort required. Options may include air streaming into the mask from a contained system that either has a stored supply or generates air flow.
Future prophylaxes	Some preexposure prophylaxes for biological agents require several administrations, immunity attainment is time-consuming, or the period of coverage does not address the full operational period. Future prophylaxes should provide immunity against all known threat CBRN and high-risk TIM agents, as well as potential future threat agents, and be FDA approved. CBRND medical countermeasures are needed providing a sustained level of protection over an extended period of time (minimally the operational period), do not require multiple administrations, are easily disseminated and administered, support a minimum level of protection, protect against a broad range of agents, cover the range of preexposure to post-exposure/presymptomatic application needs, and are applicable to the protected population (including eligible civilians).
Improved IPE garments and accessories	Develop new generation of IPE garments and accessories (e.g., boots/boot covers, gloves, hoods, etc.) using modern materials permitting greater range of motion, longer wear without performance degradation, increased durability, integrated into warfighter personal equipment, and protects against all threat CBRN and high-risk TIM agents.
Integrate CBRN/TIM protective features into functional garments	Develop materials integrating CBRN/TIM protective capabilities and design standard functional garments using these materials for protection of the force.
Integrated mobile COLPRO	Develop warfighting platforms (air, land, and sea) with COLPRO that is an integral part of the operational system and protects against current and future/advanced agents.
Procure additional COLPRO	Procure additional COLPRO of required types and in needed quantities to meet the increased operational requirements.

Prophylactic administration to diverse groups	Prophylaxes address dosage range for eligible civilians (e.g., children, elderly, overweight, underweight subjects, etc.). Stabilize prophylactic effects over a wide range of dosages to address diverse applications of targeted populations.
Rebreathing	Closed circuit mechanism to permit an individual's exhaled air to be filtered, CO ₂ removed and recirculated for breathing, allowing user to make use of all available oxygen in a closed environment.
Regenerative filtration	CBRN regenerative filters able to flush retained agent, neutralize agent, or by other inherent means affords extended period of protection.
Topical	Develop topical barrier that is easily applied (i.e., spray), acts as a contact hazard barrier, and affords protection from CBRN/TIM.

Table 13.14-3. TASHLD 14: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Assess CBRND Material</p>	<p style="text-align: center;">Contaminated Material/Equipment Protective Packaging and Containment Systems</p>	<p style="text-align: center;">Contaminated Remains Containment Systems</p>	<p style="text-align: center;">COTS Sample Containers and Equipment</p>	<p style="text-align: center;">Develop CBRN/TIM Samples and Material Containment Packaging/Systems</p>	<p style="text-align: center;">Equipment and Supplies Protective Packaging and Containment Systems</p>	<p style="text-align: center;">Current Prophylaxes</p>	<p style="text-align: center;">Combinatorial Prophylaxes</p>
<p>CBRN/TIM protective packagings are limited or not identified for other than specialized functions.</p>	X	X	X	X	X	X		
<p>Movement of CBRN/TIM contaminated material is generally limited initially to tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport.</p>	X	X	X	X	X	X		
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X	X	X	X	X	X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>							X	X
<p>Prophylaxis for MWAs is virtually nonexistent.</p>							X	X
<p>The predominant means of protection of supporting assets is decontamination of the asset following secondary exposure/contamination.</p>	X	X	X	X	X	X		
<p>The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.</p>	X						X	X

Table 13.14-3. TASHLD 14: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Future Prophylaxes</p>	<p style="text-align: center;">Prophylactic Administration to Diverse Groups</p>	<p style="text-align: center;">Broad-Application Above-the-Neck Respiratory Protection</p>	<p style="text-align: center;">Chemical Air Generation</p>	<p style="text-align: center;">Chemical Treatment</p>	<p style="text-align: center;">Develop COLPRO Kits</p>	<p style="text-align: center;">Disposable COLPRO</p>	<p style="text-align: center;">Disposable IPE</p>
<p>CBRN/TIM protective packagings are limited or not identified for other than specialized functions.</p>							X	X
<p>Movement of CBRN/TIM contaminated material is generally limited initially to tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport.</p>						X	X	X
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X	X	X	X	X	X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>	X	X						
<p>Prophylaxis for MWA is virtually nonexistent.</p>	X	X						
<p>The predominant means of protection of supporting assets is decontamination of the asset following secondary exposure/contamination.</p>						X	X	X
<p>The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.</p>	X	X						

Table 13.14-3. TASHLD 14: IMA Assessment (continued)

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Material Approaches (IMA)</p>	<p style="text-align: center;">Filtration System Lowering Inhalation Pressure Requirement</p>	<p style="text-align: center;">Improved IPE Garments and Accessories</p>	<p style="text-align: center;">Integrate CBRN/TIM Protective Features into Functional Garments</p>	<p style="text-align: center;">Integrated Mobile COLPRO</p>	<p style="text-align: center;">Field-Expedient COLPRO Kits</p>	<p style="text-align: center;">Rebreathing</p>	<p style="text-align: center;">Regenerative Filtration</p>	<p style="text-align: center;">Topical</p>
<p>CBRN/TIM protective packagings are limited or not identified for other than specialized functions.</p>					X			
<p>Movement of CBRN/TIM contaminated material is generally limited initially to tactical ground transport. Air transport (tactical rotary-wing) is a last resort due to concerns about asset contamination. Tactical and strategic fixed-wing air transport is not considered an acceptable means of transport.</p>				X	X			X
<p>CBRND protective equipment and measures do not protect against all CBRN/TIM agents.</p>	X	X	X	X	X	X	X	X
<p>Medical prophylaxis does not exist for all threat CBRN/TIM and TIM agents.</p>								X
<p>Prophylaxis for MWA is virtually nonexistent.</p>								X
<p>The predominant means of protection of supporting assets is decontamination of the asset following secondary exposure/contamination.</p>				X	X			X
<p>The issue and administration of prophylaxis to eligible civilians requires review due to questions regarding applicability to the range of body types, ages, and physical/medical factors inherent within a potential population, as well as possible long-term health issues and legal implications.</p>								X

CHAPTER 14. STRATEGIC NATIONAL SUSTAIN TASKS

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14.0 Strategic National Sustain

14.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives, define limits and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans. The Strategic National sublevel encompasses U.S. Department of Defense (DoD), service, and interagency tasks. Twelve Strategic National Sustain tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA), including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)-sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the Strategic National (SN) Sustain (SUST) area, restates relevant information from the CBRND Defense (CBRND) FAA including a description of each of the 12 SNSUST tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The Functional Needs Analysis (FNA) section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The FSA section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near- or far-term resolution to identified deficiencies within the individual capabilities.

Most of the SNSUST tasks involve required capabilities of major staffs or staff sections within DoD. In those areas where a DoD staff or agency needed to interact within the interagency, the task focused on DoD capabilities required to facilitate the interaction.

14.0.2 FNA Summary

Table 14.0-1 summarizes the overall current and projected capability to perform the SNSUST tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “red.” The greatest deficiency is the lack of universally accepted standards of cleanliness for all types of decontamination operations and the development of policies for detection and verification of those standards. The Office of the Secretary of Defense

(OSD) and the Chairman of the Joint Chiefs of Staff (CJCS) are responsible for ensuring that military representatives are able to coordinate with allies, allied military organizations, potential host nations, and coalition partners for the development of policies and planning for restoration operations within an active theater under military control to limit potential CBRN hazards. The capability to establish restoration operation agreements and policies exists now administratively. Mechanisms currently used are North Atlantic Treaty Organization (NATO) working groups that develop Standardization Agreements (STANAGs) and Allied Joint Publications (AJPs) as well as American, British, Canadian, and Australian Armies Program (ABCA) Quadrupartite working groups. Ad hoc formations of coalitions can include establishment of policies, responsibilities, and procedures for restoration operations required from CBRN contamination if the threat situation warrants. While the current state of “tactical-level” agreements and policies is mature and robust, those agreements and policies do not reflect the needs of operational level and above multinational organizations, therefore no standardized agreements; doctrine; and tactics, techniques, and procedures (TTPs) have resulted for these levels of war. Tasks for establishing a variety of policies and guidelines for joint restoration operations and post-conflict remediation of restoration operation sites have not been accomplished. While the Joint Staff has the ability to perform these tasks, it has not yet done so. In addition, there is little in the way of operational level and above experience, doctrine, or TTPs to help guide the process. At a minimum, the projected capability will improve to “yellow” following a decision to act on these requirements.

Table 14.0-1. Strategic National Sustain Summary FNA Findings

Task Number	CBRN Strategic National Sustain Task Title	Capability		
		Current	Near/Mid	Far
SNSUST 1	Establish restoration operation agreements and policies with allies, allied military organizations, potential host nations, and coalition partners.	●	●	●
SNSUST 2	Establish international decontamination standards and policies.	●	●	●
SNSUST 3	Establish policies and guidelines for joint restoration operations.	●	●	●
SNSUST 4	Establish policies and guidelines for post-conflict remediation of restoration operation sites.	●	●	●
SNSUST 5	Establish policies and guidelines for interagency roles and responsibilities for restoration operations.	●	●	●
SNSUST 6	Establish multinational interoperability standards for restoration operations.	●	●	●
SNSUST 7	Establish international infectious disease quarantine and isolation standards and policies for biological warfare attacks.	●	●	●

SNSUST 8	Determine restoration operations impact on strategic deployment, sustainment, and redeployment.	●	●	●
SNSUST 9	Supply strategic forces and assets with adequate decontamination capability.	●	●	●
SNSUST 10	Establish forward presence of decontamination units and facilities in theater.	●	●	●
SNSUST 11	Provide restoration operation “Global Family of Engagement Plan” policies and guidelines to combatant commanders.	●	●	●
SNSUST 12	Coordinate CBRN elimination operations.	NA	NA	NA
OVERALL		●	●	●

14.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) (non-materiel and materiel) solutions for the capability gaps identified in the FNA section.

14.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with actions that must include concept development to provide the basis for policy and guidelines for the majority of national-level tasks. The greatest need is the establishment of universally accepted standards of cleanliness for all types of decontamination operations and the development of policies for detection and verification of those standards. Concepts must also be developed that will guide operational and above conduct of multinational restoration operations and experimentation conducted to refine the concepts. Refined concepts must be tested in full-scale exercises and lessons learned applied to the writing of and revision of concepts, doctrine, and TTPs. Other solutions include the development of leader education programs and increasing the capability of CBRND staffs at all levels. CJCS and interagency partners must work out procedures and exercise scenarios for the complex interactions between agencies required before, during, and after CBRND restoration operations. The Emergency Support Functions (ESF) in the Federal Response Plan provide a framework for defining these responsibilities. The current version of the *Universal Joint Task List (UJTL)* does not apply outside DoD although future editions are intended for the interagency audience. Interagency roles and responsibilities must be defined, especially for post-conflict aspects of restoration operations. Other solutions include the development of leader education programs for interagency, CBRND, and non-CBRND leaders. Few exercises and little experimentation have taken place to facilitate the formulation of data useful for Joint Capabilities Integration and Development System (JCIDS) analysis at the operational level and above. It is imperative that these exercises/experiments take place and lessons learned be integrated into doctrine, TTPs, and guidance and further tested through exercises. Only then can JCIDS analysis truly identify capability gaps and requirements. Other

solutions include the development of leader education programs for both CBRND and non-CBRND leaders and automated system enhancements and tools that will help with the integration of decontamination tasks into exercises and the follow-on gathering of data for analysis.

14.0.3.2 IMA

The Global Command and Control System (GCCS) does not provide useful information on restoration operations for deployment, sustainment, and redeployment considerations and does not receive information from the Joint Warning and Reporting Network (JWARN). An automated system must be developed to provide location (global positioning system [GPS]) and unit/activity restoration operation status through component command unit communication systems into the NBC (Nuclear, Biological, and Chemical) Battle Management System and from there into JWARN and GCCS. Systems must be automatic and provide analysis of impact of restoration operations on strategic deployment, sustainment, and redeployment. Automated tools must be developed that take the relevant data (when gathered) and provide a means to forecast strategic force restoration operation requirements.

14.1 Task SNSUST 1: Establish restoration operation agreements and policies with allies, allied military organizations, potential host nations, and coalition partners

14.1.1 Functional Area Analysis

14.1.1.1 Definition

To seek out those countries with which the United States will cooperate during potential military operations. Prearranged agreements prior to combat operations will facilitate restoration operations in the event of CBRN/toxic industrial material (TIM) contamination of forces, equipment, and facilities. Per *QDR 2001*, U.S. alliances, as well as a wide range of bilateral security relationships, are a centerpiece of U.S. security. In conjunction with interagency partners, CJCS will establish agreements with allies and potential coalition host nations to establish policy, responsibilities, and procedures for restoration operations required from CBRN/TIM contamination. As circumstances change, the agreements are subsequently reworked and maintained to include international agreements for post-conflict remediation of restoration operation sites.

14.1.1.2 Derivation

UJTL (SN 9.2.2, SN 7.5, SN 8.1.12), QDR 2001

14.1.1.2.1 Supported Task: N/A

14.1.1.2.2 Lateral Task: SNSHA 3

14.1.1.2.3 Supporting Tasks: STSUST 4, STSUST 7

14.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Ambiguous threat. (C2.9.3)

Civil

1. Limited foreign government support. (C3.1.2.3)
2. Moderately opposed foreign public opinion. (C3.1.2.4)

14.1.2 Functional Needs Analysis

14.1.2.1 Capability and Deficiency Assessment Summary

Table 14.1-1 discusses the only capabilities that currently exist to perform the task to the designated standards. No other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” OSD and the CJCS are responsible for ensuring that military representatives are able to coordinate with allies, allied military organizations, potential host nations, and coalition partners for the development of policies and planning for restoration operations within an active theater under military control to limit potential CBRN hazards. The capability to establish restoration operation agreements and policies exists now administratively. Mechanisms currently used are NATO working groups that develop STANAGs and AJPAs as well as ABCA Quadrapartite working groups. Ad hoc formations of coalitions can include establishment of policies, responsibilities, and procedures for restoration operations required from CBRN contamination if the threat situation warrants. The ABCA Coalition Operations Handbook provides a good point of departure for establishing restoration operations policies within newly formed coalitions. Combatant command (COCOM) staffs can formulate these types of ad hoc agreements (with State Department permission/cooperation in peacetime) or through Theater Engagement Plans that conform to CBRND initiatives in the “Global Family of Engagement Plans” (see Task SNSUST 11).

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. No capability improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Joint TTPs (JTTPs), training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 14.1-1. SNSUST 1: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
COCOMs (U.S. Forces, Korea [USFK]) using Theater Engagement.	Y ¹	R ²	R ³
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	Y ⁴	G ⁵	R ⁶
NATO Working Group	Y ⁷	G ⁸	R ⁹
Near/Mid			
COCOMs (USFK) using Theater Engagement.	Y ¹⁰	R	R
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	Y ¹¹	G	R
NATO Working Group	Y ¹²	G	R
Far			
COCOMs (USFK) using Theater Engagement.	G ¹³	G	G
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	G ¹⁴	G	G
NATO Working Group	G ¹⁵	G	G
Current Overall Capability	Y	Y	R
Near/Mid-Term Overall Capability	Y	G	R
Far-Term Overall Capability	G	G	G

	FAA Measure	Scale
M1	Restoration operation agreements and policies have been established with all nonadversary nations prior to combat operations.	G – Yes, Y – Limited, R – No
M2	Existing agreements and policy statements are updated regularly.	G – Yes, Y – Limited, R – No
M3	International exercises/experimentation provide feedback on efficacy of agreements and policy.	G – Yes, Y – Limited, R – No

¹ Nothing precludes COCOM staff from accomplishing this task, and in other areas of CBRND, particularly within Central Command and USFK, engagement and cooperation have taken place to varying degrees. USFK has the most robust cooperation on CBRND. But broadly speaking, restoration operation theater engagement plan (TEP) has so far not been initiated. The Joint Forces Staff College is interested in using CBRND issues in its TEP training curriculum.

² There are no restoration operation agreements or policy statements within the framework of TEP at this time.

³ While there have been many international exercises, an exercise focused on restoration of operations has not been conducted. The Restoration Operations (RESTOPS) Advanced Concept Technology Demonstration (ACTD) (USFK), when published, will provide information about fixed-site restoration but does not focus on multinational restoration operations.

⁴ Basic agreements and policies relating to many aspects of CBRND interoperability have been established for the four-member Quadripartite Armies. Many interoperability issues for restoration operations remain, particularly issues at higher than tactical level

⁵ Working groups update agreements and policies on a regular basis. The updates to agreements and policies relating to restoration are limited to the comprehensiveness of the initial products.

⁶ While Quadripartite exercises usually take place every two years, many focusing on interoperability, an exercise focused on restoration of operations has not been conducted.

⁷ Basic agreements and policies relating to many aspects of CBRND interoperability and common policies have been established (primarily in the form of STANAGs) for all of the 26 member nations that will provide military forces. Cooperation with Russia and other “partner” countries on defense against CBRN is also increasing. Many interoperability issues for restoration operations remain, particularly issues at higher than tactical level.

⁸ Working groups update agreements and policies on a regular basis. The updates to agreements and policies relating to restoration are limited to the comprehensiveness of the initial products.

⁹ While there have been many international exercises, an exercise focused exclusively on restoration of operations has not been conducted. When published, the RESTOPS ACTD (USFK) will provide information about fixed sites.

¹⁰ Limited changes/improvements are expected in the near/mid term.

¹¹ Limited changes/improvements are expected in the near/mid term.

¹² Limited changes/improvements are expected in the near/mid term.

¹³ Continual improvements are expected across the board as COCOM exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

¹⁴ Continual improvements are expected across the board as ABCA exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

¹⁵ Continual improvements are expected across the board as NATO exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

14.1.3 Functional Solution Analysis

14.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** No restoration operation agreements and policies with allies, allied military organizations, potential host nations, and coalition partners that focus at operational level and above.

Non-Materiel Solutions: *Doctrine:* Establish agreements and policies with allies, allied military organizations, potential host nations, and coalition partners to include restoration operations considerations at operational level and above. This task will likely have to be done in conjunction with new exercises and experiments.

2. **Deficiency:** No international exercises focused on restoration operations.

Non-Materiel Solutions: *Doctrine:* Provide input to working groups and councils to establish policies and guidelines to include operational-level and above restoration operations in international exercises. *Training:* Develop exercises that focus on multinational restoration operations considerations at operational level and above. Multinational and coalition training exercises at the Joint National Training Center (JNTC) must test and capture lessons learned on joint and combined restoration operations. *Facilities:* Incorporate telemetrics and infrastructure to support operational-level and above multinational restoration operation training at JNTC.

3. **Deficiency:** No concepts/doctrine have been established for operational level and above.

Non-Materiel Solutions: *Doctrine:* Establish doctrine, i.e., staff guidance, that focuses on operational-level and above restoration operations considerations (Chairman of the Joint Chiefs of Staff Instruction [CJCSI], Chairman of the Joint Chiefs of Staff Manual [CJCSM], or JTTPs). This task will likely have to be done in conjunction with new exercises and experiments. Doctrinal publications provide no guidance useful for developing international restoration policies at this level. *Joint Publication (JP) 3-11* provides operational-/tactical-level decontamination considerations only. *STANAG 2426 (NBC Contamination Control Policy for NATO Forces)*, a successful example of the process, still has flaws. The progress of *Quadripartite Standardization Agreement (QSTAG) 1335 (NBC Decontamination, Following ABCA Operations, For Redeployment And/Or Recovery)* has been hampered by an inability to develop international standards for contamination levels. Key to defining restoration policies is reaching agreement among subject matter experts as to what constitutes an acceptable level of contamination. Debate on how clean is “clean” will continue until international standards are developed and codified. International standards on acceptable levels of contamination must be developed. Medical experts must define acceptable levels of hazard to permit development of sensitive detection devices and effective decontaminants. As lessons are learned from JNTC and theater-level multinational exercises, doctrine must be developed that can be incorporated into pertinent joint publications.

- 4. Deficiency:** There is no Joint Professional Military Education (JPME) leader education on multinational restoration operations or TEP.
Non-Materiel Solutions: *Leadership:* Once concepts and doctrine are developed, include as learning areas in JPME requirements. Work with the Joint Forces Staff College (JFSC) to integrate restoration operations into TEP curriculum.
- 5. Deficiency:** CBRND Staffs do not have adequate capability, experience, or education.
Non-Materiel Solutions: *Organization:* Analyze CBRND staffing in all organizations in light of the tasks required of them in this JCIDS. Recommend staffing/organizational changes, enhancements, or alternative fixes as required. *Leadership:* Analyze training/education received by CBRND specialists assigned to joint staffs. Recommend training/education changes, enhancements, or alternative fixes as required. *Personnel:* Analyze experience base of CBRND specialists assigned to joint staffs. Recommend career track changes, prerequisites, enhancements, or alternative fixes as required.

14.1.3.2 IMA Assessment Summary

N/A

14.2 Task SNSUST 2: Establish international decontamination standards and policies

14.2.1 Functional Area Analysis

14.2.1.1 Definition

To determine internationally accepted standards of decontamination and establish globally accepted policy for determining compliance and enforcement of the standards. Decontamination standards and policy must be established prior to combat operations and maintained with allies and potential coalition hosts and partners. Further, it is important to have globally accepted standards to facilitate international cooperation during periods of CBRN/TIM emergencies resulting in widespread contamination and to clarify when once contaminated assets may be returned to unrestricted utility. Decontamination standards will provide common measures for assessing levels of decontamination. Furthermore, it is important to have globally accepted standards to facilitate international cooperation during CBRN/TIM emergencies with widespread contamination. As circumstances change (e.g., sensitive detection devices needed for hazardous low-dosage agents), the standards will need to be subsequently reworked and maintained.

14.2.1.2 Derivation

UJTL (SN 9.2.2, SN 7.5, SN 8.1.12)

14.2.1.2.1 Supported Task: N/A

14.2.1.2.2 Lateral Task: SNSHA 3

14.2.1.2.3 Supporting Task: STSUST 4

14.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Restricted information exchange. (C2.3.1.8)
4. Ambiguous threat. (C2.9.3)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3)

14.2.2 Functional Needs Analysis

14.2.2.1 Capability and Deficiency Assessment Summary

Table 14.2-1 discusses the only capabilities that currently exist to perform the task to the designated standards. No other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” OSD and the CJCS are responsible for ensuring that military representatives are able to coordinate with allies, allied military organizations, potential host nations, and coalition partners for establishing decontamination standards and policies. The capability to establish decontamination standards and policies exists now administratively. Mechanisms currently used are NATO working groups that develop Standardization Agreements (STANAGs) and Allied Joint Publications (AJPs) as well as ABCA Quadrapartite working groups. The most significant technical hurdle is the lack of agreement about decontamination standards for movement of previously contaminated equipment.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited changes /improvements are expected in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. Limited improvements are expected across the board although NATO exercises/experimentation efforts will provide valuable lessons learned at appropriate levels. Little progress is expected until standards that define how clean is “clean” are established and accepted throughout the international community.

Table 14.2-1. SNSUST 2: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3	M4	M5	M6
Current						
ABCA Quadrapartite Working Group	R ¹	R ²	R ³	R ⁴	R ⁵	R ⁶
NATO Working Groups	R ⁷	R ⁸	R ⁹	R ¹⁰	R ¹¹	R ¹²
Near-Mid						
ABCA Quadrapartite Working Group	R ¹³	R	R	R	Y ¹⁴	Y ¹⁵
NATO Working Groups	R ¹⁶	R	R	R	Y ¹⁷	Y ¹⁸
Far						
ABCA Quadrapartite Working Group	R ¹⁹	R	R	R	Y	Y
NATO Working Groups	R ²⁰	R	R	R	Y	Y
Current Overall Capability	R	R	R	R	R	R
Near/Mid-Term Overall Capability	R	R	R	R	Y	Y
Far-Term Overall Capability	R	R	R	R	Y	Y

	FAA Measure	Scale
M1	Internationally accepted standards of decontamination are established.	G – Yes, Y – Limited, R – No
M2	Policy for determining compliance with and enforcement of standards is established.	G – Yes, Y – Limited, R – No
M3	Standards are modified after advances in detection technology enable lower levels of agent detection.	G – Yes, Y – Limited, R – No
M4	Existing policy is updated regularly.	G – Yes, Y – Limited, R – No
M5	International exercises/experimentation provide feedback on efficacy of standards and policy.	G – Yes, Y – Limited, R – No
M6	Mechanism/international body is established to facilitate agreement on decontamination standards.	G – Yes, Y – Limited, R – No

¹ No internationally accepted standards of decontamination are established. Standard agreements outlining doctrinal procedures for conducting decontamination at the tactical level do exist. But standards that define how clean is “clean” after decontamination do not currently exist.

² No policies for determining compliance with and enforcement of standards are established.

³ No standards currently exist to be modified.

⁴ No policies are in place to be updated.

⁵ Because the standards do not exist, they have never been exercised or been part of experimentation.

⁶ No doctrine has been developed other than defining tactical-level decontamination to be done to limit mission degradation.

⁷ No internationally accepted standards of decontamination are established. Standard agreements outlining doctrinal procedures for conducting decontamination at the tactical level do exist. But standards that define how clean is “clean” after decontamination do not currently exist.

⁸ No policies for determining compliance with and enforcement of standards are established.

⁹ No standards currently exist to be modified.

¹⁰ No policies are in place to be updated.

¹¹ Because the standards do not exist, they have never been exercised or been part of experimentation.

¹² No doctrine has been developed other than defining tactical-level decontamination to be done to limit mission degradation.

¹³ Limited changes/improvements are expected in the near/mid term.

¹⁴ Limited improvements and new experimental progress will yield usable data in the near/mid to far term.

¹⁵ As a result of anticipated experimentation, DOTLPF will improve in the near/mid to far term.

¹⁶ Limited changes/improvements are expected in the near/mid term.

¹⁷ Limited improvements and new experimental progress will yield usable data in the near/mid to far term.

¹⁸ As a result of anticipated experimentation, DOTLPF will improve in the near/mid to far term.

¹⁹ Limited improvements are expected across the board as ABCA exercises/experimentation efforts provide valuable lessons learned at appropriate levels. Little progress is expected until standards that define how clean is “clean” are established and accepted throughout the international community.

²⁰ Limited improvements are expected across the board as NATO exercises/experimentation efforts provide valuable lessons learned at appropriate levels. Little progress is expected until standards that define how clean is “clean” are established and accepted throughout the international community.

14.2.3 Functional Solution Analysis

14.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No decontamination standards and policies (above tactical level) with allied military organizations, potential host nations, and coalition partners.

Non-Materiel Solutions: *Doctrine:* Establish decontamination standards and policies with allied military organizations, potential host nations, and coalition partners to include detection standards for previously contaminated materiel and equipment.
- 2. Deficiency:** No doctrine has been developed that would lead to a universally agreed upon standard of decontamination that would satisfy cross-border movement of previously contaminated equipment.

Non-Materiel Solutions: *Doctrine:* JP 3-11 provides no definitive guidance for the establishment of international decontamination standards. Again, the problem is rooted primarily in a lack of internationally agreed-upon levels of decontamination/permissible level of contamination. The progress in the development of draft QSTAG 1335 (NBC Decontamination, Following ABCA Operations, for Redeployment and/or Recovery) has been hampered by an inability to develop international standards for contamination levels. The concept of “clearance decontamination” ideally describes the ultimate result of definitive guidance and standards. Clearance decontamination is defined in AJP 3-8 as “decontamination of equipment and/or personnel on temporary or permanent removal from an operation to a standard sufficient to allow unrestricted transportation, maintenance, employment and disposal.” The development of international standards would ideally provide a mechanism for the transport of previously contaminated military equipment across international borders once the equipment was certified as having met the standard. Complicating the establishment of these standards is the fact that establishment of contamination standards is a civil, as well as a military, problem. Civil authorities have a responsibility to safeguard their citizens and dare not allow previously contaminated material to enter their countries unless they meet (yet to be established) agreed upon and certifiable standards. Commercial industrial organizations, particularly in the transport sector, must be assured that neither transport personnel nor equipment will be harmed by hazards that cannot be detected by current technology or exists at levels that have not yet been determined to be hazardous.

14.2.3.2 IMA Assessment Summary

N/A

14.3 Task SNSUST 3: Establish policies and guidelines for joint restoration operations

14.3.1 Functional Area Analysis

14.3.1.1 Definition

To establish, prior to combat operations, and then maintain policy and guidelines that will facilitate the planning and execution of joint restoration operations. CJCS, rather than individual commanders, must provide guidance on support to special operations forces (SOF) and foreign consequence management (CM) to facilitate intertheater standardization of restoration operations. This action must be accomplished by CJCS rather than individual combatant commands to facilitate intertheater standardization of restoration operations. Includes guidance on support to SOF and support required for foreign CM.

14.3.1.2 Derivation

UJTL (SN 9.2.2, SN 7.5, SN 5.4.2, SN 8.1.12)

14.3.1.2.1 Supported Task: N/A

14.3.1.2.2 Lateral Task: SNSHA 8

14.3.1.2.3 Supporting Tasks: STSUST 1, STSUST 2

14.3.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil. N/A

14.3.2 Functional Needs Analysis

14.3.2.1 Capability and Deficiency Assessment Summary

Table 14.3-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” CJCS has numerous responsibilities to include but not limited to prepare strategic plans, prepare military strategy and assessments, prepare joint logistic and mobility plans, etc. The joint staff has the skill and experience to establish policies and guidelines for joint restoration operations but has not yet done so.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but lead to a far-term assessment of only “yellow.”

Table 14.3-1. SNSUST 3: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3	M4
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵
Near/Mid-Term Overall Capability	R	R	R	R
Far-Term Overall Capability⁶	Y ⁷	Y	Y	Y

	FAA Measure	Scale
M1	Policies and guidelines for joint restoration operations are established.	G – Yes, Y – Limited, R – No
M2	Existing policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	Joint exercises/experimentation provides feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No
M4	Guidelines on supporting SOF and foreign CM are established.	G – Yes, Y – Limited, R – No

¹ Little joint doctrine or TTPs have been developed above the tactical level. There is no experience factor in establishing guidance for joint restoration operations at the operational level and above.

²The joint staff has the basic capability to perform this task but there are currently no policies and guidelines for joint/multinational restoration operations above the tactical level. There are multi-Service and individual Service policies/tactical guidelines, but no definitive guidelines and policies for joint/multinational forces above the tactical level. Service/multinational terminology has developed different terms for similar concepts, resulting in potential operational confusion during complex combat operations.

³ There are no policies and guidelines.

⁴An exercise focused on joint restoration operations has not been conducted. To preclude operational confusion during complex restoration operations, guidelines must be established and exercised to determine deficiencies.

⁵ No guidelines on supporting SOF and foreign CM are established, but there is a requirement for COCOMs to develop plans to support requests for foreign CM.

⁶ There are no policies and guidelines.

⁶DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

14.3.3 Functional Solution Analysis

14.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** No policies and guidelines for joint restoration operations.
Non-Materiel Solutions: *Doctrine:* Establish policies and guidelines for joint restoration operations.

2. **Deficiency:** No guidelines on supporting SOF and foreign CM are established.
Non-Materiel Solutions: *Doctrine:* Establish policies and guidelines on supporting SOF and foreign CM.

3. **Deficiency:** No exercises focused on restoration operation.
Non-Materiel Solutions: *Training:* Develop joint exercises that include or focus on joint restoration operations. *Facilities:* Incorporate required telemetrics and infrastructure to support joint restoration operation exercises and experiments at JNTC.

4. **Deficiency:** No doctrine has been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine and TTPs at the operational level and above, i.e., staff guidance (CJCSI, CJCSM or JTTPs).

5. **Deficiency:** No JPME education on restoration of operations.
Non-Materiel Solutions: *Leadership:* Develop JPME leader education on joint restoration operations. Provide focused education on joint restoration operations to CBRND leaders and staffers.

14.3.3.2 IMA Assessment Summary

N/A

14.4 Task SNSUST 4: Establish policies and guidelines for post-conflict remediation of restoration operation sites

14.4.1 Functional Area Analysis

14.4.1.1 Definition

To establish, prior to combat operations, policy and guidelines that U.S. forces will adhere to under circumstances not covered by existing international agreements or agreements with allies, allied military organizations, potential host nations, and coalition partners. CJCS establishes and maintains policy/guidelines for post-conflict remediation of restoration operation sites for those circumstances. The importance of post-conflict CBRND considerations being developed prior to the conflict to facilitate planning and troop protection has been made patently clear by situations such as low-level CBRN/TIM hazard considerations during Desert Storm.

14.4.1.2 Derivation

UJTL (SN 9.2.2, SN 5.4.2, SN 8.1.12)

14.4.1.2.1 Supported Task: N/A

14.4.1.2.2 Lateral Tasks: SNSHA 3, SNSHA 8

14.4.1.2.3 Supporting Task: STSUST 3

14.4.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil. N/A

14.4.2 Functional Needs Analysis

14.4.2.1 Capability and Deficiency Assessment Summary

Table 14.4-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” CJCS has numerous responsibilities including but not limited to preparing strategic plans, military strategy and assessments, joint logistic and mobility plans, etc. The importance of post-conflict CBRN considerations being developed prior to the conflict to facilitate planning and troop protection was made patently clear by confusion over low-level CBRN hazard considerations during Desert Storm. Hazards may extend some distance beyond the immediate area and all affected areas, to include transfer of contamination by individuals, animals, vehicles, etc. must be considered. The joint staff has the skill and experience to establish policies and guidelines for post-conflict remediation of restoration operation sites but has not yet done so.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term except that DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term future. The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

Table 14.4-1. SNSUST 4: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R ²	R ³	R ⁴
Near/Mid-Term Overall Capability⁵	R	R	R
Far-Term Overall Capability	Y ⁶	Y	Y

	FAA Measure	Scale
M1	Policies and guidelines for post-conflict remediation of restoration operation sites are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	International/joint exercises or experimentation provide feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No

¹ No joint doctrine or TTPs has been developed above the tactical level. There is no experience factor in establishing guidance for post-conflict remediation of restoration operation sites at the operational level and above.

² The joint staff has the basic capability to perform this task but there are currently no policies and guidelines for post-conflict remediation of restoration operation sites.

³ There are no policies and guidelines.

⁴ An exercise focused on joint restoration operations has not been conducted. To preclude operational confusion during post-conflict remediation of restoration operation sites, guidelines must be established and exercised to determine deficiencies.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

14.4.3 Functional Solution Analysis

14.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Policies and guidelines for post-conflict remediation of restoration operation sites do not exist.
Non-Materiel Solutions: *Doctrine:* Establish policies and guidelines for post-conflict remediation of restoration operation sites.

- 2. Deficiency:** No exercises have focused on restoration operations.
Non-Materiel Solutions: *Training:* Develop exercises to include restoration operations.
Facilities: Incorporate required infrastructure into JNTC.

- 3. Deficiency:** No doctrine/TTPs have been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine and TTPs at the operational level and above, i.e., staff guidance (CJCSI, CJCSM or JTTPs). Multinational working groups must develop policies/guidelines for post-conflict remediation (rather than just mitigation) of restoration operation sites resulting from Allied/coalition operations in conjunction with pertinent civilian organizations and agencies.

- 4. Deficiency:** JPME education on restoration of operations does not exist.
Non-Materiel Solutions: *Leadership:* Develop JPME leader education on joint restoration operations. Provide focused education on joint restoration operations to CBRND leaders and staffers.

14.4.3.2 IMA Assessment Summary

N/A

14.5 Task SNSUST 5: Establish policies and guidelines for interagency roles and responsibilities for restoration operations

14.5.1 Functional Area Analysis

14.5.1.1 Definition

To establish, prior to combat operations, policy and guidelines that will facilitate interagency roles and responsibilities for restoration operations. To facilitate interagency coordination, CJCS, in conjunction with interagency partners, will define these roles and responsibilities prior to combat operations and will maintain them. DoD and interagency partners must work out procedures and train for the complex interactions between agencies required during CBRN/TIM restoration operations.

14.5.1.2 Derivation

UJTL (SN 9.2.2, SN 8.3.1, SN 7.5)

14.5.1.2.1 Supported Task: N/A

14.5.1.2.2 Lateral Task: SNSHA 3

14.5.1.2.3 Supporting Task: STSUST 4

14.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)

Civil

1. Correct interdepartmental/interagency relationships. (C3.1.1.3)

14.5.2 Functional Needs Analysis

14.5.2.1 Capability and Deficiency Assessment Summary

Table 14.5-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” CJCS has numerous responsibilities, including but not limited to preparing strategic plans, military strategy and assessments, joint logistic and mobility plans, etc. The joint staff has the ability to establish policies and guidelines for interagency roles and responsibilities for restoration operations but has not yet done so.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term except that DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

Table 14.5-1. SNSUST 5: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R ²	R ³	R ⁴
Near/Mid-Term Overall Capability	R	R	R
Far-Term Overall Capability⁵	Y ⁶	Y	Y

	FAA Measure	Scale
M1	Policies and guidelines for interagency role and responsibilities for restoration operations are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	National exercises/experimentation provide feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No

¹ No joint doctrine or TTPs has been developed to address interagency roles and responsibilities for restoration operations. There is no experience factor in establishing guidance for interagency roles and responsibilities for restoration operations.

² The joint staff has the basic capability to perform this task, but there are currently no policies and guidelines for interagency roles and responsibilities for restoration operations.

³ There are no policies and guidelines.

⁴ An exercise focused on joint restoration operations has not been conducted. To preclude operational confusion about interagency roles and responsibilities for restoration operations, guidelines must be established and exercised in conjunction with interagency partners to determine deficiencies.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

14.5.3 Functional Solution Analysis

14.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Policies and guidelines for post-conflict remediation of restoration operation sites do not exist.
Non-Materiel Solutions: *Doctrine:* Establish policies and guidelines for interagency roles and responsibilities for restoration operations.

2. **Deficiency:** No exercises have focused on restoration operations.
Non-Materiel Solutions: *Training:* Develop exercises to include restoration operations. *Facilities:* National-level CBRN exercises must include as exercise objectives the testing of interagency roles and responsibilities in restoration operations. As plans are made for the establishment of a Joint National Training Center (QDR 2001), TTPs for testing interagency roles in restoration operations must be integrated into training center plans.

3. **Deficiency:** No doctrine/TTPs have been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine and TTPs at the operational level and above, i.e., staff and interagency guidance (CJCSI, CJCSM, JTTPs and pertinent interagency publications). *UJTL 6.0* development must include defining interagency restoration operation tasks. JP 3-11 revisions must address in doctrine the interactions required between joint forces and interagency partners before, during, and after restoration operations resulting from CBRN contamination. The ESF in the Federal Response Plan provides a framework for defining these responsibilities.

4. **Deficiency:** JPME education on restoration of operations does not exist.
Non-Materiel Solutions: *Leadership:* Develop JPME leader education on joint restoration operations that includes interagency roles and responsibilities. Work with interagency partners to develop leader education for their training/education venues. Provide focused education on joint restoration operation interagency roles and responsibilities to CBRND leaders and staffers.

14.5.3.2 IMA Assessment Summary

N/A

14.6 Task SNSUST 6: Establish multinational interoperability standards for restoration operations

14.6.1 Functional Area Analysis

14.6.1.1 Definition

To establish, prior to combat operations, multinational interoperability standards for restoration operations. To facilitate multinational cooperation, CJCS, in conjunction with interagency partners, will establish these standards prior to combat operations and will maintain them. Standards must include common terminology, procedures, decontaminants, equipment, and replacement parts.

14.6.1.2 Derivation

UJTL (SN 9.2.2, SN 7.5, SN 8.3.1), Allied Joint Publication (AJP) 3-8

14.6.1.2.1 Supported Task: N/A

14.6.1.2.2 Lateral Task: SNSHA 7

14.6.1.2.3 Supporting Task: STSUST 10

14.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3)

14.6.2 Functional Needs Analysis

14.6.2.1 Capability and Deficiency Assessment Summary

Table 14.6-1 discusses the only capabilities that currently exist to perform the task to the designated standards. No other capabilities are projected that will accomplish this task.

Current Capability and Deficiency

Current capability is assessed as “yellow.” OSD and CJCS are responsible for ensuring that military representatives are able to coordinate with allies, allied military organizations, potential host nations, and coalition partners for the establishment of multinational interoperability standards for restoration operations. The capability to establish restoration operation interoperability agreements and policies exists now administratively. Mechanisms currently used are NATO working groups that develop STANAGs and AJPs as well as ABCA Quadrapartite working groups. Ad hoc formations of coalitions can include establishment of policies, responsibilities, and procedures for restoration operations required from CBRN contamination if the threat situation warrants. The ABCA Coalition Operations Handbook provides a good point of departure for establishing restoration operations policies within newly formed coalitions. USFK has a mature relationship with South Korea. COCOM staffs can formulate these types of ad hoc agreements (with State Department permission/cooperation in peacetime) or through TEPs that conform to CBRND initiatives in the “Global Family of Engagement Plans” (see Task SNSUST 11).

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception that DOTMLPF should improve in some areas as a result of initiatives that use data resulting from focused experimentation. Overall assessment will remain at “yellow.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve, leading to a far-term assessment of “green.”

Table 14.6-1. SNSUST 6: Capability and Deficiency Assessment

Capability/Measure	M1	M2	M3
Current			
COCOMs (USFK) Using Theater Engagement.	Y ¹	G ²	Y ³
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	Y ⁴	G ⁵	Y ⁶
NATO Working Group	Y ⁷	G ⁸	Y ⁹
Near/Mid			
COCOMs (USFK) using Theater Engagement.	Y ¹⁰	G	Y
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	Y ¹¹	G	Y
NATO Working Group	Y ¹²	G	Y
Far			
COCOMs (USFK) using Theater Engagement.	G ¹³	G	G
American, British, Canadian, and Australian Armies Program (ABCA) (Quadripartite)	G ¹⁴	G	G
NATO Working Group	G ¹⁵	G	G
Current Overall Capability	Y	G	Y
Near/Mid-Term Overall Capability	Y	G	Y
Far-Term Overall Capability	G	G	G

	FAA Measure	Scale
M1	Interoperability standards for restoration operations are established.	G – Yes, Y – Limited, R – No
M2	Existing interoperability standards are updated regularly.	G – Yes, Y – Limited, R – No
M3	International/joint exercises or experimentation provide feedback on efficacy of interoperability standards.	G – Yes, Y – Limited, R – No

¹ Nothing precludes COCOM staff from accomplishing this task, and in other areas of CBRND interoperability, particularly within CENTCOM and USFK, engagement and cooperation has taken place to varying degrees. USFK has the most robust cooperation on CBRND. But broadly speaking, restoration operation TEP has so far not been initiated. JFSC is interested in using CBRND issues in its TEP training curriculum.

² Existing interoperability standards are updated on a regular basis.

³ USFK exercises are usually conducted on a regular basis. An exercise specifically focused on restoration of operations has not been conducted. When published, the RESTOPS ACTD (USFK) will provide information about fixed-site restoration but does not focus on multinational restoration operations or operational interoperability.

⁴ Basic tactical-level decontamination interoperability issues are addressed in varying levels of detail and are basically adequate. Interoperability standards for restoration operations considerations are virtually nonexistent above the tactical level.

⁵ Existing interoperability standards are updated on a regular basis.

⁶ ABCA Armies conduct interoperability exercises every two years. An exercise specifically focused on restoration of operations has not been conducted. There will be no exercise in 2004 due to operational commitments.

⁷ Basic tactical-level decontamination interoperability issues are addressed in varying levels of detail and are basically adequate. Interoperability standards for restoration operations considerations are virtually nonexistent above the tactical level. Many interoperability issues for restoration operations remain, particularly issues at higher than tactical level.

⁸ Existing interoperability standards are updated on a regular basis.

⁹ NATO exercises are usually conducted on a regular basis. An exercise specifically focused on restoration of operations has not been conducted.

¹⁰ Limited changes/improvements are expected in the near/mid term.

¹¹ Limited changes/improvements are expected in the near/mid term.

¹² Limited changes/improvements are expected in the near/mid term.

¹³ Continual improvements are expected across the board as COCOM exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

¹⁴ Continual improvements are expected across the board as ABCA exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

¹⁵ Continual improvements are expected across the board as NATO exercises/experimentation efforts provide valuable lessons learned at appropriate levels.

14.6.3 Functional Solution Analysis

14.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No multinational interoperability standards for restoration operations exist above tactical level.
Non-Materiel Solutions: *Doctrine:* Establish multinational interoperability standards for restoration operations at operational level and above.

- 2. Deficiency:** No exercises have focused on restoration operations.
Non-Materiel Solutions: *Doctrine:* Establish working groups and councils to establish policies and guidelines to include restoration operations. *Training:* Develop exercises that include restoration operations. *Facilities:* Incorporate multinational restoration operation interoperability training capabilities into JNTC.

- 3. Deficiency:** Multinational doctrine for restoration operations is virtually nonexistent above the tactical level.
Non-Materiel Solutions: *Doctrine:* Establish interoperability doctrine, i.e., staff guidance, for operational level and above. Revision of disconnects in AJP 3-8 would be a first step in resolving multinational deficiencies.

- 4. Deficiency:** There is a lack of standard communications equipment or compatibility.
Non-Materiel Solutions: None.

14.6.3.2 IMA Assessment Summary

Table 14.6-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 14.6-2. SNSUST 6: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Lack of standard communications equipment or compatibility	Command, control, communications, computers, intelligence equipment	Need to establish common standard equipment specifications, procedures, and doctrine to address the process and methods for providing accurate, timely, and relevant information distribution between ABCA coalition nations. Incompatibility between national applications of communications equipment hinders timely distribution of information or coordination for restoration operations. Work-arounds, software, or emerging technologies may facilitate interoperability of these systems in the future. Although establishing technical interoperability between systems must be the immediate near-term goal, it does not guarantee the full capability of feature sets, which certain staffs may require to conduct restoration operations. Also, U.S. forces internally do not have integrated capability between command and control systems and CBRND systems.

14.7 Task SNSUST 7: Establish international infectious disease quarantine and isolation standards and policies for biological warfare attacks

14.7.1 Functional Area Analysis

14.7.1.1 Definition

To establish, prior to combat operations, international infectious disease quarantine and isolation standards and policy for biological warfare attacks. To facilitate international cooperation, CJCS, in conjunction with interagency partners, will establish these standards and policy prior to combat operations and will maintain them and then seek and ensure international consensus. Biological attacks that occur during wartime are likely to be much more severe than peacetime epidemics. In addition, there will also be the complication of wartime conditions and requirements for moving or evacuating military personnel.

14.7.1.2 Derivation

UJTL (SN 4.3.3, SN 7.5, SN 8.1.12)

14.7.1.2.1 Supported Task: N/A

14.7.1.2.2 Lateral Task: SNSHA 9

14.7.1.2.3 Supporting Task: STSUST 4

14.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Restricted information exchange. (C2.3.1.8)
4. Ambiguous threat. (C2.9.3)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3)

14.7.2 Functional Needs Analysis

14.7.2.1 Capability and Deficiency Assessment Summary

Table 14.7-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” CJCS has numerous responsibilities, including, but not limited to, preparing strategic plans, military strategy and assessments, joint logistic and mobility plans, etc. Although international agreements govern the establishment and control of infectious disease quarantine standards, these standards have not been developed with intentional biological warfare in mind. Standards and procedures for reception, staging, onward movement, and integration (RSOI) of forces through and in allied or coalition partner countries when biological warfare has been initiated have not been developed. The outbreak of a disease requiring international quarantine could prevent the projection of forces into a critical area. The joint staff has the capability to work with the Surgeon General and interagency partners and allies to establish international infectious disease quarantine and isolation standards and policies for biological warfare attacks but has not yet done so.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but lead to a far-term assessment of only “yellow.”

Table 14.7-1. SNSUST 7: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R ²	R ³	R ⁴
Near/Mid-Term Overall Capability	R ⁵	R	R
Far-Term Overall Capability⁶	Y ⁷	Y	Y

	FAA Measure	Scale
M1	International infectious disease quarantine standards and policies for biological warfare attacks are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	International/joint exercises or experimentation provide feedback on efficacy of standards and policies.	G – Yes, Y – Limited, R – No

¹ No doctrine or TTPs exist. Leader education does not address this issue.

² Although international agreements govern the establishment and control of infectious disease quarantine and isolation standards, these standards have not been developed with intentional biological warfare in mind. Standards and procedures for RSOI of forces through and in allied or coalition partner countries when biological warfare has been initiated have not been developed. Emerging problems resulting from Severe Acute Respiratory Syndrome (SARS) highlight problems that could be anticipated. The outbreak of a disease requiring international quarantine could prevent the projection of forces into a critical area.

³ There are no standards and policies.

⁴ While there have been many international/joint exercises, an exercise focused on infectious disease quarantine and isolation for biological warfare attacks has not been conducted.

⁵ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned. When an automated tool that integrates deployment, sustainment, and redeployment data with restoration operation impacts and projections is developed, the 2-hour time standard may be achievable.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Although international agreements govern the establishment and control of infectious disease quarantine and isolation standards, these standards have not been developed with intentional biological warfare in mind. Standards and procedures for RSOI of forces through and in allied or coalition partner countries when biological warfare has been initiated have not been developed. Emerging problems resulting from SARS highlight problems that could be anticipated. The outbreak of a disease requiring international quarantine could prevent the projection of forces into a critical area.

14.7.3 Functional Solution Analysis

14.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There is no international infectious disease quarantine/isolation standard and policy for biological warfare attacks.
Non-Materiel Solutions: *Doctrine:* Establish international infectious disease quarantine standard and policy for biological warfare attacks.
- 2. Deficiency:** No exercise focused on quarantine/isolation for biological warfare attacks has been conducted.
Non-Materiel Solutions: *Training:* Develop exercises to include scenarios requiring biological warfare attacks that pose quarantine/isolation issues. *Facilities:* Incorporate ability to exercise/conduct experimentation into JNTC.
- 3. Deficiency:** No doctrine has been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, i.e., staff guidance (CJCSI, CJCSM or JTTPs) for international infectious disease quarantine standard and policy for biological warfare attacks.
- 4. Deficiency:** No JPME courses address quarantine standards and policies for biological warfare attacks.
Non-Materiel Solutions: *Leadership:* Establish JPME/interagency/multinational leader education on quarantine standards and policies for biological warfare attacks.

14.7.3.2 IMA Assessment Summary

N/A

14.8 Task SNSUST 8: Determine restoration operations impact on strategic deployment, sustainment, and redeployment

14.8.1 Functional Area Analysis

14.8.1.1 Definition

To make a specific assessment of the impact that ongoing or planned restoration operations will have on the requirement to conduct strategic deployment, sustainment, and redeployment. CJCS receives input from deployment, sustainment, or redeployment locations that have been targeted by CBRN/TIM weapons concerning the status of restoration operations for key locations, facilities, and equipment that are required for strategic deployment, sustainment, or redeployment of forces and determines the impact. CJCS also receives input regarding key strategic forces and means that are contaminated as a result of CBRN/TIM attacks at their locations regarding the status of restoration operations designed to prepare them for strategic deployment/redeployment or for strategic sustainment activities.

14.8.1.2 Derivation

UJTL (SN 9.2.2, SN 1.1.4, SN 1.1.5, SN 1.2.5)

14.8.1.2.1 Supported Task: N/A

14.8.1.2.2 Lateral Task: SNSHA 10

14.8.1.2.3 Supporting Task: STSUST 13

14.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited lift assets. (C2.5.2)
6. High rear-area security. (C2.7.1)
7. Limited host nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

14.8.2 Functional Needs Analysis

14.8.2.1 Capability and Deficiency Assessment Summary

Table 14.8-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” CJCS has numerous responsibilities, including synchronizing and monitoring worldwide military operations and activities, including determining the restoration operation impact, whether on forces or facilities, on strategic deployment, sustainment, and redeployment. The joint staff likely has the skill and experience to manually conduct the task, but there are several obstacles that will prevent meeting the required timeline and hinder the process.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but lead to a far-term assessment of only “yellow.”

Table 14.8-1. SNSUST 8: Capability and Deficiency Assessment

Capability: CJCS J-3	M1	M2	M3	M4	M5	M6	M7
Current Overall Capability¹	R²	Y³	Y⁴	Y⁵	R⁶	R⁷	Y⁸
Near/Mid-Term Overall Capability	R	Y	Y	Y	R	R	Y
Far-Term Overall Capability	Y⁹	Y	Y	Y	Y	Y	Y

	FAA Measure	Scale
M1	Determination of restoration operation impact on strategic deployment, sustainment, and redeployment is made within 2 hours.	G – Yes, Y – Limited, R – No
M2	Total force pending strategic deployment, sustainment, and redeployment is analyzed for impact due to restoration operations.	G – Yes, Y – Limited, R – No
M3	All restoration operations meet established deployment, sustainment, and redeployment priorities.	G – Yes, Y – Limited, R – No
M4	All key locations, facilities, and equipment required to facilitate deployment, sustainment, or redeployment of strategic forces and means that are affected by restoration operations are included in assessment.	G – Yes, Y – Limited, R – No
M5	National/joint exercises provide lessons learned on procedures for determining restoration operation impact on strategic deployment, sustainment, and redeployment.	G – Yes, Y – Limited, R – No
M6	National/joint experimentation provides data on efficacy of current/proposed procedures.	G – Yes, Y – Limited, R – No
M7	Operational and analytical/planning staffs have the training and experience to develop contingency plans in the event restoration operations are incomplete or inadequate for deployment, sustainment, or redeployment.	G – Yes, Y – Limited, R – No

¹ Concepts, doctrine and, TTPs focusing restoration operation impact on strategic deployment, sustainment, and redeployment are limited. CBRND staffs and staffing at all levels are not robustly manned making it difficult to apply CBRND subject matter expertise when required. CBRND staffs are not adequately trained/experienced on strategic CBRND issues. JPME does not currently address this issue.

² The J-3 staff would ultimately have the means to make a determination of the impact of ongoing or projected restoration operations on strategic deployment, sustainment, and redeployment. Although the J-3 staff is skilled and experienced, they would have little skill or experience with CBRND issues concerning restoration operations. For restoration operation issues, their current capability is does not receive information from JWARN. It is unlikely that assessments can be made manually within 2 hours, slowing down the process. The GCCS does not provide useful information on restoration operations for deployment/redeployment considerations and sustainment.

³ Limited. Nothing precludes the J-3 staff from considering the total force involved, but because the current capability for analysis is manual accuracy may not be as dependable and might be subject to human errors.

⁴ Limited. Nothing precludes the J-3 staff from developing strategic restoration operation priorities designed to meet established strategic deployment, sustainment, and redeployment priorities, but because the current capability for analysis is manual, accuracy may not be as dependable subject to human errors.

⁵ Limited. Nothing precludes the J-3 staff from including all key locations, facilities, and equipment required to facilitate deployment of strategic forces and assets that are affected by restoration operations in the assessment, but because the current capability for analysis is manual, accuracy may not be as dependable subject to human errors.

⁶ No exercise focused on restoration operation impact on strategic deployment, sustainment, and redeployment has been conducted.

⁷ No experiment focused on restoration operation impact on strategic deployment, sustainment, and redeployment has been conducted.

⁸ Limited. The J-3 staff (or sister planning staffs) have the skill and training to develop contingency plans or orders when strategic deployment, sustainment, or redeployment sites, facilities, or units are out of action. They do not have experience with restoration operations/CBRND issues causing the problem.

⁹ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned. When an automated tool that integrates deployment, sustainment, and redeployment data with restoration operation impacts and projections is developed, the 2-hour time standard may be achieved.

14.8.3 Functional Solution Analysis

14.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** J-3 staff has little skill or experience with CBRND issues concerning restoration operations.
Non-Materiel Solutions: *Doctrine:* Establish TTPs to assist the J-3 staff assess the restoration operation impact on strategic deployment. *Training:* Establish training to assist the J-3 staff assess the restoration operation impact on strategic deployment. *Personnel:* Provide at least one operator per watch with extensive experience in CBRND issues including restoration operation impacts.
2. **Deficiency:** There are no procedures or checklists supporting this task.
Non-Materiel Solutions: *Doctrine:* Develop procedures and checklist to facilitate manual determination of restoration operation impact on strategic deployment, sustainment, and redeployment.
3. **Deficiency:** There are no exercises to support this task.
Non-Materiel Solutions: *Training:* Develop joint exercises that include or focus on joint restoration operations impacts on strategic deployment, sustainment, and redeployment.
4. **Deficiency:** There is no experimentation to support this task.
Non-Materiel Solutions: *Training:* Integrate J-3 staff into JRO experimentation campaign plan for FY2009/10 UNIFIED ENDEAVOR and all work ups. Include this task for concept experimentation.
5. **Deficiency:** Concepts, doctrine, and TTPs focusing restoration operation impact on strategic deployment, sustainment, and redeployment are limited.
Non-Materiel Solutions: *Doctrine:* Develop concepts, doctrine, and TTPs focusing on restoration operation impact on strategic deployment, sustainment, and redeployment.
6. **Deficiency:** CBRND staffs are not adequately trained/experienced on strategic CBRND issues.
Non-Materiel Solutions: *Leadership:* Analyze training/education received by CBRND specialists assigned to joint staffs. Recommend training/education changes, enhancements, or alternative fixes as required. *Personnel:* Analyze experience base of CBRND specialists assigned to joint staffs. Recommend career track changes, prerequisites, enhancements, or alternative fixes as required.
7. **Deficiency:** JPME does not currently address this issue.
Non-Materiel Solutions: *Leadership:* Develop JPME leader training requirements and curriculum on restoration operations.

- 8. Deficiency:** CBRND staffs and staffing at all levels is inadequate.
Non-Materiel Solutions: *Organization:* Analyze CBRND staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required.
- 9. Deficiency:** GCCS does not provide useful information on restoration operations for deployment, sustainment, and redeployment considerations and does not receive information from JWARN.
Non-Materiel Solutions: None.
- 10. Deficiency:** The current capability for analysis is manual and slow and might be subject to human errors.
Non-Materiel Solutions: *Training (partial):* Additional operation training on current capability.

14.8.3.2 IMA Assessment Summary

Table 14.8-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 14.8-2. SNSUST 8: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
GCCS does not provide useful information on restoration operations for deployment, sustainment, and redeployment considerations and does not receive information from JWARN.	Automated Systems	An automated system must be developed to provide location (GPS) and unit/activity restoration operation status through component command unit communication systems into the NBC Battle Management System and from there into JWARN and GCCS. System must be automatic and provide analysis of impact of restoration operations on strategic deployment, sustainment, and redeployment.
The current capability for analysis is manual and slow and might be subject to human errors.	Automated Tool	An automated tool that integrates deployment, sustainment, and redeployment data with restoration operation impacts and projections must be developed.

14.9 Task SNSUST 9: Supply strategic forces and assets with adequate decontamination capability

14.9.1 Functional Area Analysis

14.9.1.1 Definition

To ensure that strategic forces and assets are supplied with adequate decontamination capability in order to sustain operations critical to the execution of the National Military Strategy. CJCS manages the JCIDS process for restoration operations and decontamination. Complex decontamination issues, to include prioritization of austere decontamination capability, will require modeling, simulation, realistic exercises, and experimentation to determine both requirements and determinations of what constitutes “adequate decontamination capability.”

14.9.1.2 Derivation

UJTL (SN 9.2.1, SN 5.3.5.3).

14.9.1.2.1 Supported Task: N/A

14.9.1.2.2 Lateral Task: SNSHA 6

14.9.1.2.3 Supporting Tasks: STSUST 5, STSUST 9

14.9.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Multiple competing apportionments. (C2.2.2)
2. Limited personnel experience. (C2.2.4.5)
3. Limited host nation support. (C2.8.5)

Civil

1. Limited foreign government support. (C3.1.2.3)

14.9.2 Functional Needs Analysis

14.9.2.1 Capability and Deficiency Assessment Summary

Table 14.9-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” JRO-CBRND is responsible for the planning, coordination, and oversight of joint CBRN defense requirements to include ensuring that strategic forces and assets are supplied with adequate decontamination capability. The JRO has the skill and experience to conduct the task, but there is a major shortfall of data at the operational level and above.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but lead to a far-term assessment of only “yellow.”

Table 14.9-1. SNSUST 9: Capability and Deficiency Assessment

Capability: CJCS JRO-CBRND	M1	M2	M3	M4	M5
Current Overall Capability¹	R ²	R ³	Y ⁴	R ⁵	R ⁶
Near/Mid-Term Overall Capability	R	R	Y	R	R
Far-Term Overall Capability	Y ⁷	Y	Y	Y	Y

	FAA Measure	Scale
M1	National/joint exercises provide lessons learned on supplying strategic forces and assets with adequate decontamination capability.	G – Yes, Y – Limited, R – No
M2	National/joint experimentation provides data on efficacy of current/proposed procedures for supplying strategic forces and means with adequate decontamination capability.	G – Yes, Y – Limited, R – No
M3	The JCIDS process includes a comprehensive examination of CBRN “Sustain” considerations at all levels of war (SN, ST, OP, and TA).	G – Yes, Y – Limited, R – No
M4	Required capability can be supplied.	G – Yes, Y – Limited, R – No
M5	Required capability is supplied when forecast.	G – Yes, Y – Limited, R – No

¹ Concepts, doctrine, and TTPs focusing on restoration operation requirements at the operational and strategic levels are very limited. CBRN staffs and staffing at all levels are not robustly manned, making it difficult to apply CBRND subject matter expertise to planning and evaluating exercises when required. CBRND staffs are not adequately trained/experienced on strategic CBRND issues. JPME does not currently address this issue.

² While there have been many national/joint exercises that have included some restoration operations issues, an exercise focused on restoration operations for a strategic force has not been conducted except in USFK. While many tactical-level issues have been captured from this and other exercises for examination, operational-/strategic-level issues are virtually nonexistent.

³ The RESTOPS ACTD, conducted in USFK, has focused on restoration operations for fixed facilities. When published, the results are expected to provide abundant data for restoration operations for fixed facilities. There have been no experiments focusing on operational level and above warfighting restoration operations concepts and issues.

⁴ Limited. The JCIDS process is currently being used to conduct a comprehensive examination of CBRN Sustain considerations at all levels of war (SN, ST, OP, and TA) within the limitations of currently available data. The issue is with the “comprehensiveness” of the data available for examination. While data at the tactical level are reasonably available, operational-level and above data are virtually nonexistent.

⁵ Determination of what is required can not be made without realistic modeling, simulation, exercises and experimentation to determine both requirements and determinations of what constitutes “adequate decontamination capability.”

⁶ Forecasting methods can not be developed until required capability can be determined. Determination of what is required can not be made without realistic modeling, simulation, exercises, and experimentation to determine both requirements and determinations of what constitutes “adequate decontamination capability.”

⁷ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the length of time it will take for experimentation and DOTMLPF initiatives to provide feedback and lessons learned.

14.9.3 Functional Solution Analysis

14.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** An exercise including fully integrated exercise objectives or focused on restoration operations for a strategic force has not been conducted.

Non-Materiel Solutions: *Doctrine:* Establish guidelines, checklists, and exercise planning tools to integrate restoration operation objectives into joint exercises. *Training:* Facilitate the development of exercises that include fully integrated exercise objectives or are totally focused on restoration operations for joint strategic forces. *Facilities:* Incorporate infrastructure and telemetric requirements into development of JNTC.
- 2. Deficiency:** Relevant and comprehensive operational-/strategic-level issues are virtually nonexistent.

Non-Materiel Solutions: *Doctrine:* Develop guides for observer/controllers (O/Cs) so that they are better able to capture relevant lessons learned from exercises. Integrate captured data into future JCIDS analysis. *Organization:* Ensure that organizations that conduct joint exercises likely to reveal relevant data are adequately staffed with CBRN subject matter experts or that external O/C teams (provided by JRO) can be easily integrated into the exercise control/data collection plan. *Training:* Provide assistance to joint exercise developers on restoration operation scenarios and objectives and develop CBRN-centric training for O/Cs. *Leadership:* Integrate techniques for developing joint exercise restoration operation training objectives into leader training. *Personnel:* Ensure that personnel chosen to be observer/controllers have requisite combination of technical expertise, operational/exercise experience, and CBRN-centric joint exercise O/C training.
- 3. Deficiency:** There have been no experiments focusing on operational-/strategic-level warfighting restoration operations concepts and issues.

Non-Materiel Solutions: *Training:* Include this task for concept JRO experimentation campaign plan for FY2009/10 UNIFIED ENDEAVOR and all work-ups.
- 4. Deficiency:** There is no determination of what constitutes “adequate CBRND decontamination or medical capability” for strategic forces.

Non-Materiel Solutions: *Doctrine:* Develop plan for how to determine (through modeling, simulation, or experimentation) what constitutes adequate CBRND decontamination or medical capability for strategic forces. *Training:* Determine (through modeling, simulation, or experimentation) what constitutes adequate CBRND decontamination or medical capability for strategic forces.
- 5. Deficiency:** There is no method of forecasting strategic force requirements.

Non-Materiel Solutions: *Doctrine (partial):* Develop methodology for how to forecast/determine adequate CBRND decontamination or medical capability for strategic forces.

6. **Deficiency:** Concepts, doctrine, and TTPs focusing on restoration operation requirements at the operational and strategic levels are very limited.

Non-Materiel Solutions: *Doctrine:* Develop robust concepts, doctrine, and TTPs focusing on restoration operation requirements at the operational and strategic levels.

7. **Deficiency:** CBRN staffs and staffing at all levels is not adequate.

Non-Materiel Solutions: *Doctrine:* Establish plans to support strategic forces with adequate decontamination capability. *Organization:* Establish plans to support strategic forces with adequate decontamination capability. *Leadership:* Establish plans to support strategic forces with adequate decontamination capability. *Personnel:* Establish plans to support strategic forces with adequate decontamination capability.

8. **Deficiency:** CBRND staffs are not adequately trained/experienced on strategic CBRND issues.

Non-Materiel Solutions: *Doctrine:* Develop guides and TTPs focusing on CBRND Staff roles, responsibilities, and procedures for planning and conducting restoration operation at the operational and strategic levels. *Training:* Analyze training received by CBRND specialists assigned to joint staffs. Recommend training changes, enhancements, or alternative fixes as required. *Leadership:* Analyze education received by CBRND specialists assigned to joint staffs. Recommend education changes, enhancements, or alternative fixes as required.

9. **Deficiency:** JPME does not currently address this issue.

Non-Materiel Solutions: *Leadership:* Commanders, staff directors, and leaders at all levels require extensive education on CBRND issues. Without a complete understanding of how CBRND issues can impact the warfight, they are unable to fully appreciate operational implication of CBRND and apply corrective or remedial actions.

14.9.3.2 IMA Assessment Summary

Table 14.9-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 14.9-2. SNSUST 9: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
There is no method of forecasting strategic force requirements.	Automated tools	Develop automated tools that take the relevant data (when gathered) and provide a means to forecast strategic force restoration operation requirements.

14.10 Task SNSUST 10: Establish forward presence of decontamination units and facilities in theater

14.10.1 Functional Area Analysis

14.10.1.1 Definition

To assess requirements for decontamination units and facilities in a specific theater prior to the initiation of hostilities and to conduct their deployment and employment. In conjunction with interagency partners, CJCS establishes this forward presence of decontamination units and facilities in theater. Deployments that demonstrate a capability to sustain operations despite use of CBRN/TIM weapons will rely on the visibility of a robust decontamination capability to help deter CBRN/TIM weapon use.

14.10.1.2 Derivation

UJTL (SN 9.2.1, SN 3.1.1, SN 5.4, SN 7.1.3, ST 7.1.6), QDR 2001.

14.10.1.2.1 Supported Task: N/A

14.10.1.2.2 Lateral Task: SNSHA 6

14.10.1.2.3 Supporting Tasks: STSUST 5, STSUST 6, STSUST 9, STSUST 10, STSUST 11, STSUST 12, STSUST 14

14.10.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Strong preexisting arrangements. (C2.1.1.2)
2. Major military commitments from other nations. (C2.1.1.7)
3. Abundant sustainment facilities. (C2.8.1)
4. Sufficient deployed supplies (30-90 days). (C2.8.2)
5. Extensive host nation support. (C2.8.5)

Civil

1. Limited lift assets available. (C2.5.2)
2. Limited foreign government support. (C3.1.2.3.)

14.10.2 Functional Needs Analysis

14.10.2.1 Capability and Deficiency Assessment Summary

Table 14.10-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” CJCS has numerous responsibilities to establishing forward presence of decontamination units and facilities in theater. The joint staff likely has the skill and experience to conduct the task, but there are several obstacles that will hinder the process.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term. Standard operating procedures (SOPs), guidelines, and DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but only moderately. Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites. The overall assessment will remain at “yellow” in the far-term.

Table 14.10-1. SNSUST 10: Capability and Deficiency Assessment

Capability: CJCS J-3	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	Y ⁴	R ⁵
Near/Mid-Term Overall Capability	Y	Y	Y	R
Far-Term Overall Capability⁶	Y	Y	G ⁷	Y ⁸

	FAA Measure	Scale
M1	Required decontamination units and facilities are in theater when required.	G – Yes, Y – Limited, R – No
M2	Required decontamination units and facilities in theater are prepared to conduct operations when required.	G – Yes, Y – Limited, R – No
M3	National/joint exercises provide lessons learned on coordinating forward presence of decontamination units and facilities in theater.	G – Yes, Y – Limited, R – No
M4	SOP and guidelines for structure and requirements for rapid deployable decontamination unit and facilities are established	G – Yes, Y – Limited, R – No

¹ Concepts, doctrine, and TTPs focusing on establishing forward presence of decontamination units are very limited. CBRN staffs and staffing at all levels are not robustly manned, making it difficult to apply CBRND subject matter expertise to planning and evaluating exercises when required. CBRND staffs are not adequately trained/experienced on strategic CBRND issues. JPME does not currently address this issue.

² Currently very limited units and facilities are available to deploy to theater. Data are currently unavailable to help determine what is “required” (see Task SNSUST 9).

³ While individual units and capabilities conduct training, the integration of these units and capabilities into operational-level and above exercises is very limited. Therefore, there are few data on whether they will be able to conduct operations when required.

⁴ The RESTOPS ACTD, conducted in USFK, has focused on restoration operations for fixed facilities. When published, the results are expected to provide abundant data for restoration operations for fixed facilities. There have been no experiments focusing on operational-level and above warfighting restoration operations concepts and issues to include establishing forward presence of decontamination units.

⁵ SOPs and guidelines for structure and requirements for rapid deployable decontamination unit and facilities are not established.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

⁸ SOPs and guidelines should improve as a result of focused experimentation.

14.10.3 Functional Solution Analysis

14.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Data are currently unavailable to help determine what is “required”.

Non-Materiel Solutions: *Doctrine:* Establish TTPs and methodologies to assist the J-3 staff determine capability requirements when establishing forward presence of decontamination units. *Training:* Establish training to assist the J-3 staff to determine capability requirements when establishing forward presence of decontamination units.
- 2. Deficiency:** There are few data on whether decontamination units will be able to conduct operations when required.

Non-Materiel Solutions: *Training:* Integrate this task into exercises and experiments to develop reliable data.
- 3. Deficiency:** There have been no experiments focusing on operational-level and above warfighting restoration operations concepts and issues to include establishing forward presence of decontamination units.

Non-Materiel Solutions: *Training:* Integrate this task into exercises and experiments to develop reliable data.
- 4. Deficiency:** Concepts, doctrine, and TTPs focusing on establishing forward presence of decontamination units are very limited.

Non-Materiel Solutions: *Training:* Develop enhanced concepts, doctrine, and TTPs focusing on establishing forward presence of decontamination units based on data collected in exercises and experiments.
- 5. Deficiency:** CBRN staffs and staffing at all levels are not robustly manned, making it difficult to apply CBRND subject matter expertise to planning and evaluating exercises when required.

Non-Materiel Solutions: *Organization:* Analyze CBRN staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required.
- 6. Deficiency:** CBRND staffs are not adequately trained/experienced on strategic CBRND issues.

Non-Materiel Solutions: *Training:* Analyze training/education received by CBRND specialists assigned to joint staffs. Recommend training/education changes, enhancements, or alternative fixes as required.
- 7. Deficiency:** JPME does not currently address this issue.

Non-Materiel Solutions: *Leadership:* Develop JPME leader training requirements and curriculum on restoration operations.

- 8. Deficiency:** SOPs and guidelines for structure and requirements for rapid deployable decontamination unit and facilities are not established.

Non-Materiel Solutions: *Doctrine:* Develop SOPs and guidelines for rapid deployable decontamination unit and facilities. *Organization:* Develop structure and requirements for rapid deployable decontamination unit and facilities.

14.10.3.2 IMA Assessment Summary

N/A

14.11 Task SNSUST 11: Provide restoration operation “Global Family of Engagement Plan” policies and guidelines to combatant commanders

14.11.1 Functional Area Analysis

14.11.1.1 Definition

To formulate policy for restoration operation “Global Family of Engagement Plans” and to provide this policy, as well as specific guidelines, to combatant commanders for execution. In conjunction with interagency partners, CJCS establishes and develops this policy and guidelines prior to combat operations. Because the threat of CBRN/TIM weapons is of concern to all nations and potential allies, offering assistance in establishing a restoration operational capability, through training or equipment, can help forge new friendships and cooperation. Decontamination operational issues will be easier to address in remote or austere areas if the host nation has a decontamination capability.

14.11.1.2 Derivation

UJTL (SN 9.2.1, SN 8, SN 7.5, SN 5.4.3), CJCSM 3113.01a.

14.11.1.2.1 Supported Task: N/A

14.11.1.2.2 Lateral Task: SNSHA 11

14.11.1.2.3 Supporting Task: STSUST 8

14.11.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil. N/A

14.11.2 Functional Needs Analysis

14.11.2.1 Capability and Deficiency Assessment Summary

Table 14.11-1 discusses the only capability that currently exists to perform the task to the designated standard. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” CJCS has numerous responsibilities, including, but not limited to, preparing and reviewing joint policies and guidelines, etc. The concept of “global family of engagement plans” is the phrase embodiment used in the Theater Engagement Planning (TEP) Joint Manual (*CJCSM 3113.01a*) to describe action mandated by *Defense Planning Guidance FY 2002–2007* (6 April 2000) to develop a process to globally integrate all military engagement activities. The TEPs from each geographic combatant commander or designated Executive Agent are integrated into the “Global Family of Engagement Plans,” which is approved by CJCS and forwarded to the Under Secretary of Defense for Policy for review. This process and the review and any guidance or support to aid the COCOM in the initial development of the TEP is a strategic national-level activity and—from the standpoint of Sense, Shape, Shield, and Sustain, as embodied in the CBRND Enabling Concept—must be accomplished, at a minimum, with the technical assistance and support of JRO-CBRND. When we say “Restoration Operation Global Family of Engagement Plans,” we mean the integration of Sustain CBRND Enabling Concept ideas into any policies and guidelines that would impact on COCOM development of TEPs.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve but lead to a far-term assessment of only “yellow.”

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far term. No capability improvements are forecast for the far term. The overall status will remain “yellow” despite a multitude of initiatives and is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

Table 14.11-1. SNSUST 11: Capability and Deficiency Assessment

Capability: CJCS	M1	M2	M3
Current Overall Capability¹	R²	R³	R⁴
Near/Mid-Term Overall Capability	Y⁵	Y	Y
Far-Term Overall Capability	Y	Y	Y

	FAA Measure	Scale
M1	Restoration operation “Global Family of Engagement Plan” policies and guidelines are established.	G – Yes, Y – Limited, R – No
M2	Policies and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	Joint exercises/experimentation provide feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No

¹ No doctrine, i.e., staff guidance or JTTPs, has been established specifically for restoration operations.

² No. Although generic guidance exists in *CJCSM 3113.01a*, the “Global Family of Engagement Plans” does not include restoration operations.

³ There are no polices or guidelines to update.

⁴ While there have been many joint exercises, an exercise focused on restoration operations and the efficacy of restoration operation “Global Family of Engagement Plan” policies and guidelines has not been conducted.

⁵ The overall status should improve to “yellow” due to a multitude of initiatives but is not anticipated to improve more than that due to the inherent difficulties posed by international relations.

14.11.3 Functional Solution Analysis

14.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Restoration operation are not included in the “Global Family of Engagement Plans.”
Non-Materiel Solutions: *Doctrine:* Ensure that “Global Family of Engagement Plan” policies and guidelines include restoration operations.
- 2. Deficiency:** No exercises have focused on restoration operation.
Non-Materiel Solutions: *Doctrine:* Establish working groups to establish policies and guidelines that include restoration operations. *Training:* Develop exercises that include restoration operations and focus on gathering information of the efficacy of global family of engagement planning. *Facilities:* Incorporate into JNTC.
- 3. Deficiency:** No doctrine, i.e., staff guidance or JTTPs, has been established.
Non-Materiel Solutions: *Doctrine:* Establish doctrine, i.e., staff guidance/policies (CJCSI, CJCSM or JTTPs). Such policies and guidelines should be included in documents like CJCSM 3113.01A Theater Engagement Planning, Defense Planning Guidance, the Joint Staff Capabilities Plan, and any CBRN-specific publications might provide guidance on CBRN defense integration into TEP.
- 4. Deficiency:** No training provides feedback.
Non-Materiel Solutions: *Training:* Develop training on “Global Family of Engagement Plan” restoration operation considerations so that lessons learned can be gathered.
- 5. Deficiency:** No JPME courses address “Global Family of Engagement Planning” including restoration operations.
Non-Materiel Solutions: *Leadership:* Develop JPME leader education on “Global Family of Engagement Plan” restoration operation considerations. Provide materials to JFSC so it can use restoration operations as a TEP example.

14.11.3.2 IMA Assessment Summary

N/A

14.12 Task SNSUST 12: Coordinate CBRN elimination operations

14.12.1 Functional Area Analysis

14.12.1.1 Definition

To coordinate global planning and execution of CBRN elimination operations. U.S. Armed Forces may conduct military operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, U.S. military operations across the range of conflict and nonconflict situations (e.g., peace operations, humanitarian assistance, or military support to civil authorities) also may entail a requirement to eliminate, or support the elimination of, CBRN weapons or capabilities. CBRN elimination is the systematic removal of a capability within a nation or organization to develop, deploy, or employ CBRN weapons. The degree or extent of elimination is a strategic objective, defined by a strategic end state, and ranges from complete removal of all capability (including research, production, and training for any form of CBRN weapon) to the focused removal of specific capabilities. This task encompasses three primary subtasks: *Exploitation* (locating, characterizing, and securing CBRN materiel, weapons, equipment, personnel, and infrastructure, and developing appropriate forensic evidence); *Disposition* (destroying, dismantling, rendering safe, removing, transferring, or otherwise verifiably disposing of CBRN materiel, weapons, equipment, and infrastructure); and *Monitoring and Redirection* (monitoring, inspecting, and redirecting/converting the CBRN infrastructure).

14.12.1.2 Derivation

Combatant Commander's Planning Guide for WMD Elimination Operations (Draft).

14.12.1.2.1 Supported Task: N/A

14.12.1.2.2 Lateral Task: SNSHA 10

14.12.1.2.3 Supporting Task: STSUST 9

14.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Chemical, Biological, Radiological or Nuclear threat form. (Potential types of CBRN capabilities, potential hazards or effects in the target country requiring exploitation, disposition, or monitoring and redirection.) (C1.3.3.1-3)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

CHAPTER 15. STRATEGIC THEATER SUSTAIN TASKS

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15.0 Strategic Theater Sustain

15.0.1 Introduction

At the strategic level of war, a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives, sequence initiatives, define limits and assess risks for the use of military and other instruments of national power, develop global plans or theater war plans to achieve these objectives, and provide military forces and other capabilities in accordance with strategic plans. The Strategic Theater (ST) sublevel encompasses combatant command (COCOM) tasks. Fourteen ST Sustain (SUST) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA) including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND) sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the STSUST area, restates relevant information from the CBRND FAA, including a description of each of the 14 STSUST tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near- or far-term resolution to identified deficiencies within the individual capabilities.

Most of the STSUST tasks involve required capabilities of major staffs or staff sections within the U.S. Department of Defense (DoD). In those areas where a DoD staff or agency needed to interact within the interagency, the task focused on DoD capabilities required to facilitate the interaction.

15.0.2 FNA Summary

Table 15.0-1 summarizes the overall current and projected capability to perform STSUST tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow.” The combatant commander coordinates policies, guidelines, and responsibilities with the theater commanders to govern theater restoration operations and establishes priorities. Nothing precludes the COCOM staff from accomplishing these tasks, but there is very little in the way of existing doctrine or tactics, techniques, and procedures (TTPs) to

help guide them. Procedures that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated ports of debarkation (PODs) are currently manual, making the process slow, labor-intensive, and subject to human error. Without joint TTPs (JTTPs), training, or exercises to prepare them, the COCOM staff may not have adequate expertise or time to complete these tasks before they are required. While any COCOM could provide a Joint Task Force (JTF) HQ for command and control of restoration operations, it has never been accomplished. The joint exercise UNIFIED ENDEAVOR allows a COCOM to exercise in the establishment and training of a JTF, but the exercise has never been used to establish a JTF for the specific mission of conducting large-scale restoration operations. The COCOM staff would ultimately have the means to make a determination of the impact of ongoing or projected restoration operations on theater residual capability. Although the COCOM staff is skilled and experienced, they would have little skill or experience with CBRND issues concerning restoration operations. For restoration operation issues their current capability is manual, slowing down the process. The Global Command and Control System (GCCS) does not provide useful information on restoration operations for residual capability determinations and does not receive information from the Joint Warning and Reporting Network (JWARN). It is unlikely that assessments can be made manually within 2 hours. Although improvements are expected in many of the areas, the capability projection will remain “yellow”. This overall projected assessment remaining the same for STSUST tasks is based on anticipated extrapolated results of current and programmed doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) initiatives. There are no major technological barriers to be overcome. It is rather a matter of emphasis in future budgeting and programming of resources in order to initiate or enhance recommended DOTMLPF solutions. The estimated pace of change reflected in this assessment could be accelerated or slowed based on decisions to accelerate or slow the implementation of recommended solutions.

Table 15.0-1. Strategic Theater Sustain Summary FNA Findings

Task Number	CBRN Strategic Theater Sustain Task Title	Capability		
		Current	Near/Mid	Far
STSUST 1	Establish theater restoration operation policy and guidelines.	●	●	●
STSUST 2	Establish theater restoration operation priorities.	●	●	●
STSUST 3	Establish theater restoration operation responsibilities.	●	●	●
STSUST 4	Establish theater restoration operations guidance for strategic deployment, sustainment, and redeployment, including NEO and AE operations.	●	●	●
STSUST 5	Incorporate units to support restoration operations in the TPFDL.	●	●	●

STSUST 6	Designate joint restoration operation site areas.	●	●	●
STSUST 7	Coordinate multinational restoration operations.	●	●	●
STSUST 8	Develop TEPs for restoration operation considerations and activities for assigned theater or designated countries.	●	●	●
STSUST 9	Coordinate SOF restoration operations requirements.	●	●	●
STSUST 10	Provide JTF HQ for command and control of restoration operations.	●	●	●
STSUST 11	Coordinate the decontamination of strategically significant areas/terrain.	●	●	●
STSUST 12	Coordinate the decontamination of strategically significant facilities or fixed sites.	●	●	●
STSUST 13	Determine the impact of restoration operations on theater residual capability.	●	●	●
STSUST 14	Plan CBRN elimination operations.	N/A	N/A	N/A
OVERALL		●	●	●

15.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential DOTMLPF (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The ideas for materiel approaches primarily highlight the need for automated tools to replace processes that are currently manual and thereby slow, labor-intensive, and subject to human error.

15.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with decontamination and CBRND medical operations for joint forces. Non-materiel and materiel solutions have been identified. Non-materiel solutions include such things as development of TTPs for operational and thorough decontamination of sensitive equipment and fixed facilities (interior and exterior), along with applicable training programs. Remaining materiel requirements include the need for decontaminants that are nontoxic, noncorrosive, and environmentally friendly. These decontaminants must neutralize agents on a variety of surfaces such as aircraft skin and sensitive equipment, while using little or no water. In addition, they must be compatible with each other. Other remaining materiel requirements include application devices that allow for decontamination of porous surfaces, along with hard-to-reach and large areas while protecting the operator from spray-back or extensive IPE requirements.

15.0.3.2 IMA

This section summarizes possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment. All assessments to facilitate developing theater restoration operation priorities must be done manually, increasing the time required to establish priorities when the CBRN situation changes. Automated systems and tools must be developed to facilitate this process. Procedures that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs are currently manual, making the process slow, labor-intensive, and subject to human error. It is important to develop automated tools and integrate procedures into automated systems that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.

15.1 Task STSUST 1: Establish theater restoration operation policy and guidelines

15.1.1 Functional Area Analysis

15.1.1.1 Definition

To establish, prior to combat operations, policy and guidelines that will facilitate theater restoration operations. To facilitate joint and multinational intratheater execution of decontamination operations, the combatant commander provides these policy and guidelines, prior to combat operations, to the theater commanders to govern theater restoration operations. The wide variety of potential allies, as well as possible threat configurations and capabilities, requires both general and specific guidance. As threat capabilities change or improve, so too must the guidance. Includes guidance on support to special operations forces (SOF) and support required for foreign consequence management (CM).

15.1.1.2 Derivation

UJTL (ST 9.4, ST 7.1.5, ST 4.2.3, ST 5.4.1), AJP 3-8.

15.1.1.2.1 Supported Task: SNSUST 3

15.1.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.1.1.2.3 Supporting Tasks: OPSUST 1, OPSUST 12

15.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)

Civil. N/A

15.1.2 Functional Needs Analysis

15.1.2.1 Capability and Deficiency Assessment Summary

Table 15.1-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The combatant commander coordinates policies and guidelines with the theater commanders to govern theater restoration operations. Nothing precludes the COCOM staff from establishing policies and guidelines for joint restoration operations, but there is very little in the way of existing doctrine or TTPs to help guide them. There are no definitive guidelines and policies for joint/multinational theater-/operational-level operations. Conflicting terminology has the potential to produce operational friction. A restoration exercise focused on theater restoration operations has not been conducted. A Restoration Operations (RESTOP) Advanced Concept Technology Demonstration (ACTD) has been conducted in U.S. Forces, Korea (USFK) with results to be published (TBP). Doctrine/TTPs have not been developed for operational level and above. Leader education does not address this issue. CBRND staffs and staffing at all levels is inadequate.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. In the mid term, improvements will be made or initiated. Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites. Definitive guidelines and policies will be developed for joint/multinational theater-level operations. Conflicting terminology having the potential to produce operational friction will be standardized. The overall capability will improve to “green” in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.1-1. STSUST 1: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	G ³	Y ⁴
Near/Mid-Term Overall Capability⁵	Y	G	G ⁶
Far-Term Overall Capability⁷	G ⁸	G	G

	FAA Measure	Scale
M1	Policy and guidelines for theater restoration operations are established.	G – Yes, Y – Limited, R – No
M2	Existing policy and guidelines are updated regularly.	G – Yes, Y – Limited, R – No
M3	Theater exercises/experimentation provide feedback on efficacy of policy and guidelines.	G – Yes, Y – Limited, R – No

¹ No doctrine or TTPs have been developed that is useful for operational-level and above restoration operation consideration. Leader education does not address this issue. CBRND staffs and staffing at all levels is inadequate.

² Policies and guidelines for theater restoration operations are limited, but nothing precludes a COCOM staff from developing policies and guidelines. There are NATO, multi-Service, and individual Service tactical policies and guidelines, but no definitive guidelines and policies for joint/multinational theater-level operations. Conflicting terminology has the potential to produce operational friction.

³ Policies and guidelines are updated regularly.

⁴ Limited. A restoration exercise focused on theater restoration operations has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁸ Definitive guidelines and policies will be developed for joint/multinational theater-level operations. Conflicting terminology having the potential to produce operational friction will be standardized.

15.1.3 Functional Solution Analysis

15.1.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Policies and guidelines for joint/multinational theater/operational-level restoration operations are limited.
Non-Materiel Solutions: *Doctrine:* Establish policies and guidelines for joint/multinational theater/operational-level restoration operations. Include guidance on support to SOF and support required for foreign consequence management.
2. **Deficiency:** Conflicting terminology has the potential to produce operational friction.
Non-Materiel Solutions: *Doctrine:* Deconflict terminology in joint, Service, and multinational doctrine and TTPs.
3. **Deficiency:** A restoration exercise focused on theater restoration operations has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises to define and refine restoration operation policies and guidelines. Incorporate lessons learned from RESTOPS ACTD into future exercises. *Facilities:* Incorporate infrastructure required to conduct COCOM-level restoration exercises into the Joint National Training Center (JNTC).
4. **Deficiency:** A RESTOP ACTD (ongoing) has been conducted in USFK with results TBP.
Non-Materiel Solutions: *Training:* Incorporate lessons learned from RESTOPS ACTD into future exercises and experimentation that looks at issues other than fixed sites.
5. **Deficiency:** Doctrine/TTPs have not been developed for operational level and above.
Non-Materiel Solutions: *Doctrine:* Establish JPME leader education on this task.
6. **Deficiency:** CBRND staff functions and organization vary greatly between commands, which can be detrimental to planning, coordination, and operations.
Non-Materiel Solutions: *Organization:* Analyze CBRND staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required.
7. **Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Develop Joint Professional Military Education (JPME) training on restoration operations roles and responsibilities. CJCSI 1800.01a, JPME, must include leader-learning areas for restoration operations considerations at the ST level.

15.1.3.2 IMA Assessment Summary

N/A

15.2 Task STSUST 2: Establish theater restoration operation priorities

15.2.1 Functional Area Analysis

15.2.1.1 Definition

To establish theater restoration operation priorities to ensure that strategically significant forces and facilities are available when required. The combatant commander establishes these priorities and provides them to theater commanders to govern the establishment of joint restoration operation priorities. Critical data elements include agent toxicity and persistency as well as the duration of a hazard on a variety of surfaces under differing weather conditions. As operational requirements change, priorities are adjusted as required.

15.2.1.2 Derivation

UJTL (ST 9.4, ST 4.2.3, ST 5.4.1).

15.2.1.2.1 Supported Task: SNSUST 3

15.2.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.2.1.2.3 Supporting Task: OPSUST 2

15.2.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)

Civil. N/A

15.2.2 Functional Needs Analysis

15.2.2.1 Capability and Deficiency Assessment Summary

Table 15.2-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The combatant commander coordinates theater restoration operation priorities and provides them to theater commanders to govern the establishment of joint restoration operation priorities. Nothing precludes the COCOM staff from establishing restoration priorities based on the current situation, but there is very little in the way of existing doctrine or TTPs to help guide them. All assessments must be done manually, increasing the time required to establish priorities when the CBRN situation changes. Changes must be made manually, and staff familiarity with CBRND issues is limited. A restoration exercise focused on theater restoration operations has not been conducted. A RESTOP ACTD has been conducted with results TBP.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception that DOTMLPF should improve in some areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.2-1. STSUST 2: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	Y ³	Y ⁴
Near/Mid-Term Overall Capability⁵	Y	Y	Y
Far-Term Overall Capability⁶	G ⁷	G ⁸	G ⁹

	FAA Measure	Scale
M1	Theater restoration operation priorities are established.	G – Yes, Y – Limited, R – No
M2	Priorities are modified after operational requirements change.	G – Yes, Y – Limited, R – No
M3	Theater exercises/experimentation provide feedback on the establishment of theater restoration operation priorities.	G – Yes, Y – Limited, R – No

¹ No doctrine/TTPs have been developed. Leader education does not address this issue.

² Nothing precludes the COCOM staff from establishing restoration priorities based on the current situation, but no pertinent joint publications provide guidance to assist planners who need to advise the combatant commander on the coordination of theater restoration operation priorities. All assessments must be done manually, increasing the time required to establish priorities when the CBRN situation changes.

³ Nothing precludes changing priorities after operational requirements change, but the changes must be made manually, and staff familiarity with CBRND issues is limited.

⁴ Limited, a restoration exercise focused on theater restoration operations has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁷ Joint publications will provide guidance to assist planners who need to advise the combatant commander on the coordination of theater restoration operation priorities. All assessments will no longer be done manually decreasing the time required to establish priorities when the CBRN situation changes.

⁸ Changes will no longer be made manually, and staff familiarity with CBRND issues will increase due to education designed for JPME.

⁹ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.2.3 Functional Solution Analysis

15.2.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** All assessments must be done manually, increasing the time required to establish priorities when the CBRN situation changes.
Non-Materiel Solutions: *Training (partial):* Develop COCOM staff exercises to define and refine restoration priorities and guidelines.

2. **Deficiency:** A restoration exercise focused on theater restoration operations has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises to define and refine restoration operation policies and guidelines. Incorporate lessons learned from RESTOPS ACTD into future exercises.

3. **Deficiency:** Doctrine/TTPs have not been developed for operational level and above.
Non-Materiel Solutions: *Doctrine:* Develop TTPs to provide assistance to staffs that must coordinate theater restoration operation priorities.

4. **Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Establish JPME leader education on this task.

15.2.3.2 IMA Assessment Summary

Table 15.2-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 15.2-2. STSUST 2: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
All assessments must be done manually, increasing the time required to establish priorities when the CBRN situation changes.	Automated tools	Develop automated systems and tools to facilitate the establishment of theater restoration operation priorities.

15.3 Task STSUST 3: Establish theater restoration operation responsibilities

15.3.1 Functional Area Analysis

15.3.1.1 Definition

To establish theater restoration operation responsibilities to facilitate the smooth coordination of decontamination efforts. The combatant commander establishes and maintains these responsibilities and provides them to theater commanders to govern the control of joint restoration operations.

15.3.1.2 Derivation

UJTL (ST 9.4, ST 4.2.3, ST 5.4.1).

15.3.1.2.1 Supported Task: SNSUST 4

15.3.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.3.1.2.3 Supporting Task: OPSUST 3

15.3.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)

Civil. N/A

15.3.2 Functional Needs Analysis

15.3.2.1 Capability and Deficiency Assessment Summary

Table 15.3-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The combatant commander coordinates theater restoration operation responsibilities and provides them to theater commanders to govern the control of joint

restoration operations. Nothing precludes the COCOM staff from establishing restoration responsibilities based on the current situation, but there is very little in the way of existing doctrine or TTPs to help guide them. No pertinent joint publications provide guidance to assist the planners. Leader education does not address this issue.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Little capability improvement is forecast for the near/mid term with the exception that DOTMLPF should improve in some areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.3-1. STSUST 3: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	G ³	Y ⁴
Near/Mid-Term Overall Capability⁵	Y	G	Y
Far-Term Overall Capability⁶	G ⁷	G	G ⁸

	FAA Measure	Scale
M1	Theater restoration operation responsibilities are established.	G – Yes, Y – Limited, R – No
M2	Responsibilities are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	Theater exercises/experimentation provide feedback on the establishment of theater restoration operation responsibilities.	G – Yes, Y – Limited, R – No

¹ No doctrine/TTPs have been developed. Leader education does not address this issue.

² Nothing precludes the COCOM staff from coordinating theater restoration operation responsibilities and providing them to theater commanders to facilitate planning and govern the control of joint restoration operations, but no pertinent joint publications provide guidance to assist the planners.

³ Nothing precludes changing priorities after substantive changes are recommended and approved.

⁴ Limited. A restoration exercise focused on the establishment of theater restoration operation responsibilities has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁷ Joint publications will be enhanced to provide guidance to assist the planners.

⁸ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.3.3 Functional Solution Analysis

15.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** No pertinent joint publications or TTPs provide guidance to assist the planners.
Non-Materiel Solutions: *Doctrine:* Develop pertinent joint publications provide guidance to assist planners who need to advise the combatant commander on the coordination of theater restoration operation responsibilities.

2. **Deficiency:** A restoration exercise focused on the establishment of theater restoration operation responsibilities has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises to define and refine restoration operation responsibilities. Incorporate lessons learned from RESTOPS ACTD into future exercises.

3. **Deficiency:** RESTOP ACTD results have not been published.
Non-Materiel Solutions: *Training:* Incorporate lessons learned from RESTOPS ACTD into future doctrine and staff exercises.

4. **Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Establish JPME leader education on this task.

15.3.3.2 IMA Assessment Summary

N/A

15.4 Task STSUST 4: Establish theater restoration operations guidance for strategic deployment, sustainment, and redeployment, including NEO and AE operations

15.4.1 Functional Area Analysis

15.4.1.1 Definition

To ensure the integration of strategic deployment, sustainment, and redeployment with ongoing or planned restoration operations. Key considerations include contamination avoidance by lift assets, designation of alternate ports of embarkation/debarkation (POEs/PODs), identification of transload sites for transload of cargo and passengers from uncontaminated to contaminated lift platforms for movement into contaminated PODs, thorough decontamination of lift platforms, and redeploying forces to internationally recognized decontamination standards. Aeromedical evacuation (AE) planning should include TTPs to enable the movement of contagious/contaminated patients.

15.4.1.2 Derivation

UJTL (ST 1.1.2, ST4, ST4.2.2.2, ST8.4.3, ST9.4), Air Mobility Operations in a Chemical and Biological Environment.

15.4.1.2.1 Supported Tasks: SNSUST 1, SNSUST 2, SNSUST 5, SNSUST 7

15.4.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.4.1.2.3 Supporting Task: OPSUST 11

15.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited lift assets available. (C2.5.2)
6. High rear-area security. (C2.7.1)
7. Limited host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

Limited foreign government support. (C3.1.2.3)

15.4.2 Functional Needs Analysis

15.4.2.1 Capability and Deficiency Assessment Summary

Table 15.4-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” Any COCOM HQ has the basic ability to establish theater restoration operations guidance for strategic deployment, sustainment, and redeployment (including noncombatant evacuation operations [NEO] and AE) operations. There are some deficiencies that negatively impact on the speed and efficiency with which they will be able to do this, and some international standards that must be established to preclude intertheater movement problems.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. Improvements in JTTPs are forecast in the near/mid term, which should improve the overall capability to “yellow.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will continue to improve leading to a far-term assessment of “green.” A problem anticipated to extend into the far term is that there is no universally accepted standard for movement of contaminated cargo and/or the evacuation of contagious or contaminated casualties/remains.

Table 15.4-1. STSUST 4: Capabilities and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	R ³	G ⁴	R ⁵	G ⁶	R ⁷	R ⁸	R ⁹
Near/Mid-Term Overall Capability¹⁰	Y	Y	G	Y	G	Y	R	Y
Far-Term Overall Capability¹¹	G ¹²	Y ¹³	G	Y ¹⁴	G	Y ¹⁵	R	G ¹⁶

	FAA Measure	Scale
M1	Theater CBRN/toxic industrial material (TIM) status impacts on strategic deployment, sustainment, and/or redeployment are projected.	G – Yes, Y – Limited, R – No
M2	Alternate and/or diversion en route bases and PODs/POEs have been designated to avoid contaminated areas during deployment, sustainment, and redeployment operations.	G – Yes, Y – Limited, R – No
M3	Joint Logistics over The Shore (JLOTS) is planned to avoid contaminated Seaport of Embarkation/Debarcation (SPOE/SPOD).	G – Yes, Y – Limited, R – No
M4	Cargo/passenger transload site identified for transload of deploying forces and sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.	G – Yes, Y – Limited, R – No
M5	CBRN/TIM situation has been considered in theater reception, staging, onward movement, and integration plans.	G – Yes, Y – Limited, R – No
M6	All cargo is decontaminated to internationally accepted standards (when available) prior to redeployment.	G – Yes, Y – Limited, R – No
M7	Overflight and landing restrictions will permit the movement of contaminated cargo and/or the evacuation of contagious or contaminated casualties/remains.	G – Yes, Y – Limited, R – No
M8	NEO plans include actions in the event of CBRN/TIM attack.	G – Yes, Y – Limited, R – No

¹ No concepts or doctrine relating to this issue have been developed. Joint leader education does not address this issue.

² Limited. Any COCOM staff can determine how CBRN status in the theater impacts strategic deployment, sustainment, and/or redeployment, but there are no TTPs that specifically address issues affecting how to do this.

³ Limited. Any COCOM staff can establish alternate PODs/POEs, but there are no TTPs that specifically address establishing PODs/POEs to avoid contaminated areas during deployment, sustainment, and redeployment operations.

⁴ Nothing precludes JLOTS planning in response to any sort of contamination and it is anticipated as a requirement for any sort of SPOE/SPOD disruption.

⁵ Limited. Any COCOM staff can develop, identify and monitor the operations of a transload site. However, no TTPs specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs. Any such procedures are currently manual, making the process slow, labor-intensive, and subject to human error.

⁶ Nothing precludes planning of this type. Contamination reports must be immediately available to execute plans.

⁷ Any COCOM HQ can coordinate with the Department of Defense Explosive Safety Board to review and approve plans for the lease, transfer or disposal of DoD real property when contamination exists or is suspected to exist. There are no internationally accepted standards for decontamination completeness.

⁸ There is no universally accepted standard for movement of contaminated cargo and/or the evacuation of contagious or contaminated casualties/remains.

⁹ While some NEO plans do address CBRN issues to one degree or another, standards established by the joint staff do not exist.

¹⁰ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹¹ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹² JTTP will be developed to determine how CBRN status in the theater impacts strategic deployment, sustainment, and/or redeployment.

¹³ JTTP will be developed that specifically addresses establishing PODs/POEs to avoid contaminated areas during deployment, sustainment, and redeployment operations.

¹⁴ JTTP will be developed that specifically addresses moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.

¹⁵ Internationally accepted standards for decontamination completeness will be established.

¹⁶ Standards will be established by the joint staff to address NEO CBRND issues.

15.4.3 Functional Solution Analysis

15.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No TTPs exist to assist in projecting theater CBRN status impacts on strategic deployment, sustainment, and/or redeployment.
Non-Materiel Solutions: *Doctrine:* Develop TTPs to assist in projecting theater CBRN status impacts on strategic deployment, sustainment, and/or redeployment.
- 2. Deficiency:** There are no TTPs that specifically address establishing PODs/POEs to avoid contaminated areas during deployment, sustainment, and redeployment operations.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that specifically address establishing PODs/POEs to avoid contaminated areas during deployment, sustainment, and redeployment operations.
- 3. Deficiency:** There are no TTPs that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.
- 4. Deficiency:** Procedures that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs are currently manual making the process slow, labor intensive, and subject to human error.
Non-Materiel Solutions: None.
- 5. Deficiency:** There are no internationally accepted standards for decontamination completeness.
Non-Materiel Solutions: *Doctrine:* Develop internationally accepted standards for decontamination completeness.
- 6. Deficiency:** There is no universally accepted standard for movement of contaminated cargo and/or the evacuation of contagious or contaminated casualties/remains
Non-Materiel Solutions: *Doctrine:* Develop universally accepted standard for movement of contaminated cargo and/or the evacuation of contagious or contaminated casualties/remains.
- 7. Deficiency:** Standards established by the joint staff that provide CBRN NEO guidance to all COCOMs do not exist.
Non-Materiel Solutions: *Doctrine:* Develop standards established by the joint staff that provide CBRN NEO guidance to all COCOMs.
- 8. Deficiency:** No concepts or doctrine relating to this issue have been developed.

Non-Materiel Solutions: *Doctrine:* Develop concepts and doctrine relating to this issue.

9. Deficiency: Joint leader education does not address this issue.

Non-Materiel Solutions: *Leadership:* Develop joint leader education relating to this issue.

15.4.3.2 IMA Assessment Summary

Table 15.4-2 shows possible material approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 15.4-2. STSUST 4: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Procedures that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs are currently manual, making the process slow, labor-intensive, and subject to human error.	Automation Tool	Develop automated tools and integrate procedures into automated systems that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.

15.5 Task STSUST 5: Incorporate units to support restoration operations in the TPFDL

15.5.1 Functional Area Analysis

15.5.1.1 Definition

To incorporate units to support restoration operations in the Time-Phased Force and Deployment List (TPFDL) to ensure that the right restoration operation capabilities are available when required. The combatant commander is responsible for this incorporation and must be well-versed in both friendly restoration operation capabilities and limitations as well as changes in the CBRN/TIM threat.

15.5.1.2 Derivation

UJTL (ST 9.4, ST 7.1.2, ST 7.1.3), QDR 2001.

15.5.1.2.1 Supported Tasks: SNSUST 9, SNSUST 10

15.5.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.5.1.2.3 Supporting Task: N/A

15.5.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Multiple competing apportionments. (C2.2.2)
2. Limited personnel experience. (C2.2.4.5)
3. Limited host-nation support. (C2.8.5)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.5.2 Functional Needs Analysis

15.5.2.1 Capability and Deficiency Assessment Summary

Table 15.5-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “green.” The Combatant Commander incorporates units to support restoration operations in the TPFDL. This task requires that the Combatant Commander be well-versed in friendly decontamination, medical, logistical, assessment, and engineering capabilities and limitations. Nothing precludes the COCOM staff from accomplishing this task, but there is very little in the way of existing doctrine or TTPs to help guide them.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. JTTPs, training and exercises, and education will all improve retaining a mid-term assessment of “green.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should continue to improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.5-1. STSUST 5: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4
Current Overall Capability¹	G ²	G ³	Y ⁴	G ⁵
Near/Mid-Term Overall Capability⁶	G	G	G ⁷	G
Far-Term Overall Capability⁸	G	G	G	G

	FAA Measure	Scale
M1	Units to support restoration operations are incorporated in the TPFDL.	G – Yes, Y – Limited, R – No
M2	TPFDL is modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	Theater exercises/experimentation provide feedback on the incorporation of units to support restoration operations in the TPFDL.	G – Yes, Y – Limited, R – No
M4	TPFDL changes are made as required by CBRN/TIM threat assessment.	G – Yes, Y – Limited, R – No

¹ JP 3-11 and other pertinent publications do not provide definitive guidance or methods by which units can be selected for deployment into theaters where contamination threats are possible. Joint leader education does not address this issue.

² QDR 2001 calls for sufficient mobility, including airlift, sealift, prepositioning, basing infrastructure, alternative points of debarkation, and new logistical concepts of operations, to conduct expeditionary operations in distant theaters against adversaries armed with CBRN and other means to deny access to U.S. forces. The capability to establish forward presence of decontamination units and facilities in theater and to incorporate units to support restoration operations in the TPFDL exists now.

³ Yes. There are no organic constraints.

⁴ Limited, a restoration exercise focused on the incorporation of units to support restoration operations in the TPFDL has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ Yes. There are no organic constraints.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

⁸ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

15.5.3 Functional Solution Analysis

15.5.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** A restoration exercise focused on the incorporation of units to support restoration operations in the TPFDL has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises focusing on the incorporation of units to support restoration operations in the TPFDL.
- 2. Deficiency:** RESTOP ACTD results have not been published.
Non-Materiel Solutions: *Doctrine:* Incorporate lessons learned from RESTOPS ACTD into future doctrine and staff exercises.
- 3. Deficiency:** JP 3-11 and other pertinent publications do not provide definitive guidance or methods by which units can be selected for deployment into theaters where contamination threats are possible.
Non-Materiel Solutions: *Doctrine:* Develop doctrine/TTPs providing definitive guidance or methods by which units can be selected for deployment into theaters where contamination threats are possible.
- 4. Deficiency:** Joint leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Develop JPME training on this task.

15.5.3.2 IMA Assessment Summary

N/A

15.6 Task STSUST 6: Designate joint restoration operation site areas

15.6.1 Functional Area Analysis

15.6.1.1 Definition

To designate joint restoration operation site areas to facilitate subordinate unit decontamination planning. The combatant commander, in conjunction with host-nation or coalition partners, is responsible for these designations. In addition to operational considerations, host-nation environmental impacts and hazards must be considered, as well as impacts on friendly civilian populations.

15.6.1.2 Derivation

UJTL (ST 9.4, ST 4.2.3, ST 6.2.6.2).

15.6.1.2.1 Supported Task: SNSUST 10

15.6.1.2.2 Lateral Tasks: STSHA 6, STSUST 14

15.6.1.2.3 Supporting Task: OPSUST 13

15.6.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C 2.1.1.2)
2. Limited personnel experience. (C2.2.4.5)
3. Limited lift assets available. (C2.5.2)
4. Poor joint staff integration. (C2.3.1.1)
5. Moderate host-nation support. (C2.8.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Diplomatic foreign government support. (C3.1.2.3)

15.6.2 Functional Needs Analysis.

15.6.2.1 Capability and Deficiency Assessment Summary

Table 15.6-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” In conjunction with host-nation or coalition partners, the combatant commander designates areas for fixed joint restoration operations. Nothing precludes the COCOM staff from accomplishing this task, but there is very little in the way of existing doctrine or TTPs to help guide them. A restoration exercise focused on determining efficacy of designated joint restoration operation site areas has not been conducted.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.6-1. STSUST 6: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	G ³	Y ⁴
Near/Mid-Term Overall Capability⁵	Y	G	Y
Far-Term Overall Capability⁶	G ⁷	G	G ⁸

	FAA Measure	Scale
M1	Designated joint restoration operation site areas are established with nominated individual countries.	G – Yes, Y – Limited, R – No
M2	Designated joint restoration operation site areas are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	International exercises/experimentation provide feedback on efficacy of designated joint restoration operation site areas.	G – Yes, Y – Limited, R – No

¹ No doctrine/TTPs have been developed. Leader education does not address this issue.

² Nothing precludes designating a joint RESTOPS area, but no guidance exists on selection criteria, so there is no way to know whether selection is appropriate or will meet operational requirements.

³ Any staff can accomplish this task.

⁴ Limited, a restoration exercise focused on efficacy of designated joint restoration operation site areas has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ Doctrine/JTTPs will be developed. Leader education will be designed to address this issue.

⁶ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁷ Doctrine/JTTPs will be developed. Leader education will be designed to address this issue.

⁸ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.6.3 Functional Solution Analysis

15.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No guidance exists on selection criteria, so there is no way to know whether selection is appropriate or will meet operational requirements.
Non-Materiel Solutions: *Doctrine:* Develop doctrine/TTPs providing definitive guidance or methods by which the efficacy of designated joint restoration operation site areas can be determined and the process improved. An Army Maneuver Support Center or Department of Navy action will be appropriate to address the doctrinal development of these technical procedures. Country studies will need to be done for engineering, water conservation issues, etc. Bilateral agreements with listed restrictions and requirements for hosting countries will need to be reached.
- 2. Deficiency:** A restoration exercise focused on determining the efficacy of designated joint restoration operation site areas has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises focusing on designating joint restoration operation site areas.
- 3. Deficiency:** RESTOP ACTD results have not been published.
Non-Materiel Solutions: *Doctrine:* Incorporate lessons learned from RESTOPS ACTD into future doctrine and staff exercises.
- 4. Deficiency:** No leader education for restoration operations.
Non-Materiel Solutions: *Leadership:* Develop JPME leader training on designating joint restoration operation areas.

15.6.3.2 IMA Assessment Summary

N/A

15.7 Task STSUST 7: Coordinate multinational restoration operations

15.7.1 Functional Area Analysis

15.7.1.1 Definition

To plan for the mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities. The combatant commander provides for the coordination of multinational restoration operations using U.S. capabilities to restore multinational units/facilities, multinational capabilities to restore U.S. units/facilities, or a combination of both.

15.7.1.2 Derivation

UJTL (ST 9.4, ST 8.2.10, ST 8.3.2), AJP 3-8.

15.7.1.2.1 Supported Task: SNSUST 1

15.7.1.2.2 Lateral Tasks: STSHA 8, STSUST 14

15.7.1.2.3 Supporting Tasks: OPSUST 5, OPSUST 6, OPSUST 7

15.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel experience. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)
4. Moderate host-nation support. (C2.8.5)

Civil

1. Moderate host-nation support. (C2.8.5)
2. Mixed support for political policies. (C3.1)
3. Diplomatic foreign government support. (C3.1.2.3)

15.7.2 Functional Needs Analysis

15.7.2.1 Capability and Deficiency Assessment Summary

Table 15.7-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The combatant commander provides for the coordination of multinational restoration operations using U.S. capabilities to restore multinational units/facilities, using multinational capabilities to restore U.S. units/facilities, or a combination of both. Nothing precludes the COCOM staff from accomplishing this task, but there is very little in the way of existing doctrine or TTPs to help guide them. Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units are virtually nonexistent at the ST level. A restoration exercise focused on efficacy of plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities has not been conducted. Little or no training is conducted to expose weaknesses in coordination of multinational restoration operations. Most of the considerations in AJP 3-8 are focused at the tactical level. JP 3-11 also presents information primarily at the tactical level with some operational considerations included. No document focuses on issues of concern for the combatant commander. Joint leader education does not address this issue.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.7-1. STSUST 7: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	Y ²	G ³	Y ⁴
Near/Mid-Term Overall Capability⁵	Y	G	Y
Far-Term Overall Capability⁶	G ⁷	G	G ⁸

	FAA Measure	Scale
M1	Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities are established with nominated individual countries.	G – Yes, Y – Limited, R – No
M2	Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	International exercises/experimentation provide feedback on efficacy of plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities.	G – Yes, Y – Limited, R – No

¹ Most of the considerations in *AJP 3-8* are focused at the tactical level. *JP 3-11* also presents information primarily at the tactical level with some operational considerations included. No document focuses on issues of concern for the combatant commander. Joint leader education does not address this issue.

² The capability to coordinate multinational restoration operations exists now. Actual plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities are limited. Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities are mature at the tactical level but virtually nonexistent at the ST level.

³ Yes. There are no organic constraints once the initial plans exist.

⁴ Limited, a restoration exercise focused on efficacy of plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities has not been conducted. Little or no training is conducted to expose weaknesses in coordination of multinational restoration operations.

A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁷ Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities will be refined or developed as a result of focused international experiments and exercises.

⁸ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.7.3 Functional Solution Analysis

15.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units are virtually nonexistent at the ST level.
Non-Materiel Solutions: *Doctrine:* Develop plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units at the ST level.
- 2. Deficiency:** A restoration exercise focused on efficacy of plans for mutual restoration operation interoperability and cooperation between U.S. and multinational units and facilities has not been conducted.
Non-Materiel Solutions: *Training:* Develop COCOM staff exercises focusing on mutual restoration operation interoperability and cooperation between U.S. and multinational units at the ST level. National-level, COCOM, and JTF exercises must include the coordination of multinational restoration operations in order to test, find, and document potential weaknesses. CBRN incidents and events need to be included at all levels of command to integrate CBRN defense into multinational training. Multinational formations, North Atlantic Treaty Organization integrated military command structure components, and potential coalition partners need to be included. The appropriate training and exercise will be essential to integrate non-U.S. forces into the CBRN defense capability of the joint force.
- 3. Deficiency:** RESTOP ACTD results have not been published.
Non-Materiel Solutions: *Doctrine:* Incorporate lessons learned from RESTOPS ACTD into future doctrine and staff exercises.
- 4. Deficiency:** Joint leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* JPME must include leader-learning areas for restoration operations considerations at the ST level.
- 5. Deficiency:** Doctrine does not exist above the tactical level.
Non-Materiel Solutions: *Doctrine:* AJP 3-8 and JP 3-11 both need to be updated to include multinational restoration operation coordination guidance for the ST level.

15.7.3.2 IMA Assessment Summary

N/A

15.8 Task STSUST 8: Develop TEPs for restoration operation considerations and activities for assigned theater or designated countries

15.8.1 Functional Area Analysis

15.8.1.1 Definition

To develop Theater Engagement Plans (TEPs) that will allow cooperation and the building of trust through a combination of restoration operation exercises, training, equipment exchange, and other cooperative efforts. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. To ensure cooperation and interoperability, the combatant commander develops TEPs for restoration operation considerations and activities for assigned theater or designated countries. TEPs that include restoration operation considerations and activities for assigned theater or designated countries can help to mitigate reluctance to support the United States. If countries are provided with the means to restore themselves after CBRN/TIM attacks or if they are assured of U.S. assistance, they will feel less threatened. In conjunction with interagency partners, CJCS coordinates “Global Family of Engagement Plan” policy and guidelines to combatant commanders for restoration operation considerations.

15.8.1.2 Derivation

UJTL (ST 9.4, ST 8.2.1, ST 8.1.2), CJCSM 3113.01a.

15.8.1.2.1 Supported Task: SNSUST 11

15.8.1.2.2 Lateral Task: STSHA 9

15.8.1.2.3 Supporting Task: OPSUST 7

15.8.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Moderate host-nation support. (C2.8.5)
2. Mixed support for political policies. (C3.1)
3. Limited foreign government support. (C3.1.2.3.)

15.8.2 Functional Needs Analysis

15.8.2.1 Capability and Deficiency Assessment Summary

Table 15.8-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The Combatant Command develops TEPs for restoration operation considerations and activities for assigned theater or designated countries. Nothing precludes the COCOM staff from establishing these TEPs now, but there is very little in the way of existing doctrine or TTPs to help guide them. A TEP is primarily a strategic planning document intended to link COCOM-planned regional engagement activities with national strategic objectives. The TEP is based on defense planning guidance. COCOM planned and supported operations and activities produce multiple benefits in readiness, modernization, and engagement. However, peacetime military engagement activities must be prioritized to ensure efforts are focused on those that are of greatest importance, without sacrificing warfighting capability. Because WMDs represent the most significant threat to global security, they are ideal candidates for TEPs. TEPs identify the synchronization of these activities on a regional basis and illustrate the efficiencies gained from regional COCOM engagement activities that support national strategic objectives.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.8-1. STSUST 8: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4
Current Overall Capability¹	R ²	G ³	G ⁴	R ⁵
Near/Mid-Term Overall Capability	Y	G	G	R
Far-Term Overall Capability⁶	Y ⁷	G	G	G ⁸

	FAA Measure	Scale
M1	Restoration operation TEPs are established for designated countries.	G – Yes, Y – Limited, R – No
M2	TEPs are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M3	TEPs meet guidelines of <i>CJCSM 3113.01A</i> .	G – Yes, Y – Limited, R – No
M4	Joint exercises/experimentation provide feedback on efficacy of TEPs for specific countries.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Nothing precludes a COCOM staff from initiating TEP for restoration operations, but no guidance has been provided, and no doctrine exists specifically addressing restoration operation integration into TEPs.

³ Nothing precludes meeting this standard once restoration operation TEPs are established.

⁴ Nothing precludes restoration operation TEPs from meeting the guidelines of *CJCSM 3113.01a*. CBRND issues are perfect for TEPs.

⁵ No Restoration Operation exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.

⁶ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁷ Guidance will be provided and doctrine will be developed specifically addressing restoration operation integration into TEPs.

⁷ Restoration Operation exercises/experimentation will be conducted to provide feedback on efficacy of TEPs for specific countries.

15.8.3 Functional Solution Analysis

15.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No guidance has been provided and no doctrine/TTPs exist specifically addressing restoration operation integration into TEPs.
Non-Materiel Solutions: *Doctrine:* Establish policies, TTPs, and guidelines that include practical ways to enhance theater restoration operations integration into TEPs.
- 2. Deficiency:** No Restoration Operation exercises/experimentation have been conducted to provide feedback on efficacy of TEPs for specific countries.
Non-Materiel Solutions: *Training:* Develop exercises to include restoration operations with TEP countries to determine efficacy of policy once established.
- 3. Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* At the urging of the Joint Forces Staff College (JFSC), and as part of a JRO-CBRND joint education initiative, a team began to investigate ways to develop CBRN defense initiatives as part of theater engagement planning. The subject matter experts at the JFSC felt that in the current global environment, CBRND was an ideal platform for military engagement, enhancing a common global defense capability against weapons of mass destruction. The team plans to present these Joint Capabilities Integration and Development System (JCIDS) tasks to the JFSC as a foundation for the development of TEP education materials when they are finalized.

15.8.3.2 IMA Assessment Summary

N/A

15.9 Task STSUST 9: Coordinate SOF restoration operations requirements

15.9.1 Functional Area Analysis

15.9.1.1 Definition

To provide specialized planning and coordination of key decontamination and support assets required to support SOF operational requirements. Because of the level of coordination required, the combatant commander coordinates SOF restoration operation requirements. SOF operations are often done clandestinely or in austere areas. Restoration operations for SOF will be complex and require extraordinary planning and support.

15.9.1.2 Derivation

UJTL (ST 9.4, ST 1.3.4, ST 1.3.7).

15.9.1.2.1 Supported Tasks: SNSUST 9, SNSUST 10, SNSUST 12

15.9.1.2.2 Lateral Task: N/A

15.9.1.2.3 Supporting Task: OPSUST 8

15.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Limited lift assets. (C2.5.2)
7. High rear-area security. (C2.7.1)
8. No host-nation support. (C2.8.5)
9. Conventional and terrorist threat form. (C2.9.2)
10. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.9.2 Functional Needs Analysis

15.9.2.1 Capability and Deficiency Assessment Summary

Table 15.9-1 discusses the capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” Any COCOM staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to support SOF restoration operation requirements, but there are some deficiencies that negatively impact on the efficiency with which they will be able to operate.

Projected Near/Mid-Term Capability and Deficiency

Some improvements in JTTP capability is currently projected for the near/mid term. The overall near/mid term capability is forecast to be “yellow.”

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will continue to improve leading to a far-term assessment of “yellow.”

Table 15.9-1. STSUST 9: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6
Current Overall Capability¹	R ²	R ³	R ⁴	R ⁵	R ⁶	R ⁷
Near/Mid-Term Overall Capability⁸	Y	Y	Y	Y	Y	R
Far-Term Overall Capability⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	Y ¹⁴	Y ¹⁵

	FAA Measure	Scale
M1	Procedures are in place to facilitate response to SOF requests for assistance.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists exist to help complete planning.	G – Yes, Y – Limited, R – No
M3	Decontamination support provided is adequate to meet mission requirements.	G – Yes, Y – Limited, R – No
M4	Decontamination and support forces have SOF restoration operation experience.	G – Yes, Y – Limited, R – No
M5	Decontamination lift requirements are met adequately to support mission requirements.	G – Yes, Y – Limited, R – No
M6	Joint exercises provide lessons learned on SOF restoration operation support.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Limited. Any COCOM-level unit staff can respond to SOF request for assistance, but there are no specific procedures, TTPs, or formalized familiarization training that addresses the unique aspects of joint forces supporting SOF restoration operation requirements.

³ Limited. Any ST-level HQ staff can develop procedures and checklists for operational plans and orders, but there are no TTPs that address development of the unique requirements of SOF restoration operational plans and orders.

⁴ Limited. Any ST-level HQ staff can provide support, but there is no real way of knowing how effective this support will be without comprehensive training events.

⁵ Limited. No staff will have an experience base without comprehensive training with SOF.

⁶ Limited. Lift requirements cannot be determined without comprehensive training with SOF.

⁷ No joint exercises/experimentation have provided lessons learned on SOF restoration operation support.

⁸ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁹ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹⁰ JTTPs and formalized familiarization training that addresses the unique aspects of joint forces supporting SOF restoration operation requirements will be developed.

¹¹ JTTPs will be formulated that address development of the unique requirements of SOF restoration operational plans and orders.

¹² Comprehensive training events will provide an assessment mechanism.

¹³ Comprehensive training with SOF will allow staffs to develop an SOF support experience base.

¹⁴ Comprehensive training with SOF will be conducted to determine lift requirements and special needs.

¹⁵ Joint exercises/experimentation will provide lessons learned on SOF restoration operation support.

15.9.3 Functional Solution Analysis

15.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** There are no specific procedures, doctrine, or TTPs that address the unique aspects of joint forces supporting SOF restoration operation requirements.
Non-Materiel Solutions: *Doctrine:* Develop procedures, doctrine, or TTPs that address the unique aspects of joint forces supporting SOF restoration operation requirements.

2. **Deficiency:** There is no specific formalized familiarization training that addresses the unique aspects of joint forces supporting SOF restoration operation requirements.
Non-Materiel Solutions: *Training:* Develop planning staff familiarization training that addresses the unique aspects of joint forces supporting SOF restoration operation requirements.

3. **Deficiency:** No joint exercises or experimentation have provided lessons learned on SOF restoration operation support.
Non-Materiel Solutions: *Training:* Conduct specific ST-level exercises/experiments to determine SOF restoration operation support lessons learned under a wide variety of conditions.

4. **Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* JPME must include leader-learning areas for SOF restoration operations considerations at the ST level.

15.9.3.2 IMA Assessment Summary

N/A

15.10 Task STSUST 10: Provide JTF HQ for command and control of restoration operations

15.10.1 Functional Area Analysis

15.10.1.1 Definition

To establish and deploy a JTF for the specific purpose of maintaining command, control, and execution of extensive restoration operations. The combatant commander may determine that the extent or complexity of required restoration operations is such that he needs to establish a JTF to control and coordinate the restoration operations.

15.10.1.2 Derivation

UJTL (ST 9.4, ST 5.1, ST 5.4.3).

15.10.1.2.1 Supported Tasks: SNSUST 6, SNSUST 10

15.10.1.2.2 Lateral Task: N/A

15.10.1.2.3 Supporting Task: OPSUST 9

15.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBR/TIM effects. (Chemical or biological or radiological contamination affecting forces strategically deployed or affecting terrain, facilities, equipment, or manpower required to facilitate their mission.) (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. High rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.10.2 Functional Needs Analysis

15.10.2.1 Capability and Deficiency Assessment Summary

Table 15.10-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” This task has never been attempted by a theater COCOM, and no training or experience base exists. Any combatant command has the ability to stand up a JTF using a corps/division-equivalent HQ to form a JTF HQ. There are many deficiencies that negatively impact on the speed and efficiency with which they will be able to stand up a JTF HQ with the express purpose of providing command and control of restoration operations.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. In particular, a UNIFIED ENDEAVOR exercise is projected to enable this task in FY2011. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.10-1. STSUST 10: Capabilities and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16
Current Overall Capability¹	R ²	R ³	Y	R ⁴	Y ⁵	Y ⁶	G ⁷	R ⁸	Y ⁹	G ¹⁰	G ¹¹	G ¹²	R ¹³	G ¹⁴	Y	R ¹⁵
Near/Mid-Term Overall Capability¹⁶	R	R	Y	R	Y	Y	G	R	Y	G	G	G	R	G	Y	R
Far-Term Overall Capability¹⁷	G ¹⁸	G ¹⁹	G	G ²⁰	G ²¹	G ²²	G	G ²³	G ²⁴	G	G	G	G ²⁵	G	G	G ²⁶

	FAA Measure	Elaboration	Scale
M1	Plans have been developed that establish a JTF for the specific purpose of maintaining command and control of extensive restoration operations.		G – Yes, Y – Limited, R – No
M2	Procedures and checklists exist to help modify plans during crisis action planning (CAP).		G – Yes, Y – Limited, R – No
M3	Adequate planning time, during CAP, is made available by combatant commander to components for planning.	Restoration operations require significant planning efforts.	G – Yes, Y – Limited, R – No
M4	Appointed joint force commander has requisite training and experience.		G – Yes, Y – Limited, R – No
M5	Joint restoration operations area is defined.		G – Yes, Y – Limited, R – No
M6	Joint force headquarters element is deployed and established in theater.		G – Yes, Y – Limited, R – No
M7	Initial communication is established with host-nation and U.S. Department of State representatives (after combatant commander establishes joint force HQ).		G – Yes, Y – Limited, R – No
M8	Joint force staff has requisite training and experience.		G – Yes, Y – Limited, R – No
M9	Taskings to initial augmentees for newly formed JTF are determined and prepared in advance.		G – Yes, Y – Limited, R – No
M10	Friendly forces orders/taskings are not significantly delayed because of unclear command relationships with HQ.		G – Yes, Y – Limited, R – No
M11	All designated staff positions are filled.		G – Yes, Y – Limited, R – No
M12	All DoD components and involved foreign governments are adequately represented on designated joint force staff.		G – Yes, Y – Limited, R – No
M13	Joint force staff augmentees have previously trained as members of a restoration operation JTF.		G – Yes, Y – Limited, R – No
M14	Nations with allocated or apportioned forces are represented on JTF staff.		G – Yes, Y – Limited, R – No
M15	Necessary augmentees are identified in joint force SOPs by rank and duty position.	Personnel with proper skill sets are critical to validate completion of restoration operations and make critical recommendations for reopening of facilities.	G – Yes, Y – Limited, R – No

M16	Joint exercises/experimentation provide feedback on efficacy of providing a JTF for restoration operations.	G – Yes, Y – Limited, R – No
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- ¹ No doctrine has been developed.
- ² No plans have been developed.
- ³ No procedures or checklists currently exist to aid plan modification.
- ⁴ No leader training/education for JTF RESTOPS exists, nor is there any experience base.
- ⁵ Nothing precludes designating a joint RESTOPS area, but no guidance exists.
- ⁶ Nothing precludes this action, and COCOMs do exercise establishing a JTF HQ. However, it has never been done for RESTOPS, and no guidance exists.
- ⁷ Yes. There are no organic common constraints.
- ⁸ No staff training/education for JTF RESTOPS exists, nor is there any experience base.
- ⁹ Nothing precludes this action, and COCOMs do exercise establishing taskings. However, it has never been done for RESTOPS, and no guidance exists.
- ¹⁰ Yes. There are no organic command relationship constraints.
- ¹¹ Yes. There are no organic staffing constraints.
- ¹² Yes. There are no organic representation constraints.
- ¹³ No. There is no experience base.
- ¹⁴ Yes. There are no organic representation constraints.
- ¹⁵ No. A RESTOPS JTF exercise/experiment has never been conducted.
- ¹⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.
- ¹⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.
- ¹⁸ Plans will be developed that establish a JTF for the specific purpose of maintaining command and control of extensive restoration operations. Current planning by the U.S. Northern Command for homeland security purposes can be used as a guide for joint combat operations.
- ¹⁹ Procedures and checklists will be developed to aid plan modification.
- ²⁰ Leader training/education for will be specifically developed for JTF RESTOPS. Educated leaders will train resulting in an experience base.
- ²¹ Guidance will be developed for designating a joint RESTOPS area.
- ²² A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.
- ²³ Staff training/education for JTF RESTOPS will be developed and employed, resulting in enhanced staff expertise and experience.
- ²⁴ A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.
- ²⁵ As more training is done in this area, an experience base will be established.
- ²⁶ A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.

15.10.3 Functional Solution Analysis

15.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No plans have been developed that establish a JTF for the specific purpose of maintaining command and control of extensive restoration operations.
Non-Materiel Solutions: *Doctrine:* Develop plans to establish a JTF for the specific purpose of maintaining command and control of extensive restoration operations.
- 2. Deficiency:** No procedures and checklists exist to help modify plans during CAP.
Non-Materiel Solutions: *Doctrine:* Develop TTPs to aid CAP.
- 3. Deficiency:** No leader training/education for JTF RESTOPS exists, nor is there any experience base.
Non-Materiel Solutions: *Training:* Develop leader training (command post exercise) to exercise potential commanders and staffs in RESTOPS JTF operations. *Leadership:* Develop designated leaders (leader education/exercises) who are nominated to potentially command a RESTOPS JTF.
- 4. Deficiency:** No guidance exists for establishing a joint RESTOPS area.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for deploying a RESTOPS JTF to a theater.
- 5. Deficiency:** A RESTOPS JTF has never been deployed and established in theater, and no guidance exists.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for RESTOPS JTF deployment.
Training: Develop training for RESTOPS JTF deployment.
- 6. Deficiency:** No staff training/education for JTF RESTOPS exists, nor is there any experience base.
Non-Materiel Solutions: *Training:* Develop training for RESTOPS JTF staffs. *Leadership:* Develop leader education for RESTOPS JTF staffs.
- 7. Deficiency:** No guidance exists for determining and preparing taskings to initial augmentees.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for determining and preparing taskings to initial RESTOPS JTF augmentees.
- 8. Deficiency:** No joint force staff augmentees have previously trained as members of a restoration operation JTF.
Non-Materiel Solutions: *Training:* Develop training for joint force RESTOPS JTF staff augmentees. *Personnel:* Designate personnel to be assigned as joint force RESTOPS JTF staff augmentees.

9. Deficiency: No SOPs exists for a RESTOPS JTF.

Non-Materiel Solutions: *Doctrine:* Develop RESTOPS JTF SOPs.

10. Deficiency: Joint exercises/experimentation do not provide feedback on efficacy of providing a JTF for restoration operations.

Non-Materiel Solutions: *Training:* Develop exercises to develop lessons learned about RESTOPS JTF. Nominate establishing RESTOPS JTF to be part of JRO-CBRND experimentation campaign (UNIFIED ENDEAVOR FY2010). Conduct experiments on emerging RESTOPS JTF concepts.

11. Deficiency: No doctrine has been developed.

Non-Materiel Solutions: *Doctrine:* Develop doctrine for conduct of RESTOPS JTF operations.

15.10.3.2 IMA Assessment Summary

N/A

15.11 Task STSUST 11: Coordinate the decontamination of strategically significant areas/terrain**15.11.1 Functional Area Analysis****15.11.1.1 Definition**

To develop plans and coordinate mission execution of the decontamination of areas or terrain that are considered of such strategic significance that they must undergo decontamination. Although weathering is the preferred decontamination technique for areas/terrain, if a determination is made that there is no alternative because of the strategic significance of the area/terrain, the complexity of the decontamination and the large amount of resources required will require COCOM coordination. An area of strategic significance would probably constitute a large area or very important transportation nodes and would necessarily involve host nations in the process.

15.11.1.2 Derivation

UJTL (ST 9.4, ST 6.2.2).

15.11.1.2.1 Supported Task: SNSUST 10**15.11.1.2.2 Lateral Tasks: STSHA 8, STSUST 14****15.11.1.2.3 Supporting Task: OPSUST 10****15.11.1.3 Condition**

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. High rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.11.2 Functional Needs Analysis

15.11.2.1 Capability and Deficiency Assessment Summary

Table 15.11-1 discusses the capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any COCOM staff has a team of operational planners and command and control specialists and most have CBRN subject matter experts. This team of experts has the skill to coordinate the decontamination of significant areas/terrain, but there are some deficiencies that negatively impact on the efficiency with which they will be able to operate.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.11-1. STSUST 11: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability⁷	Y	Y	G	Y	Y
Far-Term Overall Capability⁸	G ⁹	G ¹⁰	G	G ¹¹	G ¹²

	FAA Measure	Scale
M1	Plans have been developed for the decontamination of strategically significant areas/terrain.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists exist to help modify plans during CAP.	G – Yes, Y – Limited, R – No
M3	Adequate planning time, during CAP, is made available by combatant commander to components for planning.	G – Yes, Y – Limited, R – No
M4	Decontamination capabilities meet mission requirements.	G – Yes, Y – Limited, R – No
M5	Joint exercises/experimentation provide feedback on efficacy of providing a JTF for restoration operations.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Limited. Any COCOM-level unit staff can develop plans to coordinate the decontamination of significant areas/terrain, to include standing up a joint task force HQ to provide command and control if required, but there are no specific procedures, TTPs, or formalized familiarization training that addresses the unique aspects of large-scale decontamination of significant areas/terrain at the ST level.

³ Limited. Any ST-level HQ staff can develop procedures and checklists for modifying operational plans and orders during CAP, but there are no TTPs that are designed to help address CAP for decontamination of significant areas/terrain.

⁴ Yes. There are no organic time constraints.

⁵ Limited. Any ST-level HQ staff can provide support, but there is no real way of knowing how effective this support will be without comprehensive training events.

⁶ Limited, a restoration exercise focused on efficacy of providing a JTF for decontamination of significant areas/terrain has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁷ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁸ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁹ Procedures, TTPs, and formalized familiarization training that address the unique aspects of large-scale decontamination of significant areas/terrain at the ST level will be developed.

¹⁰ JTTPs that are designed to help address CAP for decontamination of significant areas/terrain will be developed.

¹¹ A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.

¹² Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.11.3 Functional Solution Analysis

15.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There are no specific procedures, TTPs or formalized familiarization training that addresses the unique aspects of large-scale decontamination of significant areas/terrain at the ST level.
Non-Materiel Solutions: *Doctrine:* Establish specific procedures or TTPs that addresses the unique aspects of large-scale decontamination of significant areas/terrain at the ST level.
Training: Develop formalized staff familiarization training that addresses the unique aspects of large-scale decontamination of significant areas/terrain at the ST level.
- 2. Deficiency:** There are no TTPs that are designed to help address CAP for decontamination of strategically significant areas/terrain.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that are designed to help address CAP for decontamination of strategically significant areas/terrain.
- 3. Deficiency:** A restoration exercise/experimentation focused on efficacy of providing a JTF for decontamination of strategically significant areas/terrain has not been conducted.
Non-Materiel Solutions: *Training:* A special UNIFIED ENDEAVOR JTF exercise should be scheduled to test a combatant command's ability to establish a JTF to provide command and control of extensive or complex restoration operations. It should include scenarios involving strategically significant areas/terrain or facilities. Lessons learned can be captured and used to develop doctrine and TTPs. Incorporate lessons learned from RESTOPS ACTD into future exercises.
- 4. Deficiency:** No doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for ST-level decontamination of significant areas/terrain.
- 5. Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Develop leader education for ST-level decontamination of significant areas/terrain.

15.11.3.2 IMA Assessment Summary

N/A

15.12 Task STSUST 12: Coordinate the decontamination of strategically significant facilities or fixed sites

15.12.1 Functional Area Analysis

15.12.1.1 Definition

To develop plans and coordinate mission execution of the decontamination of strategically significant facilities. Although weathering is the preferred decontamination technique for facilities, if a determination is made to actively decontaminate the facility, the complexity of the decontamination and the large amount of resources involved will require combatant command coordination.

15.12.1.2 Derivation

UJTL (ST 9.4, ST 6.2.2).

15.12.1.2.1 Supported Task: SNSUST 10

15.12.1.2.2 Lateral Tasks: STSHA 8, STSUST 14

15.12.1.2.3 Supporting Task: OPSUST 10

15.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. High rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.12.2 Functional Needs Analysis

15.12.2.1 Capability and Deficiency Assessment Summary

Table 15.12-1 discusses the capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any COCOM staff has a team of operational planners and command and control specialists and most have CBRN subject matter experts. This team of experts has the skill to coordinate the decontamination of significant facilities or fixed sites, but there are some deficiencies that negatively impact on the efficiency with which they will be able to operate.

Projected Near/Mid-Term Capability and Deficiency

No other capability is currently projected for the near/mid term. No capability improvement is forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.12-1. STSUST 12: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3	M4	M5
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵	Y ⁶
Near/Mid-Term Overall Capability⁷	Y	Y	G	Y	Y
Far-Term Overall Capability⁸	G ⁹	G ¹⁰	G	G ¹¹	G ¹²

	FAA Measure	Scale
M1	Plans have been developed for the decontamination of strategically significant facilities.	G – Yes, Y – Limited, R – No.
M2	Procedures and checklists exist to help modify plans during CAP.	G – Yes, Y – Limited, R – No
M3	Adequate planning time, during CAP, is made available by the combatant commander to components for planning.	G – Yes, Y – Limited, R – No
M4	Decontamination meets mission requirements.	G – Yes, Y – Limited, R – No
M5	Joint exercises/experimentation provide feedback on efficacy of providing a JTF for restoration operations.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. Leader education does not address this issue.

² Limited. Any COCOM-level unit staff can develop plans to coordinate the decontamination of significant facilities or fixed sites, to include standing up a joint task force HQ to provide command and control if required, but there are no specific procedures, TTPs, or formalized familiarization training that addresses the unique aspects of large-scale decontamination of significant facilities or fixed sites at the ST level.

³ Limited. Any ST-level HQ staff can develop procedures and checklists for modifying operational plans and orders during CAP, but there are no TTPs that are designed to help address CAP for decontamination of strategically significant facilities or fixed sites.

⁴ Yes. There are no organic time constraints.

⁵ Limited. Any ST-level HQ staff can provide support, but there is no real way of knowing how effective this support will be without comprehensive training events.

⁶ Limited, a restoration exercise focused on efficacy of providing a JTF for decontamination of significant facilities or fixed sites has not been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP.

⁷ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁸ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁹ JTTPs and formalized familiarization training that addresses the unique aspects of large-scale decontamination of significant facilities or fixed sites at the ST level will be developed.

¹⁰ JTTPs that are designed to help address CAP for decontamination of strategically significant facilities or fixed sites will be developed.

¹¹ A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.

¹² Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.12.3 Functional Solution Analysis

15.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There are no specific procedures, TTPs, or formalized familiarization training that addresses the unique aspects of large-scale decontamination of significant facilities or fixed sites at the ST level.
Non-Materiel Solutions: *Doctrine:* Establish specific procedures or TTPs that addresses the unique aspects of large-scale decontamination of significant facilities or fixed sites at the ST level. *Training:* Develop formalized staff familiarization training that addresses the unique aspects of large-scale decontamination of significant facilities or fixed sites at the ST level.
- 2. Deficiency:** There are no TTPs that are designed to help address CAP for decontamination of strategically significant facilities or fixed sites.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that are designed to help address CAP for decontamination of significant facilities or fixed sites.
- 3. Deficiency:** There is no way of knowing how effective decontamination of significant facilities or fixed sites will be without comprehensive training events.
Non-Materiel Solutions: *Training:* Develop comprehensive training events to determine how effective decontamination of strategically significant facilities or fixed sites will be with current command and control techniques and equipment. *Personnel:* Personnel evaluating and mentoring CBRN elements of national-level, COCOM, and JTF exercises must possess adequate joint and CBRN credentials.
- 4. Deficiency:** No doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for ST-level decontamination of significant facilities or fixed sites.
- 5. Deficiency:** Leader education does not address this issue.
Non-Materiel Solutions: *Leadership:* Develop leader education for ST-level decontamination of significant facilities or fixed sites.

15.12.3.2 IMA Assessment Summary

N/A

15.13 Task STSUST 13: Determine the impact of restoration operations on theater residual capability

15.13.1 Functional Area Analysis

15.13.1.1 Definition

To initiate and direct the process of gathering required information about the impact of ongoing or anticipated restoration operations on theater residual capability and providing an assessment. The combatant commander must determine to what extent theater residual capability will be affected by ongoing or projected restoration operations. The length of time that key units or weapons systems or key facilities will be unavailable or capabilities will be degraded prior to or during decontamination operations will be of vital importance in a CBRN/TIM environment.

15.13.1.2 Derivation

UJTL (ST 9.4, ST 4.2.3, ST 4.2.6).

15.13.1.2.1 Supported Task: SNSUST 8

15.13.1.2.2 Lateral Task: N/A

15.13.1.2.3 Supporting Task: OPSUST 4

15.13.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. High rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

15.13.2 Functional Needs Analysis

15.13.2.1 Capability and Deficiency Assessment Summary

Table 15.13-1 discusses the only capability that currently exists to perform the task to the designated standard. There is only one capability that exists, and no other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any COCOM HQ has the basic ability to determine the impact of restoration operations on theater residual capability, but there are several obstacles that will prevent meeting the required timeline and hinder the process. Although the COCOM staff is skilled and experienced, they would have little skill or experience with CBRND issues concerning restoration operations. For restoration operation issues their current capability is manual, slowing down the process.

The COCOM Headquarters was assessed in light of current limited staff use of JWARN and the anticipated fielding initial operational capability (IOC) of the Joint Effects Model (JEM) Block I in FY2006 and the IOC of the Joint Operational Effects Federation (JOEF) Block I, Increment I in FY2008. JOEF will provide a significant CBRN adaptive planning capability for restoration operations. JEM will provide a single, validated capability to predict and track CBRN and TIM events and effects. JOEF will provide an operational requirements modeling and simulation system which accurately predicts CBRN effects on personnel, equipment, and operations and permit restoration operation planning. Since JEM/JOEF IOC will not be met until FY2006 and FY 2008, respectively, the time standard for Measure 1 was assessed as “red.” There are no TTPs that have been developed based on lessons learned from exercises or experimentation. Concepts, doctrine, and TTPs focusing restoration operation impact on theater residual capability are limited. CBRND staffs and staffing at all levels are not robustly manned making it difficult to apply CBRND subject matter expertise when required. CBRND staffs are not adequately trained/experienced on strategic theater CBRND issues. JPME does not currently address this issue.

Projected Near/Mid-Term Capability and Deficiency

The COCOM will benefit from JEM and JOEF Block I, which will be IOC for the near/mid term. The time standard for near-/mid-term Measure 1 will be assessed as “green” if the IOC is met. DOTLPP changes will also improve, but the overall situation will remain “yellow” in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capability is currently projected for the far-term future. DOTMLPPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 15.13-1. STSUST 13: Capability and Deficiency Assessment

Capability: COCOM HQ	M1	M2	M3
Current Overall Capability¹	R²	Y³	Y⁴
Near/Mid-Term Overall Capability⁵	Y⁶	Y	Y
Far-Term Overall Capability⁷	G	G⁸	G⁹

	FAA Measure	Scale
M1	Determination of restoration operation impact on theater residual capability can be made within 2 hours.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists are developed to facilitate determination.	G – Yes, Y – Limited, R – No
M3	National/joint exercises provide lessons learned on procedures for determining restoration operation impact on theater residual capability.	G – Yes, Y – Limited, R – No

¹ Concepts, doctrine, and TTPs focusing restoration operation impact on theater residual capability are limited. CBRND staffs and staffing at all levels are not robustly manned, making it difficult to apply CBRND subject matter expertise when required. CBRND staffs are not adequately trained/experienced on strategic theater CBRND issues. JPME does not currently address this issue.

² The COCOM staff would ultimately have the means to make a determination of the impact of ongoing or projected restoration operations on theater residual capability. Although the COCOM staff is skilled and experienced, they would have little skill or experience with CBRND issues concerning restoration operations. For restoration operation issues their current capability is manual, slowing down the process.

³ Any ST-level HQ staff can develop procedures and checklists to facilitate determination of restoration operation impact on theater residual capability, but there are no TTPs that have been developed based on lessons learned from exercises or experimentation.

⁴ No exercise focused on restoration operation impact on theater residual capability has been conducted. A RESTOP ACTD (ongoing) has been conducted with results TBP, but it is unlikely to provide data on theater residual capability determinations.

⁵ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁶ Through improved leader education and exercises, the COCOM staff will gain skill and experience with CBRND issues concerning restoration operations. The COCOM will benefit from JEM and JOEF Block I, which will be IOC for the near/mid term and allow automation of restoration operation planning and assessments. The two-hour time frame will be assessed as “green” if the IOC is met.

⁷ DOTMLPF improvements will continue as a result of new lessons learned from experiments and exercises.

⁸ JTTP will be developed based on lessons learned from exercises or experimentation.

⁹ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

15.13.3 Functional Solution Analysis

15.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The COCOM staff has little skill or experience with CBRND issues concerning restoration operations.
Non-Materiel Solutions: *Doctrine:* Establish TTPs to assist the COCOM staff determine the restoration operation impact on theater residual capability. *Organization:* Analyze CBRND staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required. *Training:* Establish training to assist the COCOM staff determine the restoration operation impact on theater residual capability. *Personnel:* Provide at least one operator per watch with extensive experience in CBRND issues including restoration operation impacts. Preferably, this operator will be a CBRND subject matter expert if the size and organization of the CBRND staff allows.
- 2. Deficiency:** No TTPs have been developed based on lessons learned from exercises or experimentation.
Non-Materiel Solutions: *Doctrine:* Develop TTPs based on lessons learned from exercises or experimentation. Integrate COCOM staff into JRO experimentation campaign plan for FY2009/10 UNIFIED ENDEAVOR and all work-ups. Include this task for concept experimentation.
- 3. Deficiency:** A restoration exercise focused on procedures for determining restoration operation impact on theater residual capability has not been conducted.
Non-Materiel Solutions: *Training:* Develop exercises that include this task.
- 4. Deficiency:** A RESTOP ACTD (ongoing) has been conducted with results TBP, but it is unlikely to provide data on theater residual capability determinations.
Non-Materiel Solutions: *Training:* Incorporate lessons learned from RESTOPS ACTD into future doctrine and staff exercises.
- 5. Deficiency:** Concepts and doctrine focusing restoration operation impact on theater residual capability are limited.
Non-Materiel Solutions: *Doctrine:* Develop concepts and doctrine focusing on restoration operation impact on theater residual capability.
- 6. Deficiency:** CBRND staffs and staffing at all levels are not robustly manned, making it difficult to apply CBRND subject matter expertise when required.
Non-Materiel Solutions: *Organization:* Analyze CBRND staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required.

- 7. Deficiency:** CBRND staffs are not adequately trained/experienced on ST CBRND issues.
Non-Materiel Solutions: *Leadership:* Develop leader training requirements and curriculum on restoration operations designed specifically for CBRND subject matter experts.
- 8. Deficiency:** JPME does not currently address this issue.
Non-Materiel Solutions: *Leadership:* Develop JPME leader training requirements and curriculum on restoration operations.

15.13.3.2 IMA Assessment Summary

N/A

15.14 Task STSUST 14: Plan CBRN elimination operations

15.14.1 Functional Area Analysis

15.14.1.1 Definition

To plan and execute theater CBRN elimination operations. A combatant commander may conduct military operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, U.S. military operations across the range of military operations also may entail a requirement to eliminate, or support the elimination of, CBRN weapons or capabilities. CBRN elimination is the systematic removal of a capability within a nation or organization to develop, deploy, or employ CBRN weapons. The degree or extent of elimination is a strategic objective, defined by a strategic end state, and ranges from complete removal of all capability (including research, production, and training for any form of CBRN weapon) to the focused removal of specific capabilities. This task encompasses three primary subtasks: *Planning Exploitation* (locating, characterizing, and securing CBRN materiel, weapons, equipment, personnel, and infrastructure, and developing appropriate forensic evidence); *Planning Disposition* (destroying, dismantling, rendering safe, removing, transferring, or otherwise verifiably disposing of CBRN materiel, weapons, equipment, and infrastructure); and *Planning Monitoring and Redirection* (monitoring, inspecting, and redirecting/converting the CBRN infrastructure).

15.14.1.2 Derivation

Combatant Commander's Planning Guide for WMD Elimination Operations (Draft).

15.14.1.2.1 Supported Task: SNSUST 10

15.14.1.2.2 Lateral Tasks: STSHA 6, STSHA 8, STSUST 1, STSUST 2, STSUST 3, STSUST 4, STSUST 5, STSUST 6, STSUST 7, STSUST 11, STSUST 12

15.14.1.2.3 Supporting Task: OPSUST 14

15.14.1.3 Condition

Perform this task under conditions of:

Physical

1. Chemical, biological, radiological or nuclear threat form. (C1.3.3.1-3)

Military

1. Cooperative nation.
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations. (C2.1.1.7)
 - c. Limited host-nation support. (C2.8.5)

2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host nation support. (C2.8.5)

Common Military Conditions

1. Limited personnel expertise. (C2.2.4.5)

Civil

1. Cooperative nation.
 - a. Limited foreign government support. (C3.1.2.3)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3)

Common Civil Conditions

1. Moderate restraints on action. (C3.1.3.4)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

CHAPTER 16. OPERATIONAL SUSTAIN TASKS

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16.0 Operational Sustain

16.0.1 Introduction

The operational (OP) level of war is where campaigns and major operations are planned, conducted, and sustained to accomplish strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces and provide the means by which tactical successes are exploited to achieve strategic objectives. Fourteen OP Sustain (SUST) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA), including a task for elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)–sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the OPSUST area, restates relevant information from the CBRN Defense (CBRND) FAA, including a description of each of the 14 OPSUST tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and in the Ideas for Materiel Approaches (IMA) section. The IMAs provide a possible near- or far-term resolution to identified deficiencies within the individual capabilities.

16.0.2 FNA Summary

Table 16.0-1 summarizes the overall current and projected capability to perform the OPSUST tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow.” Any operational-level HQ has a team of operational planners and information command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to establish component commander reporting procedures for restoration requirements, but there are some deficiencies that negatively impact on standardization and experience levels. A CBRN mobile assessment team could be used to assess units that are contaminated and assembled on an ad hoc basis at any time from in-house Joint Task Force (JTF) resources. Prototype Standing JTF (SJTF) staffs must be assessed to determine their ability to provide mobile assessment teams. This capability has never been attempted or

tested. There is no doctrine that covers this capability. This capability could also be developed in any new CBRND units that are currently being stood up. Until teams are designated, staffed, trained and equipped they will be unable to respond to the incident site within 1 hour. While the staff has the ability to provide JTF command and control of restoration operations, they have nothing to guide their efforts without the development of specific doctrine and tactics, techniques, and procedures (TTPs). This doctrine and TTPs cannot be developed without lessons learned from exercises (none of which have ever been conducted) or experimentation. Until international standards for decontamination (How clean is “clean”?) are established, intertheater movement of decontaminated equipment will be problematic. Although significant improvements are anticipated in the mid term, the projected capability will remain “yellow.”

Table 16.0-1. Operational Sustain Summary FNA Findings

Task Number	CBRN Operational Sustain Task Title	Capability		
		Current	Near/Mid	Far
OPSUST 1	Establish component commander reporting procedures for restoration requirements.	●	●	●
OPSUST 2	Assess component command contamination reports for operational degradation implications and restoration operation requirements.	●	●	●
OPSUST 3	Conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.	●	●	●
OPSUST 4	Assess the operational impact of required restoration activities.	●	●	●
OPSUST 5	Provide operational guidance to forces with contaminated units.	●	●	●
OPSUST 6	Provide mobile assessment teams to assess and determine disposition of contaminated units, equipment, facilities, or activities.	●	●	●
OPSUST 7	Provide restoration operation country assistance teams to support TEPs.	●	●	●
OPSUST 8	Support SOF restoration operation requirements.	●	●	●
OPSUST 9	Provide JTF command and control of restoration operations.	●	●	●
OPSUST 10	Provide JTF command and control of decontamination of strategically significant areas/terrain or facilities.	●	●	●

OPSUST 11	Integrate restoration operations with strategic deployment, sustainment, and redeployment, including NEO and AE operations.	●	●	●
OPSUST 12.	Coordinate decontamination procedures for processing contaminated remains in the JOA.	●	●	●
OPSUST 13	Coordinate salvage of materials that require decontamination.	●	●	●
OPSUST 14	Conduct CBRN elimination operations.	NA	NA	NA
OVERALL		●	●	●

16.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) (non-materiel and materiel) solutions for the capability gaps identified in the FNA section.

16.0.3.1 DOTLPF

The DOTLPF solutions identified in this chapter are associated primarily with a lack of established procedures and TTPs to guide performance of the tasks. TTPs must be developed, based on lessons learned in exercises and experiments, for the staff to use and to standardize processes, formats and data elements. Other solutions include the development of leader education programs, training, and doctrine. There are numerous deficiencies associated with the JTF staff’s ability to provide mobile assessment teams to assess and determine disposition of contaminated units, equipment, facilities, or activities. Concepts must be developed that will guide use of mobile assessment teams to assess and determine disposition of contaminated units, equipment, facilities, or activities and experimentation conducted to refine the concepts. Refined concepts must be tested in full-scale exercises and lessons learned applied to the writing of and revisions of both doctrine and TTPs. Other solutions include the development of leader education programs.

16.0.3.2 IMA

An automated system must be developed to provide these capabilities, as well as location (global positioning system) and unit/activity restoration operation status through component command unit communication systems into the Nuclear, Biological, and Chemical (NBC) Battlespace awareness system. The system must be automatic and provide component command restoration requirements in accordance with established formats. An automated system to ensure that reports are received even if the reporting unit is having severe degradation or communication problems must be developed. The current capability to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing is not automated. The process must be linked to automated systems so that routine data can be used by automated tools (that must be developed). This will improve speed of assessment.

Human out of the loop will improve accuracy if data are reliable. The current capability to assess the operational impact of required restoration activities is manual. An automated tool will determine the impact of contaminated units or facilities that must undergo restoration operations on JTF operations. The system must have integrated analysis tools to predict and reprioritize restoration requirements based on interaction with JTF J3 operational priorities. This will improve speed of assessment. The current capability of providing operational guidance to forces with contaminated units is manual and not automated, slowing down the process. Automated tools and automatic processes must be developed for assisting commanders and staffs in providing operational guidance to forces with contaminated units. The system should be automatic and provide component command degradation information in accordance with established formats. The system should have integrated analysis tools to predict degradation impact to critical JTF operations based on interaction with JTF J3 operational priorities. Information on degradation must be automatically provided to J3 systems so that decisions can be made on operational priorities or required changes. This could be used in conjunction with a sensor system on individual vehicles and systems, integrated with an automated system that immediately provides a real-time assessment of operational degradation. A required materiel solution for the provision of mobile assessment teams will be a command and control platform to quickly transport the team to the incident site. It will provide them with all the tools required to make the assessment, provide them with total protection from any CBRN hazard and allow for quick and complete decontamination of the command and control platform after the assessment is complete. The tools onboard can be linked to sensors on the contaminated units, equipment, facilities providing automatic data feeds en route.

16.1 Task OPSUST 1: Establish component commander reporting procedures for restoration requirements

16.1.1 Functional Area Analysis

16.1.1.1 Definition

To establish and maintain procedures to be followed by component commanders that will be used to report their joint restoration operation requirements. The JTF commander establishes component commander reporting procedures for restoration requirements in order to provide for standardization and improved efficiency.

16.1.1.2 Derivation

UJTL (OP 7.3, OP 5.3.2, ST 7.2.1).

16.1.1.2.1 Supported Task: STSUST 1

16.1.1.2.2 Lateral Task: OPSHA 10

16.1.1.2.3 Supporting Task: TASUST 24

16.1.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. Partial preexisting arrangements. (C2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)
3. Poor joint staff integration. (C2.3.1.1)

Civil. N/A

16.1.2 Functional Needs Analysis

16.1.2.1 Capability and Deficiency Assessment Summary

Table 16.1-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ has a team of operational planners and information command and control specialists, and most have CBRN subject matter experts. This

team of experts has the skill to establish component commander reporting procedures for restoration requirements, but there are some deficiencies that negatively impact on standardization and experience levels.

Projected Near/Mid-Term Capability and Deficiency

DOTLPF should improve in the near/mid term. No other capabilities are currently projected for the near/mid term. No capability improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.1-1. OPSUST 1: Capability and Deficiency Assessment

Capability: Joint Task Force Headquarters (JTF-HQ)	M1	M2	M3	M4
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵
Near/Mid-Term Overall Capability⁶	Y	Y	Y	Y
Far-Term Overall Capability⁷	G ⁸	G ⁹	G ¹⁰	G ¹¹

	FAA Measure	Scale
M1	Theater policy and guidelines for theater restoration operations are established.	G – Yes, Y – Limited, R – No
M2	Component commander reporting procedures for restoration requirements are established.	G – Yes, Y – Limited, R – No
M3	Component commander reporting procedures for restoration requirements are modified after substantive changes are recommended and approved.	G – Yes, Y – Limited, R – No
M4	Joint exercises/experimentation provide feedback of component commander reporting procedures for restoration requirements.	G – Yes, Y – Limited, R – No

¹ There is no leader training/education for JTF restoration operations.

² Limited. The existence of theater policy and guidelines for restoration operations varies by theater.

³ Limited. Any JTF-HQ can develop reporting procedures, but there are no TTPs that specifically address reporting procedures for restoration requirements. Any procedures would be manual.

⁴ Limited. A JTF-HQ does not have TTPs that specifically addresses reporting procedures for restoration operations to guide them in modifying procedures after substantive changes are recommended and approved.

⁵ Limited. Any joint exercise/experiment can provide feedback, but few if any have been conducted that include reporting procedures for restoration requirements.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁸ As the results of Restoration Operations (RESTOPS) Advanced Concept Technology Demonstration (ACTD) are understood and incorporated at all theaters, the appropriate policy and guidelines will be developed.

⁹ Joint TTPs (JTTPs) that specifically address reporting procedures for restoration requirements will be developed.

¹⁰ JTTPs that specifically address reporting procedures for restoration operations to guide them in modifying procedures after substantive changes are recommended and approved will be developed.

¹¹ A UNIFIED ENDEAVOR exercise will specifically be used to exercise this task.

16.1.3 Functional Solution Analysis

16.1.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Limited reporting procedures exist. Any procedures would be manual.
Non-Materiel Solutions: *Doctrine:* Refine TTPs on reporting procedures for restoration requirements. Begin to develop formats for restoration operation requirements and include them in pertinent joint publications. Developed joint format parameters will be included in pertinent Service publications. *Organization:* Prototype SJTF CBRN centers must be provided with adequate CBRN center staffing to ensure that manual collection of component command restoration requirements can be performed. Service component CBRN centers must be assessed to see if they can adequately perform the function of providing manual restoration requirement reports to the JTF CBRN center. CBRN staffing/training is not standard across the Services. Refine exercises to develop lessons learned about reporting procedures for restoration requirements of a JTF. Incorporate lessons learned from Restoration Operations (RESTOPS) Advanced Concept Technology Demonstration (ACTD) into future exercises. *Personnel:* Provide adequately trained personnel (either specially trained subject matter experts [SMEs] or unit personnel who receive extra training) for all units that must report/receive restoration requirements. Staffing of proposed joint “opposing force” must include personnel who possess adequate joint and CBRN credentials. Personnel evaluating and mentoring CBRN elements of JTF exercises must possess adequate joint and CBRN credentials.
- 2. Deficiency:** Limited restoration exercises.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for developing exercises for restoration requirements. *Training:* Develop training for staffs on reporting procedures for restoration requirements.
- 3. Deficiency:** No TTPs have been developed.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for reporting procedures for restoration requirements.
- 4. Deficiency:** There is no leader training/education for JTF restoration operations.
Non-Materiel Solutions: *Training:* Develop training for staffs on reporting procedures for restoration requirements. *Leadership:* Develop leader training for staffs on reporting procedures for restoration requirements. Joint Professional Military Education (JPME) must include leader-learning areas for restoration operations considerations at the OP level.

16.1.3.2 IMA Assessment Summary

Table 16.1-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.1-2. OPSUST 1: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Limited reporting procedures. Any procedures would be manual.	Automated system	An automated system that provides location (global positioning system) and unit restoration requirements through component command unit communication systems into the NBC Battle Management System and from there into Joint Warning and Reporting Network (JWARN) and Global Command and Control System (GCCS). System is automatic and provides component command restoration requirements in accordance with established formats.

16.2 Task OPSUST 2: Assess component command contamination reports for operational degradation implications and restoration operation requirements

16.2.1 Functional Area Analysis

16.2.1.1 Definition

To receive and assess component command contamination reports for operational degradation implications and restoration operation requirements. The JTF commander identifies the specific degradation of critical units and whether or not operations need to be modified.

16.2.1.2 Derivation

UJTL (OP 7.3, OP 5.2, OP 5.1.4).

16.2.1.2.1 Supported Task: STSUST 2

16.2.1.2.2 Lateral Task: OPSHA 10

16.2.1.2.3 Supporting Task: TASUST 25

16.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partial preexisting arrangements. (C2.1.1.2)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil. N/A

16.2.2 Functional Needs Analysis

16.2.2.1 Capability and Deficiency Assessment Summary

Table 16.2-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts forms the backbone of the JTF command structure. This team can accomplish the task, but there are several factors that complicate their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.2-1. OPSUST 2: Capability and Deficiency Assessment

Capability: Standing Joint Force Headquarters	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	G ²	Y ³	Y ⁴	Y ⁵	G ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability¹¹	G	Y	Y	Y	G	Y	Y	Y	Y
Far-Term Overall Capability¹²	G	G ¹³	G ¹⁴	G ¹⁵	G	G ¹⁶	G ¹⁷	G ¹⁸	G ¹⁹

	FAA Measure	Scale
M1	Contamination reports are received within 1 hour.	G – Yes, Y – Limited, R – No
M2	Unit operational degradation is assessed within 1 hour after contamination reports are received.	G – Yes, Y – Limited, R – No
M3	Restoration operation requirements are estimated within 1 hour after unit operational degradation is assessed.	G – Yes, Y – Limited, R – No
M4	Data transmitted/disseminated follow standard format.	G – Yes, Y – Limited, R – No
M5	Information is passed within established time criteria.	G – Yes, Y – Limited, R – No
M6	Unit operational degradation assessment is accurate.	G – Yes, Y – Limited, R – No
M7	Restoration operation requirements estimate is accurate.	G – Yes, Y – Limited, R – No
M8	Procedures and checklists are developed to facilitate the ability to assess component command contamination reports for operation degradation implications and restoration operation requirements.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation provide feedback on the efficacy of assessment of component command contamination reports for operational degradation implications and restoration operation requirements.	G – Yes, Y – Limited, R – No

¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

² Any SJFHQ staff can receive contamination reports manually within an hour, but an automated system would ensure that reports are received even if the reporting unit is having severe degradation or communication problems.

³ Limited. Any SJFHQ staff can conduct an operational degradation assessment, but there are no TTPs or available familiarization training that specifically address making operational degradation assessments and no automated tools to assist the process.

⁴ Limited. Any SJFHQ staff can estimate restoration requirements, but there are no TTPs or available familiarization training that specifically addresses considerations and how to estimate requirements.

⁵ Limited. Any SJFHQ staff can transmit/disseminate information according to a standard format that they develop, but there are no specific formats for operational degradation assessment requirements.

⁶ Any SJFHQ staff can pass information in a timely manner, but an automated system would ensure that reports are received even if the reporting unit is having severe degradation or communication problems.

⁷ Limited. Any SJFHQ staff can conduct an accurate unit degradation assessment, but TTPs to ensure that assessments are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. Without automation, accuracy may not be as dependable and might be subject to human errors.

⁸ Limited. Any SJFHQ staff can estimate restoration operation requirements, but TTPs to ensure that estimates are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. Without automation, accuracy may not be as dependable and might be subject to human errors.

⁹ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs that specifically address operational degradation implications.

¹⁰ Limited. Any joint exercise/ experiment can provide feedback, but few if any have been conducted that specifically address restoration operational degradation implications. Therefore, lessons learned that would facilitate development of TTP are not available.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹³ JTTPs and familiarization training that specifically address making operational degradation assessments will be developed.

¹⁴ JTTPs and familiarization training that specifically address considerations and how to estimate requirements will be developed.

¹⁵ Specific formats for operational degradation assessment requirements will be developed.

¹⁶ JTTPs to ensure that assessments are accurate will be collected and developed. More detailed specific information and checklists useful for time-sensitive situations will be developed. When automated tools have been developed, accuracy will be dependable and not be subject to human errors.

¹⁷ JTTPs to ensure that estimates are accurate will be collected or developed. More detailed specific information and checklists useful for time-sensitive situations will be developed. When automated tools have been developed, accuracy will be dependable and not be subject to human errors.

¹⁸ JTTPs that specifically address operational degradation implications will be developed.

¹⁹ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

16.2.3 Functional Solution Analysis

16.2.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Restoration exercises have been limited.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on how to develop exercises/experiments for a JTF on assessing component command contamination reports for operational degradation implications and restoration requirements. *Training:* Develop exercises/experiments for a JTF on assessing component command contamination reports for operational degradation implications and restoration requirements. Incorporate lessons learned from RESTOPS ACTD into future exercises.
2. **Deficiency:** No TTPs have been developed.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on how to assess component command contamination reports for operational degradation implications and restoration requirements.
3. **Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for staffs on assessing component command contamination reports for operational degradation implications and restoration requirements. *Leadership:* Develop leader training for staffs on assessing component command contamination reports for operational degradation implications and restoration requirements.
4. **Deficiency:** There are no automated tools to assist the process.
Non-Materiel Solutions: *Organization:* Prototype SJTF CBRN centers must be provided with adequate CBRN center staffing to ensure that manual coordination of operational implications of restoration operations with J3 can be performed. Service component CBRN centers must be assessed to see if they can adequately perform the function of providing manual restoration requirement reports to the JTF CBRN center. CBRN staffing/training is not standard across the Services.
5. **Deficiency:** No familiarization training has been developed.
Non-Materiel Solutions: *Training:* Develop familiarization training to assist staffs in this process.

16.2.3.2 IMA Assessment Summary

Table 16.2-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.2-2. OPSUST 2: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
No automated tools to assist the process of assessing component command contamination reports for operational degradation implications and restoration operation requirements.	Automated system	An automated system that provides location (global positioning system) and unit restoration requirements through component command unit communication systems into the NBC Battle Management System and from there into JWARN and GCCS. The system is automatic and provides component command restoration requirements in accordance with established formats. An automated system to ensure that reports are received even if the reporting unit is having severe degradation or communication problems.

16.3 Task OPSUST 3: Conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing

16.3.1 Functional Area Analysis

16.3.1.1 Definition

To assess units, equipment, facilities, activities, or terrain that are contaminated to determine restoration prioritization and whether or not the timing of such operations must be modified to fit the operational situation. The JTF commander makes this assessment in the context of his operational priorities. Decisions are designed to preserve operations tempo (OPTEMPO).

16.3.1.2 Derivation

UJTL (OP 7.3, OP 5.1.5, OP 5.2, OP 6.5.3).

16.3.1.2.1 Supported Task: STSUST 3

16.3.1.2.2 Lateral Task: OPSHA 12

16.3.1.2.3 Supporting Task: TASUST 25

16.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.3.2 Functional Needs Analysis**16.3.2.1 Capability and Deficiency Assessment Summary**

Table 16.3-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts forms the backbone of the JTF command structure. The standing joint force headquarters (SJFHQ) is not designed as a SJTF, but rather as a standing element that focuses on a combatant commander’s operational trouble spots. There are several limitations that cause problems for this task.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.3-1. OPSUST 3: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current Overall Capability¹	Y²	Y³	Y⁴	Y⁵	G⁶	Y⁷	Y⁸	G⁹	Y¹⁰	Y¹¹
Near/Mid-Term Overall Capability¹²	Y	Y	Y	Y	G	Y	Y	G	Y	Y
Far-Term Overall Capability	G¹³	G	G							

	FAA Measure	Scale
M1	Contamination reports are received within 30 minutes of contamination.	G – Yes, Y – Limited, R – No
M2	Unit operational risk assessment is completed within 30 minutes after contamination reports are received.	G – Yes, Y – Limited, R – No
M3	Restoration operation priorities are determined within 30 minutes after operational risk assessments are completed.	G – Yes, Y – Limited, R – No
M4	Data transmitted/disseminated follow standard format.	G – Yes, Y – Limited, R – No
M5	Information is passed within established time criteria.	G – Yes, Y – Limited, R – No
M6	Unit operational risk assessment is accurate.	G – Yes, Y – Limited, R – No
M7	Restoration operation priority determination is accurate.	G – Yes, Y – Limited, R – No
M8	Restoration operation priority determination is modified after substantive operational changes are assessed.	G – Yes, Y – Limited, R – No
M9	Procedures and checklists are developed to facilitate the ability to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.	G – Yes, Y – Limited, R – No
M10	Joint exercises/experimentation provide feedback on the efficacy of operational risk assessment of critical units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. The linkage of restoration operations and operational risk assessment is not integrated into leader education. This task is not a standard part of training.

² Any SJFHQ staff can receive contamination reports, but the current capability is manual, slowing down the process. It is unlikely that assessments can be received manually within 30 minutes.

³ Limited. Any SJFHQ staff can conduct an operational risk assessment, but there are no TTPs or formal familiarization training that specifically addresses operational risk assessment for restoration prioritization and timing. With a manual system it is unlikely that the assessment can be made in 30 minutes.

⁴ Limited. Any SJFHQ staff can determine operation priorities, but there are no TTPs or formal familiarization training that specifically addresses restoration prioritization of units, equipment, facilities, activities, or terrain that are contaminated. With a manual system it is unlikely that the priorities can be determined within 30 minutes, particularly if there are a large number of units.

⁵ Limited. Any SJFHQ staff can develop and transmit/disseminate information according to a standard format, but there is no current format that specifically addresses operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated.

⁶ Any SJFHQ staff can pass information in a timely manner once it is developed.

⁷ Limited. Any OP-level staff can perform an accurate operational risk assessment, but TTPs to ensure that assessments are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. With manual processes, accuracy may not be as dependable and might be subject to human errors.

⁸ Limited. Any OP-level staff can perform an accurate assessment, but TTPs to ensure that priority determinations are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. With manual processes, accuracy may not be as dependable and might be subject to human errors.

⁹ Any SJFHQ can make modifications. Manual procedures will slow down the process.

¹⁰ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs and familiarization training that specifically address operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.

¹¹ Limited. Any joint exercise/experiment can provide feedback, but few if any have been conducted that specifically address operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.

¹² DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹³ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation and other JRO initiatives. All standards previously assessed as limited should improve to “green” in the far term with all deficiencies eradicated.

16.3.3 Functional Solution Analysis

16.3.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Restoration exercises/experiments have been limited.
Non-Materiel Solutions: *Doctrine:* Develop an exercise/experiment for a JTF on how to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing. Incorporate lessons learned from RESTOPS ACTD into future exercises.
- 2. Deficiency:** No TTPs have been developed.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on how to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing of JTF operations.
- 3. Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for JTF staffs on how to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing. *Leadership:* Develop leader training for JTF staffs on how to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.
- 4. Deficiency:** No doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* Develop more specific doctrine on the linkage of restoration operations and operational risk assessment.
- 5. Deficiency:** System is manual.
Non-Materiel Solutions: *Doctrine:* Manual methods for determining the consolidated impact of degradation of separate unit/activity on JTF critical operations are developed for inclusion in pertinent joint publications. Methods for determining prioritization of restoration operations to facilitate JTF OPTEMPO are developed for inclusion in pertinent joint publications.
- 6. Deficiency:** The linkage of restoration operations and operational risk assessment is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Link into Officer Professional Military Education (OPME)/JPME.
- 7. Deficiency:** Current capability is not automated.
Non-Materiel Solutions: None.
- 8. Deficiency:** This task is not a standard part of training.
Non-Materiel Solutions: *Training:* Integrate into appropriate exercises.

16.3.3.2 IMA Assessment Summary

Table 16.3-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.3-2. OPSUST 3: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
System to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing is manual.	Automated system	Current system is manual. An automated system that determines the consolidated impact of degradation of separate unit/activity on JTF critical operations should be developed.
Current capability to conduct operational risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing is not automated.	Automated system	Link the process to automated systems so that routine data can be used by automated tools (that must be developed). This will improve speed of assessment. Human out of the loop will improve accuracy if data are reliable.

16.4 Task OPSUST 4: Assess the operational impact of required restoration activities

16.4.1 Functional Area Analysis

16.4.1.1 Definition

To make an assessment that determines how the required restoration activities of key units, facilities, or equipment will impact current or projected operational objectives. Some contaminated units or facilities must undergo restoration operations within a short time period or risk becoming completely combat ineffective.

16.4.1.2 Derivation

UJTL (OP 7.3, OP 5.2, OP 1.3.1).

16.4.1.2.1 Supported Task: STSUST 13

16.4.1.2.2 Lateral Task: OPSHA 12

16.4.1.2.3 Supporting Task: TASUST 25

16.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.4.2 Functional Needs Analysis

16.4.2.1 Capability and Deficiency Assessment Summary

Table 16.4-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any OP-level staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to assess the impact of restoration activities on operational objectives, but there are some deficiencies that negatively impact on their accuracy and the speed they will be able to operate.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.4-1. OPSUST 4: Capability and Deficiency Assessment

Capability: Operational-Level Unit Staff	M1	M2	M3	M4	M5
Current Overall Capability¹	R²	Y³	Y⁴	Y⁵	Y⁶
Near/Mid-Term Overall Capability⁷	R	Y	Y	Y	Y
Far-Term Overall Capability⁸	G⁹	G¹⁰	G¹¹	G¹²	G¹³

	FAA Measure	Scale
M1	Determination of restoration operation impact on operational objectives can be made within 1 hour.	G – Yes, Y – Limited, R – No
M2	Assessments of impact of restoration operations are accurate.	G – Yes, Y – Limited, R – No
M3	Procedures and checklists are developed to facilitate the ability to assess the impact of required restoration activities on operational objectives.	G – Yes, Y – Limited, R – No
M4	Joint exercises/experimentation provide lessons learned on procedures for determining restoration operation impact on operational objectives.	G – Yes, Y – Limited, R – No
M5	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. The linkage of restoration operations and operational risk assessment is not integrated into leader education. This task is not a standard part of training.

² For restoration operation issues the current capability is manual, slowing down the process. It is unlikely that assessments can be made manually within 1 hour.

³ Limited. Any OP-level staff can perform an accurate assessment, but TTPs to ensure that assessments are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. With manual processes, accuracy may not be as dependable and might be subject to human errors.

⁴ Limited. Any OP-level staff can develop procedures and checklists, but there are no TTPs that specifically address the impact of restoration activities on operational objectives.

⁵ Limited. Few if any restoration exercises or experiments focused on operational impacts on units, equipment, facilities, activities, or terrain that are contaminated and require restoration operations have been conducted. A RESTOP ACTD (ongoing) has been conducted with results to be published (TBP) that may or may not provide insight into CBRND operational impact assessment.

⁶ Limited. Depending on the extent of contamination and the decontamination means selected, the procedures may or may not be logistically supportable.

⁷ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁸ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁹ The process will be linked to automated systems so that routine data can be used by automated tools. An automated tool will determine the impact of contaminated units or facilities that must undergo restoration operations on JTF operations. System will have integrated analysis tools to predict and reprioritize restoration requirements based on interaction with JTF J3 operational priorities. This will improve speed of assessment. Human out of the loop will improve accuracy if data is reliable.

¹⁰ JTTPs to ensure that estimates are accurate will be collected or developed. More detailed specific information and checklists useful for time-sensitive situations will be developed. When automated tools have been developed, accuracy will be dependable and not be subject to human errors.

¹¹ JTTPs that specifically address the impact of restoration activities on operational objectives will be developed.

¹² Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

¹³ Development and acquisition of more efficient and less materiel-intensive decontamination systems will improve the logistical supportability in the far term.

16.4.3 Functional Solution Analysis

16.4.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Current capability is not automated.
Non-Materiel Solutions: None.
- 2. Deficiency:** No doctrine or TTPs have been developed.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on how to assess the operational impact of restoration activities on operational-level operations.
- 3. Deficiency:** Restoration exercises and experiments have been limited.
Non-Materiel Solutions: *Doctrine:* Develop exercises/ experiments for OP-level staffs on how to assess the operational impact of restoration activities. Incorporate lessons learned from RESTOPS ACTD into future exercises.
- 4. Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for OP-level staffs on how to assess the operational impact of restoration activities. *Leadership:* Develop leader training on how to assess the operational impact of restoration activities.
- 5. Deficiency:** Few exercises/experiments have been conducted at the OP level of war to determine whether decontamination operations are logistically supportable under a wide variety of conditions.
Non-Materiel Solutions: *Training:* Conduct specific OP-level exercises/experiments to determine whether decontamination operations are logistically supportable under a wide variety of conditions.

16.4.3.2 IMA Assessment Summary

Table 16.4-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.4-2. OPSUST 4: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Lack of automated means to assess the operational impact of required restoration activities.	Automated system	Link the process to automated systems so that routine data can be used by automated tools. An automated tool will determine the impact of contaminated units or facilities that must undergo restoration operations on JTF operations. System has integrated analysis tools to predict and reprioritize restoration requirements based on interaction with JTF J3 operational priorities. This will improve speed of assessment. Human out of the loop will improve accuracy if data is reliable.

16.5 Task OPSUST 5: Provide operational guidance to forces with contaminated units

16.5.1 Functional Area Analysis

16.5.1.1 Definition

To provide specific, tailored operational guidance to forces that have some or all of their units contaminated. The JTF commander may determine that some critical units or facilities must continue essential operations for a specified period of time despite contamination, prior to conducting restoration operations. To provide adequate guidance, a complete picture of the projected degradation to the unit/facility over time must be available to the JTF commander.

16.5.1.2 Derivation

UJTL (OP 7.3, OP 5.3.2).

16.5.1.2.1 Supported Task: STSUST 7

16.5.1.2.2 Lateral Task: OPSHA 6

16.5.1.2.3 Supporting Task: TASUST 26

16.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil. N/A

16.5.2 Functional Needs Analysis

16.5.2.1 Capability and Deficiency Assessment Summary

Table 16.5-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts forms the backbone of the JTF command structure. They can perform the task, but several factors will degrade their performance.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.5-1. OPSUST 5: Capability and Deficiency Assessment

Capability: Operational-Level Unit Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current Overall Capability¹	G²	Y³	Y⁴	Y⁵	G⁶	Y⁷	Y⁸	Y⁹	Y¹⁰	Y¹¹	Y¹²
Near/Mid-Term Overall Capability¹³	G	Y	Y	Y	G	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability¹⁴	G	G¹⁵	G	G	G	G	G	G	G¹⁶	G¹⁷	G

	FAA Measure	Scale
M1	Updated joint force situation is used.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists exist to help access current situation and formulate revised plans of action.	G – Yes, Y – Limited, R – No
M3	Procedures and checklists exist to help the commander to formulate crisis assessment.	G – Yes, Y – Limited, R – No
M4	Procedures and checklists exist to help adjust original plan for alternate operations (after recognizing planning assumptions invalid).	G – Yes, Y – Limited, R – No
M5	Commander’s situation reports (SITREPs) follow standard format.	G – Yes, Y – Limited, R – No
M6	Courses of action (COAs) are evaluated to find which are suitable, feasible, acceptable, and complete after assessing capabilities of contaminated units.	G – Yes, Y – Limited, R – No
M7	Milestone criteria for plan development are available and followed.	G – Yes, Y – Limited, R – No
M8	New executable operational plans and orders adequately address contamination of units.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation provide lessons learned on procedures for providing operational guidance to forces with contaminated units.	G – Yes, Y – Limited, R – No
M10	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No
M11	Report/advise contaminated units of commander’s guidance within 1 hour.	G – Yes, Y – Limited, R – No

¹ No doctrine has been developed. The linkage of restoration operations and providing operational guidance is not integrated into leader education. This task is not a standard part of training.

² Yes. Once restoration operations are required, nothing prevents a staff from updating the joint force situation.

³ Limited. Any staff can develop procedures and checklists, but there are no TTPs that specifically address providing operational guidance to forces with contaminated units.

⁴ Limited. Any staff can develop procedures and checklists, but there are no TTPs that help the commander to formulate a crisis assessment.

⁵ Limited. Any staff can develop procedures and checklists, but there are no TTPs that specifically address how to adjust original plans for alternate operations (after recognizing planning assumptions are invalid) for forces with contaminated units.

⁶ Yes. Once restoration operations are required, nothing prevents a staff from using existing standard formats.

⁷ Limited. Any staff can evaluate COAs, but there are no TTPs that specifically address evaluating the COAs after assessing capabilities of contaminated units.

⁸ Limited. Any staff can develop milestone criteria for plan development, but there are no TTPs that specifically address milestone criteria for plan development for forces with contaminated units.

⁹ Limited. Any staff can develop generic operational plans, but there are no TTPs that specifically address developing operational plans and orders addressing issues facing contaminated units.

¹⁰ Limited. Any joint exercise/ experiment can provide feedback, but few if any have been conducted that specifically address assessing the operational impact of restoration activities.

¹¹ Limited. Under specific certain circumstances, any decontamination procedure may or may not be logistically supportable at the operational level. Few exercises/experiments have been conducted at the OP level of war to determine whether decontamination operations are logistically supportable under a wide variety of conditions.

¹² Any staff can report/advise contaminated units of the commander's guidance, but the current capability is manual, slowing down the process. It is unlikely that assessments can be made manually within 1 hour.

¹³ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹⁴ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹⁵ TTP will be developed for all pertinent standards by the far term.

¹⁶ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

¹⁷ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

16.5.3 Functional Solution Analysis

16.5.3.1 DOTLFP Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The current capability is manual and not automated, slowing down the process.
Non-Materiel Solutions: None.
- 2. Deficiency:** Restoration exercises/experimentation have been limited.
Non-Materiel Solutions: *Doctrine:* Develop an exercise/experiment for a JTF on how to provide operational guidance to forces with contaminated units. Incorporate lessons learned from RESTOPS ACTD into future exercises.
- 3. Deficiency:** No TTPs/doctrine have been developed.
Non-Materiel Solutions: *Doctrine:* Develop TTPs and doctrine on all aspects of developing and providing operational guidance to forces with contaminated units of JTF operations.
- 4. Deficiency:** Few exercises/experiments have been conducted at the OP level of war to determine whether decontamination operations are logistically supportable under a wide variety of conditions.
Non-Materiel Solutions: *Training:* Develop exercises/experiments to be conducted at the OP level of war to determine whether decontamination operations are logistically supportable under a wide variety of conditions. Review and assess RESTOPS ACTD for pertinent data when published.
- 5. Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for OP-level staffs on operational guidance to forces with contaminated units. *Leadership:* Develop leader training for OP-level staffs and commanders on all aspects of developing and providing operational guidance to forces with contaminated units.

16.5.3.2 IMA Assessment Summary

Table 16.5-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.5-2. OPSUST 5: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
The current capability is manual and not automated, slowing down the process of providing operational guidance to forces with contaminated units.	Automated systems	Develop automation tools and automatic processes for assisting commanders and staffs in providing operational guidance to forces with contaminated units. System should be automatic and provide component command degradation information in accordance with established formats. System should have integrated analysis tools to predict degradation impact to critical JTF operations based on interaction with JTF J3 operational priorities. Information on degradation must be automatically provided to J3 systems so that decisions can be made on operational priorities or required changes. This could be used in conjunction with a sensor system on individual vehicles and systems, integrated with an automated system that immediately provides a real-time assessment of operational degradation.

16.6 Task OPSUST 6: Provide mobile assessment teams to assess and determine disposition of contaminated units, equipment, facilities, or activities

16.6.1 Functional Area Analysis

16.6.1.1 Definition

To establish and deploy mobile assessment teams, staffed with experts in both CBRND and operational considerations, who can make a complete assessment of contaminated units, equipment, facilities, or activities and determine their disposition. When critical units or facilities become contaminated, there will be much confusion and likely an inability of the unit to provide an objective assessment of its status or requirements. The JTF commander may provide mobile assessment teams to assess and determine residual capability of and recommend disposition of contaminated units, equipment, facilities, or activities. The team will provide its assessments and recommendations to the JTF commander.

16.6.1.2 Derivation

UJTL (OP 7.3, OP 4.4.4, OP 5.2, OP 5.3.2, OP 4.7.8).

16.6.1.2.1 Supported Task: STSUST 7

16.6.1.2.2 Lateral Task: N/A

16.6.1.2.3 Supporting Task: TASUST 24

16.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Limited host-nation support. (C2.8.5)
6. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.6.2 Functional Needs Analysis**16.6.2.1 Capability and Deficiency Assessment Summary**

Table 16.6-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts forms the backbone of the JTF command structure. A CBRN mobile assessment team could be assembled on an ad hoc basis at any time from in-house JTF resources. Prototype SJTF staffs must be assessed to determine their ability to provide mobile assessment teams. This capability has never been attempted or tested. There is no doctrine that covers this capability. This capability could also be developed in any new CBRND units that are currently being stood up.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. No capability improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term. Limited capability improvements are forecast for the near/mid term. DOTMLPF could be developed (including checklists) to improve many deficient areas as a result of initiatives that use data resulting from focused experimentation if a decision is made to resource teams.

Table 16.6-1. OPSUST 6: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25
Current Overall Capability¹	R ²	Y ³	R ⁴	Y ⁵	Y ⁶	G ⁷	G ⁸	Y ⁹	G ¹⁰	R ¹¹	G ¹²	G ¹³	Y ¹⁴	Y ¹⁵	Y ¹⁶	Y ¹⁷	Y ¹⁸	Y ¹⁹	G ²⁰	Y ²¹	Y ²²	G ²³	R ²⁴	Y ²⁵	R ²⁶
Near/Mid-Term Overall Capability	R	Y	R	Y	Y	G	G	Y	G	R	G	G	Y	Y	Y	Y	Y	Y	G	Y	Y	G	R	Y	R
Far-Term Overall Capability²⁷	R	Y	R	Y	Y	G	G	Y	G	R	G	G	Y	Y	Y	Y	Y	Y	G	Y	Y	G	R	Y	Y ²⁸

	FAA Measure	Scale
M1	Mobile assessment team arrives within 1 hour after incident.	G – Yes, Y – Limited, R – No
M2	Coordination process is activated with host nation.	G – Yes, Y – Limited, R – No
M3	Mobile assessment team properly trained, staffed, and equipped.	G – Yes, Y – Limited, R – No
M4	Liaison is established with country team and other U.S. government agencies, nongovernmental organizations (NGOs), international organizations and coalition forces.	G – Yes, Y – Limited, R – No
M5	Affected joint force commander is provided with technical expertise relating to CBRN/TIM hazards.	G – Yes, Y – Limited, R – No
M6	Appropriate U.S. resources and capabilities are factored into operational plans and actions.	G – Yes, Y – Limited, R – No
M7	Appropriate coalition resources and capabilities are factored into plans and actions.	G – Yes, Y – Limited, R – No
M8	Affected joint force/facility is provided with guidance on how and when to commence decontamination operations.	G – Yes, Y – Limited, R – No
M9	Coordination is made for additional support assets to go to the incident area if required.	G – Yes, Y – Limited, R – No
M10	A plan is in place for mobile assessment team operations.	G – Yes, Y – Limited, R – No
M11	If required, the Defense Threat Reduction Agency (DTRA) Consequence Management Advisory Team is requested.	G – Yes, Y – Limited, R – No
M12	Determination is made of the population at risk and a CBRN/TIM casualty estimate is provided for the commander's intelligence estimate.	G – Yes, Y – Limited, R – No
M13	CBRN/TIM casualty management is adequate.	G – Yes, Y – Limited, R – No
M14	CBRN/TIM casualties are assessed.	G – Yes, Y – Limited, R – No
M15	CBRN/TIM casualties are treated.	G – Yes, Y – Limited, R – No
M16	CBRN/TIM casualties are decontaminated.	G – Yes, Y – Limited, R – No
M17	Procedures are in place for movement/quarantine of CBRN/TIM casualties.	G – Yes, Y – Limited, R – No
M18	Procedures are set up for tracking and follow-up procedures of contaminated personnel.	G – Yes, Y – Limited, R – No
M19	Coordination is made with mortuary affairs on handling, decontaminating, and transporting human remains.	G – Yes, Y – Limited, R – No
M20	Operational forces are trained to operate in a CBRN/TIM environment.	G – Yes, Y – Limited, R – No
M21	Operational forces are equipped to operate in a CBRN/TIM environment.	G – Yes, Y – Limited, R – No
M22	Facilities unavailable due to CBRN/TIM attack are reported.	G – Yes, Y – Limited, R – No

M23	Theater medical threats are identified and countermeasures developed.	G – Yes, Y – Limited, R – No
M24	Mobile assessment team recommends establishment of JTF for restoration operations if required.	G – Yes, Y – Limited, R – No
M25	Procedures and checklists are developed to facilitate the ability to provide mobile assessment teams to assess and determine disposition of contaminated units, equipment, facilities, or activities.	G – Yes, Y – Limited, R – No

- ¹ No DOTMLPF is in place at this time.
- ² Assessment teams are not designated, staffed, trained or equipped at this time. Until that happens, there is no way they will be able to respond to the incident site within 1 hour.
- ³ Nothing precludes activating a coordination process of this type, but first, the process must be developed and refined through exercises.
- ⁴ There are no mobile assessment teams at this time.
- ⁵ Nothing precludes activating a liaison process of this type, but it has never been done in the context of assessing a CBRN incident.
- ⁶ Nothing precludes this action. A call-back mechanism is available now from DTRA for technical expertise relating to CBRN/TIM, but in an emergency of this type, the expertise needs to be available to the affected joint force commander at the incident site.
- ⁷ Yes. Nothing precludes factoring U.S. resources and capabilities into operational plans and actions.
- ⁸ Yes. Nothing precludes factoring coalition resources and capabilities into operational plans and actions.
- ⁹ Nothing precludes providing this guidance, but no TTPs exist at this time. See OPSUST 5.
- ¹⁰ Yes. Nothing precludes making coordination for additional support assets to go to the incident area if required.
- ¹¹ No. There are no mobile assessment teams at this time.
- ¹² Yes. Nothing precludes requesting the DTRA Consequence Management Advisory Team.
- ¹³ Yes. Nothing precludes making this determination or providing casualty estimates.
- ¹⁴ If casualty treatment units can be brought to the site quickly, and there is enough capability available to meet the demand it will be deemed adequate. This task needs to be exercised at both the operational and tactical levels because response time and adequacy has not been determined for all possible scenarios. See tactical casualty management tasks.
- ¹⁵ Nothing precludes triaging of CBRN casualties once adequate CBRND capable medical forces are on hand. This task needs to be exercised at both the operational and tactical levels because response time and adequacy has not been determined for all possible scenarios.
- ¹⁶ Nothing precludes treatment of CBRN casualties once adequate CBRND capable medical forces are on hand. This task needs to be exercised at both the operational and tactical levels because response time and adequacy has not been determined for all possible scenarios.
- ¹⁷ Nothing precludes decontamination of CBRN casualties once adequate CBRND capable medical forces are on hand. This task needs to be exercised at both the operational and tactical levels because response time and adequacy has not been determined for all possible scenarios.
- ¹⁸ Procedures for movement/quarantine of CBRN casualties are available, but this task needs to be exercised at both the operational and tactical levels because response time and adequacy of procedures has not been determined for all possible scenarios.
- ¹⁹ Procedures are available for tracking and follow-up procedures of contaminated personnel, but they need to be exercised in a stressful situation to determine their efficacy and to identify capability gaps.
- ²⁰ Nothing precludes making coordination with mortuary affairs on handling, decontaminating, and transporting human remains.
- ²¹ Operational forces are trained to “survive” in a CBRN environment. There are so few exercises with realistic CBRN scenarios that it is impossible to determine whether forces could “operate” in a CBRN environment. It is also important to know whether they would be able to accomplish assigned missions in a CBRN environment.
- ²² Operational forces are equipped to “survive” in a CBRN environment. There are so few exercises with realistic CBRN scenarios that it is impossible to determine whether forces are truly equipped to “operate” in a CBRN environment. It is also important to know whether they are adequately equipped to accomplish assigned missions in a CBRN environment.
- ²³ Nothing precludes reporting facilities unavailable due to CBRN attack.
- ²⁴ The mobile assessment team should be equipped with the means to detect, sample, and identify CBRN/TIM related medical threats. Development of medical threat countermeasures is beyond the scope of this task and must be referred appropriately.
- ²⁵ The mobile assessment team should be equipped with the means to detect, sample, and identify CBRN/TIM related medical threats. Development of medical threat countermeasures is beyond the scope of this task and must be referred appropriately.
- ²⁶ No. There are no mobile assessment teams at this time.
- ²⁷ Experimentation results may cause the creation of DOTMLPF that can be used if a decision is made to resource teams.
- ²⁸ Experimentation results may cause the creation of checklists that can be used if a decision is made to resource teams.

16.6.3 Functional Solution Analysis

16.6.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Assessment teams are not designated, staffed, trained, or equipped at this time.
Non-Materiel Solutions: *Doctrine:* Development must begin on concepts and doctrine to guide mobile assessment teams to help component commanders assess and determine residual capability of and recommend disposition of contaminated units, equipment, facilities, or activities. *Organization:* Prototype SJFHQ staffs must be assessed to determine their ability to provide mobile assessment teams. Prototype SJFHQ CBRN centers must be provided with adequate CBRN center staffing to ensure that support can be provided for mobile assessment teams. *Training:* As concepts and doctrine are developed, they must be tested and refined through experimentation and ultimately in full-scale exercises. *Leadership:* JPME must include leader-learning areas for restoration operation considerations at the OP level. *Personnel:* Personnel evaluating and mentoring CBRN elements of JTF exercises must possess adequate joint and CBRN credentials. *Facilities:* As plans are made for the establishment of the JNTC, TTPs for testing a JTF HQ's ability to field and deploy mobile assessment teams to help component commanders assess and determine residual capability of and recommend disposition of contaminated units, equipment, facilities, or activities must be integrated into training center infrastructure plans.
- 2. Deficiency:** Until teams are designated, staffed, trained, and equipped they will be unable to respond to the incident site within 1 hour.
Non-Materiel Solutions: None.
- 3. Deficiency:** The coordination process with host nations must be developed and refined through exercises.
Non-Materiel Solutions: *Doctrine:* Develop TTPs and doctrine on all aspects of coordinating with host nations during large-scale CBRN incidents. *Training:* Develop exercises/experiments to be conducted on all aspects of coordinating with host nations during large-scale CBRN incidents.
- 4. Deficiency:** Establishing liaison with country team and other U.S. government agencies, NGOs, international organizations, and coalition forces has never been done by a mobile assessment team.
Non-Materiel Solutions: *Doctrine:* Develop TTPs and doctrine on all aspects of establishing liaison with country team and other U.S. government agencies, NGOs, international organizations, and coalition forces.
- 5. Deficiency:** CBRN technical expertise must be part of the team and available to the affected joint force commander.

Non-Materiel Solutions: *Personnel:* Analyze CBRND staffing in all organizations in light of the capabilities required of them in this task. Recommend staffing/organizational changes, enhancements, or alternative fixes as required.

- 6. Deficiency:** Operational- and tactical-level exercises have not provided adequate information.

Non-Materiel Solutions: *Leadership:* This task needs to exercise at both the operational and tactical levels because response time and adequacy of casualty management, triage, treatment, decontamination, movement/quarantine, tracking and follow-up has not been adequately determined for all possible scenarios. Operational forces must be assessed to see not only whether they are trained and equipped not only to “survive” in a CBRN environment, but also whether they can accomplish typical assigned missions.

- 7. Deficiency:** No DOTMLPF is in place at this time.

Non-Materiel Solutions: *Doctrine:* All pertinent DOTMLPF needs to be developed in accordance with the process outlined in Footnote 1. JPME must include leader-learning areas for restoration operations considerations at the OP level.

16.3.2 IMA Assessment Summary

Table 16.6-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.6-2. OPSUST 6: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Until teams are designated, staffed, trained and equipped, they will be unable to respond to the incident site within 1 hour.	Mobile command and control platform	A required materiel solution will be a command and control platform to quickly transport the team to the incident site. It will provide them with all the tools required to make the assessment, provide them with total protection from any CBRN hazard, and allow for quick and complete decontamination of the command and control platform after the assessment is complete. The tools onboard can be linked to sensors on the contaminated units, equipment, facilities providing automatic data feeds en route.

16.7 Task OPSUST 7: Provide restoration operation country assistance teams to support TEPs

16.7.1 Functional Area Analysis

16.7.1.1 Definition

To provide restoration operation country assistance teams to support the Theater Engagement Plan (TEP) that has been provided by the combatant commander. Many nations that would normally support U.S. initiatives may feel threatened by hostile neighbors or nations that possess CBRN/TIM weapons. TEPs for restoration operation considerations are executed by special teams and units that demonstrate restoration operation capability or provide restoration operation training to selected countries.

16.7.1.2 Derivation

UJTL (OP 7.3, OP 4.7.1, ST 8.1.2), CJCSM 3113.01a.

16.7.1.2.1 Supported Tasks: STSUST 7, STSUST 8

16.7.1.2.2 Lateral Task: OPSHA 9

16.7.1.2.3 Supporting Task: TASUST 25

16.7.1.3 Condition

Perform this task under conditions of:

Physical. N/A

Military

1. No preexisting arrangements. (C 2.1.1.2)
2. Limited personnel expertise. (C2.2.4.5)

Civil

1. Mixed support for political policies. (C3.1)
2. Limited foreign government support. (C3.1.2.3.)

16.7.2 Functional Needs Analysis

16.7.2.1 Capability and Deficiency Assessment Summary

Table 16.7-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “red.” Any JTF HQ has a team of operational planners and information command and control specialists. This team of experts has the skill to provide restoration operation country assistance teams to support the TEP, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. The overall projected capability will remain “red” in the near/mid term.

Projected Far-Term Capability and Deficiency

No other capabilities are currently projected for the far-term. DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Steps can be taken to establish and equip country assistance teams. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.7-1. OPSUST 7: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4
Current Overall Capability¹	R ²	G ³	R ⁴	Y ⁵
Near/Mid-Term Overall Capability⁶	R	G	R	Y
Far-Term Overall Capability⁷	G ⁸	G	G ⁹	G ¹⁰

	FAA Measure	Scale
M1	Restoration operation country assistance teams are properly trained and equipped.	G – Yes, Y – Limited, R – No
M2	Valid requests for restoration operation assistance are met.	G – Yes, Y – Limited, R – No
M3	Procedures and checklists are developed to facilitate the ability to provide restoration operation country assistance teams to support the TEP.	G – Yes, Y – Limited, R – No
M4	Joint exercises provide feedback on restoration operation country assistance teams.	G – Yes, Y – Limited, R – No

¹ No specific doctrine has been developed. The linkage of restoration operations restoration operation country assistance teams is not integrated into leader education. This task is not a standard part of training.

² No. While any SJFHQ staff can train and equip a country assistance team, none have ever been established. There has been no training or equipment developed that specifically addresses the training and equipment requirements for a restoration operation country assistance team.

³ Yes. Any SJFHQ staff can process and honor requests for a country assistance team. There is currently no experience base, however.

⁴ No. Any SJFHQ staff can develop procedures and checklist for a country assistance team, but there are no TTPs that addresses a restoration operation country assistance team support to theater engagement planning.

⁵ Limited. Few if any restoration exercises or experiments focused on restoration operation country assistance teams have been conducted.

⁶ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

⁷ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

⁸ Steps will be taken to establish and equip country assistance teams.

⁹ JTTPs that addresses a restoration operation country assistance team support to TEP will be developed.

¹⁰ Experiments and exercises focused on theater restoration operations will be conducted. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

16.7.3 Functional Solution Analysis

16.7.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Restoration operation country assistance teams requirements are not defined.
Non-Materiel Solutions: *Doctrine:* CJCS has not developed an operational concept for restoration operations country assistance teams and specific guidance (technical or procedural) on how to approach this task has not been provided. Develop TTPs, organizational structure, training, leadership education, and equipment for restoration operation country assistance teams to support TEPs.
2. **Deficiency:** Prototype country assistance teams are not organized.
Non-Materiel Solutions: *Organization:* Develop organizational tables of distribution and allowances (TDAs) for restoration operation country assistance teams to support TEPs.
3. **Deficiency:** Training is inadequate for country assistance teams.
Non-Materiel Solutions: *Training:* Develop training for restoration operation country assistance teams to support TEPs.
4. **Deficiency:** Leader education inadequate.
Non-Materiel Solutions: *Leadership:* Develop JPME classes for restoration operation country assistance teams to support TEPs.
5. **Deficiency:** Restoration exercises have been limited.
Non-Materiel Solutions: *Doctrine:* Develop and refine restoration of operations exercises for a JTF. Incorporate lessons learned from RESTOPS ACTD into future exercises.

16.7.3.2 IMA Assessment Summary

N/A

16.8 Task OPSUST 8: Support SOF restoration operation requirements

16.8.1 Functional Area Analysis

16.8.1.1 Definition

To support special operations force (SOF) restoration operation requirements following the planning guidance provided by the combatant commander and utilizing JTF resources. The contamination of SOF may require extraordinary resources over long distances and to austere locations.

16.8.1.2 Derivation

UJTL (OP 7.3, OP 3.2.5.3, OP 5.4.5).

16.8.1.2.1 Supported Task: STSUST 9

16.8.1.2.2 Lateral Task: OPSHA 3

16.8.1.2.3 Supporting Tasks: TASUST 1, TASUST 2, TASUST 3, TASUST 4, TASUST 5, TASUST 6, TASUST 7, TASUST 8, TASUST 9, TASUST 10, TASUST 11, TASUST 12, TASUST 13, TASUST 16, TASUST 17, TASUST 20, TASUST 21, TASUST 23, TASUST 24, TASUST 25, TASUST 26, TASUST 27, TASUST 28, TASUST 29, TASUST 30

16.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Limited lift assets. (C2.5.2)
7. Moderate rear-area security. (C2.7.1)
8. No host-nation support. (C2.8.5)
9. Conventional and terrorist threat form. (C2.9.2)
10. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.8.2 Functional Needs Analysis**16.8.2.1 Capability and Deficiency Assessment Summary**

Table 16.8-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any OP-level staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to support SOF restoration operation requirements, but there are some deficiencies that negatively impact on the efficiency with which they will be able to operate.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Experiments and exercises focused on theater restoration operations will be conducted that specifically address SOF restoration operation support provided by JTF. Although JTTPs, training and exercises, and education will all improve the far-term assessment will remain “yellow.”

Table 16.8-1. OPSUST 8: Capability and Deficiency Assessment

Capability: Operational-Level Unit Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	G ⁷	Y ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability¹¹	Y	Y	Y	Y	Y	G	Y	Y	Y
Far-Term Overall Capability¹²	Y	Y	Y	Y	Y	G	Y	G ¹³	G ¹⁴

	FAA Measure	Scale
M1	Procedures are in place to facilitate response to SOF requests for assistance.	G – Yes, Y – Limited, R – No
M2	Procedures and checklists exist to help develop executable operational plans and orders.	G – Yes, Y – Limited, R – No.
M3	Support provided is adequate.	G – Yes, Y – Limited, R – No
M4	Decontamination and support forces have SOF restoration operation experience.	G – Yes, Y – Limited, R – No
M5	COAs are available and selected in advance of execution.	G – Yes, Y – Limited, R – No
M6	COAs are coordinated between JTF and SOF prior to execution.	G – Yes, Y – Limited, R – No
M7	Procedures and checklists exist to help issue commander’s estimate.	G – Yes, Y – Limited, R – No
M8	Joint exercises/experimentation provide lessons learned on SOF restoration operation support provided by JTF.	G – Yes, Y – Limited, R – No
M9	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No

¹ This task is not a standard part of training.

² Limited. Any OP-level unit staff can respond to SOF request for assistance, but there are no TTPs or formalized familiarization training that addresses the unique aspects of joint forces supporting SOF restoration operation requirements.

³ Limited. Any OP-level unit staff can develop procedures and checklists for operational plans and orders, but there are no TTPs that address development of the unique requirements of SOF restoration operational plans and orders.

⁴ Limited. Any OP-level unit staff can provide support, but there is no real way of knowing how effective this support will be without comprehensive training events.

⁵ Limited. No staff will have an experience base without comprehensive training with SOF.

⁶ Limited. Any OP-level unit staff can develop/select COAs in advance of execution of the mission. There are no TTPs that address development and selection of COAs while supporting a SOF restoration operation.

⁷ Any OP-level unit staff can coordinate COAs between HQs.

⁸ Limited. Any OP-level staff can develop an accurate estimate, but TTPs to ensure that estimates are accurate are limited to basic, nonspecific data that must be researched. More detailed specific information and checklists useful for time-sensitive situations are not available. With manual processes, accuracy may not be as dependable and might be subject to human errors.

⁹ Limited. Any joint exercise/ experiment can provide feedback, but few if any have been conducted that specifically address SOF restoration operation support provided by JTF.

¹⁰ Limited. Depending on the extent of contamination and the decontamination means selected, the procedures may or may not be logistically supportable.

¹¹ DOTMLPF should improve in all deficient areas, including inclusion in training, as a result of initiatives that use data resulting from focused experimentation.

¹² Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹³ Experiments and exercises focused on theater restoration operations will be conducted that specifically address SOF restoration operation support provided by JTF.

¹⁴ Development and acquisition of more efficient and less materiel-intensive decontamination systems will improve the logistical supportability in the far term.

16.8.3 Functional Solution Analysis

16.8.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** There are no TTPs for SOF restoration operation requirements.
Non-Materiel Solutions: *Doctrine:* Develop TTPs for SOF restoration of operations requirements.

2. **Deficiency:** Planning exercises for restoration with SOF have been limited.
Non-Materiel Solutions: *Doctrine:* Develop and refine restoration of operations exercises for SOF. Incorporate lessons learned from RESTOPS ACTD into future exercises.

3. **Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for staffs on SOF restoration of operations requirements. *Leadership:* Develop leader training for staffs on SOF restoration of operations requirements.

4. **Deficiency:** Automated means to support SOF restoration operation requirements is lacking.
Non-Materiel Solutions: None.

16.8.3.2 IMA Assessment Summary

Table 16.8-2 shows possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment.

Table 16.8-2. OPSUST 8: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Lack of an automated means to support SOF restoration operation requirements.	Automated systems	Link the process to automated systems so that routine data can be used by automated tools (that must be developed). This will improve speed and accuracy of planning. Human out of the loop will improve accuracy if data are reliable.

16.9 Task OPSUST 9: Provide JTF command and control of restoration operations**16.9.1 Functional Area Analysis****16.9.1.1 Definition**

To provide the command, control, communications, and planning capabilities required for restoration operations that only a JTF HQ can provide. After a JTF HQ is established at the direction of the combatant commander, it will provide command and control of extensive or complex restoration operations. This could be a standing JTF HQ that can move from theater to theater or a JTF HQ established by a specific combatant command. The JTF HQ will provide all elements of command and control of restoration operations.

16.9.1.2 Derivation

UJTL (OP 7.3, OP 4.4, OP 5.4, OP 5.5.6).

16.9.1.2.1 Supported Task: STSUST 10

16.9.1.2.2 Lateral Task: OPSHA 8

16.9.1.2.3 Supporting Tasks: TASUST 24, TASUST 25

16.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Moderate rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.9.2 Functional Needs Analysis**16.9.2.1 Capability and Deficiency Assessment Summary**

Table 16.9-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to provide JTF command and control of restoration operations, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs that specifically address the change in manning allocation as required by a restoration operation mission will be developed. Joint exercises and experiments will be conducted that will provide feedback on how a JTF commands and controls a restoration operation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.9-1. OPSUST 9: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	Y ³	Y ⁴	G ⁵	G ⁶	Y ⁷	Y ⁸	Y ⁹
Near/Mid-Term Overall Capability¹⁰	Y	Y	Y	G	G	Y	Y	Y
Far-Term Overall Capability¹¹	G ¹²	G ¹³	G ¹⁴	G	G	G ¹⁵	G ¹⁶	G ¹⁷

	FAA Measure	Scale
M1	Procedures and checklists exist to help facilitate the stand-up of a JTF for restoration operations.	G – Yes, Y – Limited, R – No
M2	Procedures exist for dissolving of the JTF (following achievement of end state).	G – Yes, Y – Limited, R – No
M3	Joint restoration operation site areas or select fixed sites are defined.	G – Yes, Y – Limited, R – No
M4	Directive or mission is provided.	G – Yes, Y – Limited, R – No
M5	Directive contains desired effect and scope of action required.	G – Yes, Y – Limited, R – No
M6	Procedures and checklists exist to help facilitate the change in manning allocation of initial HQ required by restoration operation mission.	G – Yes, Y – Limited, R – No
M7	Joint exercises/experimentation provide lessons learned on restoration operation execution provided by JTF.	G – Yes, Y – Limited, R – No
M8	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No

¹ There is no concept/doctrine on how to stand up a JTF for the conduct of restoration operations. Command and control of large-scale restoration operations is not integrated into leader education.

² Limited. Any SJFHQ staff can develop these kinds of procedures and checklists, but there are currently no TTPs that specifically address standing up a JTF for restoration operations.

³ Limited. Any SJFHQ staff can develop these kinds of procedures, but there are currently no TTPs that specifically address dissolving a JTF for restoration operations following achievement of end state.

⁴ Limited. Any SJFHQ staff can select and define operation site areas or fixed sites, but there are no TTPs that specifically address selecting and defining joint restoration sites.

⁵ Nothing precludes a higher HQ from providing a directive or mission.

⁶ Nothing precludes a higher HQ from providing a directive or mission that contains desired effect and scope of action required.

⁷ Limited. Any SJFHQ staff can develop procedures and checklists, but there are currently no TTPs that specifically address the change in manning allocation as required by a restoration operation mission.

⁸ No joint exercise or experiment has ever been conducted that would provide feedback on how a JTF commands and controls a restoration operation.

⁹ Limited. Depending on the extent of contamination and the decontamination means selected, the procedures may or may not be logistically supportable.

¹⁰ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹¹ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹² JTTPs that specifically address standing up a JTF for restoration operations will be developed.

¹³ JTTPs that specifically address dissolving a JTF for restoration operations following achievement of end state will be developed.

¹⁴ JTTPs that specifically address selecting and defining joint restoration sites will be developed.

¹⁵ JTTPs that specifically address the change in manning allocation as required by a restoration operation mission will be developed.

¹⁶ Joint exercises and experiments will be conducted that will provide feedback on how a JTF commands and controls a restoration operation.

¹⁷ Development and acquisition of more efficient and less materiel-intensive decontamination systems will improve the logistical supportability in the far term.

16.9.3 Functional Solution Analysis

16.9.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No concept/doctrine/TTPs exist for JTF conduct of restoration operations.
Non-Materiel Solutions: *Doctrine:* Develop concepts/doctrine/TTPs for JTF command and control of restoration operations to include standing up/dissolving a JTF for restoration operations, selecting and defining joint restoration operation sites, and establishing the manning allocation of initial HQ required by restoration operation mission.
- 2. Deficiency:** No JTF restoration exercises/experimentation.
Non-Materiel Solutions: *Training:* Develop a JTF command and control of restoration operations exercise/experiment. Include in CBRND experimentation campaign plan schedule.
- 3. Deficiency:** There is no leader training/education for JTF restoration of operations.
Non-Materiel Solutions: *Training:* Develop training for staffs that are likely to be part of JTF's providing command and control of restoration operations. Nominate as candidate for FY 2009/2010 UNIFIED ENDEAVOR within CBRND experimentation campaign plan.
Leadership: Develop leader education for staffs on command and control of restoration operations.

16.9.3.2 IMA Assessment Summary

N/A

16.10 Task OPSUST 10: Provide JTF command and control of decontamination of strategically significant areas/terrain or facilities**16.10.1 Functional Area Analysis****16.10.1.1 Definition**

To provide the command, control, communications, and planning capabilities required for decontamination of strategically significant areas/terrain or facilities that only a JTF HQ can provide. A JTF HQ may be established by a combatant commander to provide command and control of extensive or complex decontamination operations involving strategically significant areas/terrain or facilities. The decontamination of an area or facility will require a resource-intensive restoration operation.

16.10.1.2 Derivation

UJTL (OP 7.3, OP 1.3.1, OP 5.4, OP 5.5).

16.10.1.2.1 Supported Tasks: STSUST 11, STSUST 12

16.10.1.2.2 Lateral Task: OPSHA 5

16.10.1.2.3 Supporting Tasks: TASUST 24, TASUST 25

16.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Moderate rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.10.2 Functional Needs Analysis**16.10.2.1 Capability and Deficiency Assessment Summary**

Table 16.10-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to provide JTF command of restoration of strategically significant areas/terrain or facilities, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Joint exercises and experiments will be conducted to provide feedback on how a JTF commands extensive or complex decontamination of significant areas/terrain or facilities. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.10-1. OPSUST 10: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	Y ³	G ⁴	G ⁵	G ⁶	Y ⁷	R ⁸	Y ⁹
Near/Mid-Term Overall Capability¹⁰	Y	Y	G	G	G	Y	R	Y
Far-Term Overall Capability¹¹	G ¹²	G	G	G	G	G	G ¹³	G ¹⁴

	FAA Measure	Scale
M1	Procedures and checklists exist to help facilitate the stand up of a JTF for terrain/facilities decontamination mission.	G – Yes, Y – Limited, R – No
M2	Procedures exist for dissolving of the JTF (following achievement of end state).	G – Yes, Y – Limited, R – No
M3	Areas/terrain/facilities to be decontaminated are defined.	G – Yes, Y – Limited, R – No
M4	Directive or mission is provided.	G – Yes, Y – Limited, R – No
M5	Directive contains desired effect and scope of action required.	G – Yes, Y – Limited, R – No
M6	Procedures and checklists exist to help facilitate the change in manning allocation of initial HQ required by terrain/facilities decontamination mission.	G – Yes, Y – Limited, R – No
M7	Joint exercises provide lessons learned on terrain/facilities decontamination mission provided by JTF.	G – Yes, Y – Limited, R – No
M8	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No.

¹ There is no concept/doctrine on how to stand up a JTF for the conduct of extensive or complex decontamination of significant areas/terrain or facilities. Command and control of large-scale decontamination operations is not integrated into leader education.

² Limited. While there are generic procedures to stand up a JTF, there are no TTPs that specifically address standing up of a JTF for an extensive or complex terrain/facilities decontamination mission.

³ Limited. Any SJFHQ staff can dissolve a JTF following achievement of end state, but a JTF specifically for extensive or complex decontamination operations involving significant areas/terrain or facilities has never been stood up and thus never been dissolved.

⁴ Nothing precludes a higher HQ from defining areas/terrain/facilities to undergo decontamination.

⁵ Nothing precludes a higher HQ from providing a directive or mission.

⁶ Nothing precludes a higher HQ from providing a directive or mission that contains desired effect and scope of action required.

⁷ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs and limited training that specifically addresses the change in manning allocation as required by extensive or complex decontamination of significant areas/terrain or facilities.

⁸ No joint exercise or experiment has ever been conducted that would provide feedback on how a JTF commands extensive or complex decontamination of significant areas/terrain or facilities.

⁹ Limited. Depending on the extent of contamination and the decontamination means selected, the procedures may or may not be logistically supportable.

¹⁰ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹¹ Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹² In the far term, JTTPs will improve for all areas.

¹³ Joint exercises and experiments will be conducted to provide feedback on how a JTF commands extensive or complex decontamination of significant areas/terrain or facilities.

¹⁴ Development and acquisition of more efficient and less materiel-intensive decontamination systems will improve the logistical supportability in the far term.

16.10.3 Functional Solution Analysis

16.10.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Concepts/doctrine/TTPs do not exist for extensive or complex terrain/facilities decontamination missions.
Non-Materiel Solutions: *Doctrine:* Develop concepts/doctrine/TTPs for JTF command and control of decontamination operations for extensive or complex terrain/facilities decontamination missions, to include standing up/dissolving the JTF, selecting and defining joint decontamination operation sites, and establishing the manning allocation of initial HQ required by decontamination operation mission.
- 2. Deficiency:** There have been no JTF complex terrain/facilities decontamination missions exercises/experimentation.
Non-Materiel Solutions: *Training:* Develop a JTF command and control of decontamination operations exercise/experiment. Include in CBRND experimentation campaign plan schedule.
- 3. Deficiency:** There is no leader training/education for standing up of a JTF for an extensive or complex terrain/facilities decontamination mission.
Non-Materiel Solutions: *Training:* Develop training for staffs that are likely to be part of JTF's providing command and control of extensive or complex terrain/facilities decontamination mission. Nominate as candidate for FY 2009/2010 UNIFIED ENDEAVOR within CBRND experimentation campaign plan. *Leadership:* Develop leader education for staffs.

16.10.3.2 IMA Assessment Summary

N/A

16.11 Task OPSUST 11: Integrate restoration operations with strategic deployment, sustainment, and redeployment, including NEO and AE operations

16.11.1 Functional Area Analysis

16.11.1.1 Definition

To integrate and deconflict restoration operations with strategic mobility activities required to deploy/redeploy forces and sustain the warfighter. Due to the dubiety of current decontamination capabilities and the absence of internationally accepted decontamination standards, contaminated lift assets may be removed from the strategic lift flow. Therefore, to the maximum extent possible, uncontaminated lift assets will not be used at contaminated ports of embarkation/ports of debarkation (POEs/PODs). Contamination avoidance by lift assets requires the designation of alternate POEs/PODs, identification of transload sites for transload of cargo and passengers from uncontaminated to contaminated lift platforms for movement into contaminated PODs, thorough decontamination of lift platforms, and redeploying forces to internationally recognized decontamination standards (once obtained). Aeromedical evacuation (AE) planning should include TTPs to enable the movement of contagious/contaminated patients.

16.11.1.2 Derivation

UJTL (OP1.1, OP1.1.3, OP1.6, OP4, OP4.6.3, OP7.3, OP7.4, Air Mobility Operations In a Chemical and Biological Environment).

16.11.1.2.1 Supported Task: STSUST 4

16.11.1.2.2 Lateral Task: OPSHA 8

16.11.1.2.3 Supporting Tasks: TASUST 1, TASUST 2, TASUST 3, TASUST 4, TASUST 5, TASUST 6, TASUST 7, TASUST 8, TASUST 9, TASUST 10, TASUST 11, TASUST 12, TASUST 13, TASUST 14, TASUST 15, TASUST 16, TASUST 17, TASUST 18, TASUST 19, TASUST 20, TASUST 21, TASUST 22, TASUST 23, TASUST 24, TASUST 25, TASUST 26, TASUST 27, TASUST 28, TASUST 29, TASUST 30

16.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation (C2.1.3)

3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Limited lift assets. (C2.5.2)
6. High rear-area security. (C2.7.1)
7. Limited host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3.)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3.)

Common Civil Conditions

1. Moderate restraints on action. (C3.1.3.4)

16.11.2 Functional Needs Analysis**16.11.2.1 Capability and Deficiency Assessment Summary**

Table 16.11-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” Any JTF HQ staff has a team of operational planners and command and control specialists, and most have CBRN subject matter experts. This team of experts has the skill to integrate restoration operations with strategic deployment, sustainment, and redeployment (including noncombatant evacuation operations [NEO] and AE) operations, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. Limited capability improvements are forecast for the near/mid term except for DOTMLPF, which should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. Joint exercises/ experiments will be conducted that can provide

feedback on procedures to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that look at issues other than fixed sites. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.11-1. OPSUST 11: Capability and Deficiency Assessment

Capability: SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capability¹	Y ²	Y ³	G ⁴	Y ⁵	G ⁶	Y ⁷	R ⁸	Y ⁹	Y ¹⁰
Near/Mid-Term Overall Capability¹¹	Y	Y	G	Y	G	Y	R	Y	Y
Far-Term Overall Capability¹²	G ¹³	G	G	G	G	G	Y	G	G ¹⁴

	FAA Measure	Scale
M1	CBRN/TIM status in the Joint Operations Area (JOA) impacts strategic deployment, sustainment, and/or redeployment.	G – Yes, Y – Limited, R – No
M2	Alternate and/or diversion POEs/PODs (possibly including unimproved/improvised landing strips) are established to avoid contaminated areas during deployment, sustainment, and redeployment operations.	G – Yes, Y – Limited, R – No
M3	Joint Logistics over the Shore (JLOTS) is planned to avoid contaminated seaports of embarkation/debarkation (SPOEs/SPODs).	G – Yes, Y – Limited, R – No
M4	Uncontaminated lift platforms are limited to operations in uncontaminated ports and cargo/passenger transload site have been identified for transload of deploying forces and sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs.	G – Yes, Y – Limited, R – No
M5	JOA Reception, Staging, Onward Movement, and Integration (RSOI) is planned to avoid CBRN/TIM contaminated areas.	G – Yes, Y – Limited, R – No
M6	All cargo is decontaminated to internationally accepted standards (when available) prior to redeployment.	G – Yes, Y – Limited, R – No
M7	Direction is provided to conduct patient evacuation including procedures for the movement of contagious/contaminated casualties.	G – Yes, Y – Limited, R – No
M8	Direction for the protection and/or decontamination of evacuees is provided in NEO plans.	G – Yes, Y – Limited, R – No
M9	Joint exercises/experimentation are conducted to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations.	G – Yes, Y – Limited, R – No

¹ No concepts or doctrine relating to this issue have been developed. Leader education does not address this issue.

² Limited. Any SJFHQ staff can determine how CBRN status in the JOA impacts strategic deployment, sustainment, and/or redeployment, but there are no TTPs that specifically address issues affecting how to do this.

³ Limited. Any SJFHQ staff can establish alternate PODs/POEs, but there are no TTPs that specifically address establishing PODs/POEs to avoid contaminated areas during deployment, sustainment, and redeployment operations.

⁴ Nothing precludes JLOTS planning in response to any sort of contamination and it is anticipated as a requirement for any sort of SPOE/SPOD disruption.

⁵ Limited. Any SJFHQ staff can develop, identify, and monitor the operations of a transload site. However, there are no TTPs that specifically address moving sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated PODs. Any such procedures are currently manual making the process slow, labor-intensive, and subject to human error.

⁶ Nothing precludes planning of this type. Contamination reports must be immediately available to execute plans.

⁷ Any SJFHQ can coordinate with the Department of Defense Explosive Safety Board (DDESB) to review and approve plans for the lease, transfer or disposal of DoD real property when contamination exists or is suspected to exist. There are no internationally accepted standards for decontamination completeness.

⁸ Limited. Any SJFHQ staff can coordinate patient evacuation, but there is little in the way of TTP that specifically address the movement of contagious/contaminated casualties.

⁹ Limited. Any SJFHQ staff can develop NEO plans, but there is little in the way of TTPs that specifically address the protection and/or decontamination of evacuees for incorporation into NEO plans.

¹⁰ Few joint exercises/ experiments have been conducted that can provide feedback on procedures to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations. RESTOPS ACTD must be examined when published to determine whether any information is relevant.

¹¹ DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation.

¹² Continued DOTMLPF enhancements will result from exercise and wargame lessons learned.

¹³ In the far term, DOTMLPF improvements across the spectrum will provide a capability of “green”.

¹⁴ Joint exercises/ experiments will be conducted that can provide feedback on procedures to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations. Lessons learned from RESTOPS ACTD will be integrated into future exercises and experimentation that looks at issues other than fixed sites.

16.11.3 Functional Solution Analysis

16.11.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** There are no internationally accepted standards for decontamination completeness.
Non-Materiel Solutions: Doctrine: Develop and negotiate universally accepted standards for decontamination completeness. These standards must be in place prior to need.
- 2. Deficiency:** No TTPs that specifically address the movement of contagious/contaminated casualties.
Non-Materiel Solutions: Doctrine: Develop TTPs that specifically address the movement of contagious/contaminated casualties.
- 3. Deficiency:** No TTPs that specifically address the protection and/or decontamination of evacuees for incorporation into NEO plans.
Non-Materiel Solutions: Doctrine: Develop TTPs that specifically address the protection and/or decontamination of evacuees for incorporation into NEO plans.
- 4. Deficiency:** Few joint exercises/ experiments have been conducted that can provide feedback on procedures to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations.
Non-Materiel Solutions: Training: Develop exercises/ experiments that can provide feedback on procedures to integrate restoration operations with strategic deployment, sustainment, and redeployment (including NEO and AE) operations.
- 5. Deficiency:** RESTOPS ACTD results are not yet published.
Non-Materiel Solutions: Training: RESTOPS ACTD must be examined when published to determine whether any information is relevant.
- 6. Deficiency:** No concepts or doctrine exist.
Non-Materiel Solutions: Doctrine: Develop concepts and doctrine that provide information on how to approach this issue.
- 7. Deficiency:** No leader education exists.
Non-Materiel Solutions: Leadership: Develop leader education to assist commanders and staffs who must deal with these issues.

16.11.3.2 IMA Assessment Summary

N/A

16.12 Task OPSUST 12: Coordinate decontamination procedures for processing contaminated remains in the JOA

16.12.1 Functional Area Analysis

16.12.1.1 Definition

To plan, execute, and control decontamination procedures for processing contaminated remains in the Joint Operations Area (JOA). In the event that large numbers of casualties need decontamination before they can be processed or transported, operational coordination of administrative, facility, terrain, personnel, and equipment requirements will be necessary. Separate procedures may need to be established commensurate with type of contamination (chemical, biological, or radiological).

16.12.1.2 Derivation

UJTL (OP 7.3, OP 4.4.1.2, OP 5.4.5).

16.12.1.2.1 Supported Task: STSUST 1

16.12.1.2.2 Lateral Task: OPSHA 8

16.12.1.2.3 Supporting Task: TASUST 4

16.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. Moderate rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.12.2 Functional Needs Analysis

16.12.2.1 Capability and Deficiency Assessment Summary

Table 16.12-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow.” The Joint Mortuary Affairs Office (JMAO) is responsible for integrating Mortuary Affairs (MA) support throughout the JOA including operations in a CBRN environment. This team of experts has the skill to coordinate decontamination procedures for processing contaminated remains in the JOA, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. No capability improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.12-1. OPSUST 12: Capability and Deficiency Assessment

Capability: JTF HQ	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17
Current Overall Capability¹	G ²	G ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹	Y ¹⁰	Y ¹¹	Y ¹²	Y ¹³	R ¹⁴	Y ¹⁵	R ¹⁶	Y ¹⁷	Y ¹⁸
Near/Mid-Term Overall Capability	G	G	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	R	Y	R	Y	Y
Far-Term Overall Capability	G ¹⁹	G	G	G	G	G	G	G	G	G	G	G	G	G ²⁰	G	G	G

	FAA Measure	Scale
M1	Records of contaminated deceased/missing personnel in JOA are accurately maintained.	G – Yes, Y – Limited, R – No
M2	Records of contaminated personal effects in JOA are accurately maintained.	G – Yes, Y – Limited, R – No
M3	Personal effects of contaminated deceased/missing in JOA are accurately processed.	G – Yes, Y – Limited, R – No
M4	Decision on mortuary affairs policy for contaminated remains is made in a timely fashion resulting in no delay in the disposition of remains.	G – Yes, Y – Limited, R – No
M5	Operations include establishment of mortuary affairs decontamination collection points in theater.	G – Yes, Y – Limited, R – No
M6	Contaminated remains are correctly identified.	G – Yes, Y – Limited, R – No
M7	Contaminated remains are re-identified after disposition.	G – Yes, Y – Limited, R – No
M8	Temporary interment facilities for contaminated remains are established.	G – Yes, Y – Limited, R – No
M9	Mortuary Affairs Decontamination Collection Point (MADCP) tasks are included in planning.	G – Yes, Y – Limited, R – No
M10	Contaminated remains are recovered at the end of CBRN/TIM attacks.	G – Yes, Y – Limited, R – No
M11	Remains are recovered from temporary interment sites in the JOA and disposition determined (after end of operations in theater).	G – Yes, Y – Limited, R – No
M12	Procedures and checklists exist to facilitate the ability to coordinate decontamination procedures for processing contaminated remains in the joint operational area.	G – Yes, Y – Limited, R – No
M13	Procedures exist to facilitate personnel to search for, recover, identify, care for, and evacuate or inter deceased personnel (without MADCP units).	G – Yes, Y – Limited, R – No
M14	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No
M15	Procedures and checklists exist to facilitate the ability to process contaminated remains in the JOA for air shipment.	G – Yes, Y – Limited, R – No
M16	Disposition policies are in effect for handling of remains in a timely fashion.	G – Yes, Y – Limited, R – No
M17	Joint exercises and experimentation provide lessons learned on coordinating decontamination procedures for processing contaminated remains in the JOA.	G – Yes, Y – Limited, R – No

¹ Limited. MA doctrine, training, personnel, organizations, and facilities exist. However, they are limited in their ability to process mass fatalities following a CBRN attack.

² Nothing precludes a JMAO/unit staff from accurately maintaining records of contaminated deceased/missing personnel in JOA.

³ Nothing precludes a JMAO/unit staff from accurately maintaining records of contaminated personal effects in JOA.

⁴ Limited. Any JMAO/unit staff can coordinate the accurate processing of personal effects of contaminated deceased/missing in JOA, but no TTPs exist to aid the process.

⁵ Limited. Any JMAO/unit staff can coordinate making decisions in a timely fashion on the disposition of contaminated remains resulting in no delay in the disposition of remains, but no TTPs exist to help the decision-making process.

⁶ Limited. Nothing prevents the JMAO from coordinating the establishment of MADCP operations in theater whenever the threat of CBRN warfare exists, but leader education and joint exercises do not adequately incorporate MADCP operations.

⁷ Limited. Nothing prevents JMAO/unit staff from coordinating with a MADCP to ensure correctly identifying contaminated remains, but no TTPs exist to aid the process.

⁸ Limited. Nothing prevents a prevents JMAO/unit staff from coordinating with a MADCP to ensure reidentifying contaminated remains after disposition but no TTPs exist to aid the process.

⁹ Limited. Any JMAO/unit staff can coordinate to establish temporary interment facilities, but no TTPs exist to facilitate the process and to help operational staffs integrate this process into their planning.

¹⁰ Limited. Any JMAO/unit staff can include MADCP tasks in planning, but leader education and joint exercises do not adequately incorporate MADCP operations.

¹¹ Limited. Nothing prevents JMAO/unit staff from coordinating with a MADCP to ensure contaminated remains are being recovered at the end of CBRN attacks, but leader education and joint exercises do not adequately incorporate MADCP operations. Also, no TTPs exist to facilitate the process and to help operational staffs integrate this process into their planning.

¹² Limited. Any JMAO staff can coordinate to plan, execute, and control recovering of remains from temporary interment sites in the JOA, but few TTPs exist to guide the process.

¹³ Limited. Any JMAO staff can develop procedures and checklists, but few TTPs exist to guide the process.

¹⁴ No TTPs exist to facilitate this process by non-MADCP units.

¹⁵ Limited. Depending on the extent of contamination and the decontamination means selected, the procedures may or may not be logistically supportable.

¹⁶ No TTP exists to facilitate this process.

¹⁷ Limited. MA policies exist. However, they are limited in their applicability to contaminated remains.

¹⁸ Limited. Any joint exercise/experiment that includes MA tasks can provide lessons learned, but few if any joint exercises have been conducted that specifically address MADCP/coordinating decontamination procedures for processing contaminated remains in the JOA.

¹⁹ In the far term, DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

²⁰ Development and acquisition of more efficient and less materiel-intensive decontamination systems will improve the logistical supportability in the far term.

16.12.3 Functional Solution Analysis

16.12.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** A joint MA Staff Officers Course does not exist.
Non-Materiel Solutions: *Doctrine:* Develop a joint MA Staff Officers Course and include CBRN considerations.
2. **Deficiency:** JMAO/MADCP-specific training/education is not incorporated throughout the JPME system.
Non-Materiel Solutions: *Leadership:* Incorporate JMAO/MADCP-specific training throughout the JPME system.
3. **Deficiency:** Joint exercises/experiments do not specifically address the JMAO coordinating decontamination procedures for processing contaminated remains in the JOA.
Non-Materiel Solutions: *Training:* Develop joint training exercises and experiments specifically addressing JMAO/MADCP and coordinating decontamination procedures for processing contaminated remains in the JOA.
4. **Deficiency:** Few or no TTPs exist to facilitate the coordination of decontamination procedures for processing contaminated remains in the JOA.
Non-Materiel Solutions: *Doctrine:* Develop broad TTPs to facilitate the coordination of decontamination procedures for processing contaminated remains in the JOA.

16.12.3.2 IMA Assessment Summary

N/A

16.13 Task OPSUST 13: Coordinate salvage of materials that require decontamination**16.13.1 Functional Area Analysis****16.13.1.1 Definition**

To plan, execute, and control the salvage of those critical materials that are determined to require decontamination. In the event that large amounts/numbers of critical material or equipment require both decontamination and salvage, prior to retrograde to the continental United States or movement to another theater, operational coordination of salvage in conjunction with decontamination will be required.

16.13.1.2 Derivation

UJTL (OP 7.3, OP 4.5.4).

16.13.1.2.1 Supported Task: STSUST 6**16.13.1.2.2 Lateral Task: OPSHA 8****16.13.1.2.3 Supporting Task: TASUST 27****16.13.1.3 Condition**

Perform this task under conditions of:

Physical

1. Persistent CBRN/TIM effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Partially completed mission preparation. (C2.1.3)
3. Weak forces assigned. (C2.2.1)
4. Negligible personnel experience. (C2.2.4.5)
5. Poor joint staff integration. (C2.3.1.1)
6. High rear-area security. (C2.7.1)
7. Moderate host-nation support. (C2.8.5)
8. Conventional and terrorist threat form. (C2.9.2)
9. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

16.13.2 Functional Needs Analysis

16.13.2.1 Capability and Deficiency Assessment Summary

Table 16.13-1 discusses the only capability that currently exists to perform the task to the designated standards. No other capability is projected that will accomplish this task.

Current Capability and Deficiency

The current assessment is “yellow”. Any JTF HQ staff has a team of operational planners and logistics and salvage specialists, and most have CBRN subject matter experts. This team of experts has the skill to coordinate salvage of critical materials that require decontamination, but there are some deficiencies that negatively impact on their ability to do so.

Projected Near/Mid-Term Capability and Deficiency

No other capabilities are currently projected for the near/mid term. No capability improvements are forecast for the near/mid term.

Projected Far-Term Capability and Deficiency

DOTMLPF should improve in all deficient areas as a result of initiatives that use data resulting from focused experimentation. JTTPs, training and exercises, and education will all improve leading to a far-term assessment of “green.”

Table 16.13-1. OPSUST 13: Capability and Deficiency Assessment

SJFHQ	M1	M2	M3	M4	M5	M6	M7	M8
Current Overall Capability¹	Y ²	Y ³	Y ⁴	Y ⁵	Y ⁶	Y ⁷	Y ⁸	Y ⁹
Near/Mid-Term Overall Capability	Y	Y	Y	Y	Y	Y	Y	Y
Far-Term Overall Capability	G ¹⁰	G	G	G	G	G	G	G

	FAA Measure	Scale
M1	Procedures and checklists exist to facilitate the ability to recover and decontaminate critical items.	G – Yes, Y – Limited, R – No
M2	Procedures and exist for hazardous material that cannot be processed in accordance with appropriate regulations.	G – Yes, Y – Limited, R – No
M3	Procedures and checklists exist to facilitate the ability to dispose of hazardous material appropriately.	G – Yes, Y – Limited, R – No
M4	Procedures and checklists exist to facilitate the ability to transport contaminated materials to rear areas or designated sites.	G – Yes, Y – Limited, R – No
M5	Procedures and checklists exist to facilitate the ability to coordinate salvage of materials that require decontamination.	G – Yes, Y – Limited, R – No
M6	Procedures exist to properly dispose of contaminated material.	G – Yes, Y – Limited, R – No
M7	Decontamination procedures are logistically supportable.	G – Yes, Y – Limited, R – No
M8	Joint exercises/experimentation provide feedback on how a JTF would coordinate salvage of materials that require decontamination	G – Yes, Y – Limited, R – No

¹ Limited. There is DOTMLPF in place that addresses salvage, but there are no TTPs and limited training that specifically addresses coordinating the salvage of materials that require decontamination.

² Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs that addresses the recovery and decontamination of critical items.

³ Limited. Although there are regulations that address the processing of hazardous materials and any staff can develop TTPs to facilitate complying with regulation, there are no TTPs that link formerly CBRN contaminated materials and address the process by which they become hazardous material defined in accordance with appropriate regulations.

⁴ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs that address the ability to dispose of hazardous material appropriately.

⁵ Limited. Any SJFHQ staff can develop procedures and checklist, but there are no TTPs that address the ability to transport contaminated materials to rear areas or designated sites.

⁶ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs that addresses the ability to coordinate salvage of materials that require decontamination.

⁷ Limited. Any SJFHQ staff can develop procedures and checklists, but there are no TTPs that specifically address facilitating the ability to properly dispose of contaminated material.

⁸ Limited. Current through the mid term, decontamination procedures will remain logistically difficult to support. Improvements will be seen in the far term with the fielding of more logistically supportable decontamination alternatives.

⁹ Limited. Few if any exercises/experiments have been conducted that specifically addresses coordinating the salvage of materials that require decontamination.

¹⁰ In the far term, DOTMLPF enhancements across the board, made possible by focused experimentation and lessons learned from exercises will improve all measures to a “green” rating.

16.13.3 Functional Solution Analysis

16.13.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** No TTPs addresses the coordination of salvage materials that require decontamination.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on the coordination of salvage materials that require decontamination.
2. **Deficiency:** Salvage exercises and experiments that include decontamination issues have been limited.
Non-Materiel Solutions: *Training:* Develop exercises/experiments on the coordination of salvage materials that require decontamination. Incorporate lessons learned from RESTOPS ACTD into future exercises.
3. **Deficiency:** There is no leader training/education for salvage operations in a CBRN environment.
Non-Materiel Solutions: *Training:* Develop training for staffs on the coordination of salvage materials that require decontamination. *Leadership:* Develop leader education for staffs on the coordination of salvage materials that require decontamination.

16.13.3.2 IMA Assessment Summary

N/A

16.14 Task OPSUST 14: Conduct CBRN elimination operations

16.14.1 Functional Area Analysis

16.14.1.1 Definition

To execute theater CBRN elimination operations. A joint force commander may be directed by the combatant commander to conduct military operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, U.S. military operations across the range of military operations also may entail a requirement to eliminate, or support the elimination of, CBRN weapons or capabilities. CBRN elimination is the systematic removal of a capability within a nation or organization to develop, deploy, or employ CBRN weapons. The degree or extent of elimination is a strategic objective, defined by a strategic end state, and ranges from complete removal of all capability (including research, production, and training regarding any form of CBRN weapon) to the focused removal of specific capabilities. This task encompasses three primary subtasks: *Executing Exploitation* (locating, characterizing, and securing CBRN materiel, weapons, equipment, personnel, and infrastructure, and developing appropriate forensic evidence); *Executing Disposition* (destroying, dismantling, rendering safe, removing, transferring, or otherwise verifiably disposing of CBRN materiel, weapons, equipment, and infrastructure); and *Executing Monitoring and Redirection* (monitoring, inspecting, and redirecting/converting the CBRN infrastructure).

16.14.1.2 Derivation

Combatant Commander's Planning Guide for WMD Elimination Operations (Draft), TM 60A-1-111 (S) – CBRNE EOD Operations.

16.14.1.2.1 Supported Task: STSUST 14

16.14.1.2.2 Lateral Task: OPSHA 1

16.14.1.2.3 Supporting Tasks: TASUST 28, TASUST 29, TASUST 30

16.14.1.3 Condition

Perform this task under conditions of:

Physical

1. Chemical, biological, radiological or nuclear threat form. (C1.3.3.1-3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations. (C2.1.1.7)
 - c. Limited host-nation support. (C2.8.5)

2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host-nation support. (C2.8.5)

Common Military Conditions

1. Limited personnel expertise. (C2.2.4.5)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3.)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3.)

Common Civil Conditions

1. Moderate restraints on action. (C3.1.3.4)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

CHAPTER 17. TACTICAL SUSTAIN TASKS

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17.0 Tactical Sustain

17.0.1 Introduction

At the Tactical (TA) level of war, battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. Thirty Tactical Sustain (SUST) tasks were identified in the chemical, biological, radiological, and nuclear (CBRN) Functional Area Analysis (FAA). An additional task was added associated with isolation operations, which is a recently added component of elimination operations. However, the detailed analysis of the elimination tasks has been deferred to the Joint Requirements Office for Chemical, Biological, Radiological, and Nuclear Defense (JRO-CBRND)–sponsored FAA/Functional Needs Analysis (FNA) of the weapons of mass destruction (WMD) elimination and interdiction functional areas.

This chapter, detailing the Tactical Sustain (TASUST) area, restates relevant information from the CBRND Defense (CBRND) FAA, including a description of each of the 30 TASUST tasks, derivation of the task, an indication of other linked tasks, and the pertinent conditions. The FNA section addresses the capability and deficiency analysis and a brief description of potential near-term changes. Once all the capabilities are considered, the assessment concludes with a separate, overarching look at the entire capability spectrum to identify remaining gaps and/or synergies. The Functional Solutions Analysis (FSA) section addresses possible solutions for the deficiencies identified in the FNA section. These are categorized into materiel or non-materiel. The non-materiel solutions are addressed first and reflect one or more of the six areas of DOTLPPF: doctrine, organization, training, leadership, personnel, and facilities. If there is no non-materiel solution to the deficiencies, then materiel solutions are considered. These encompass broad approaches that are not system-specific. These potential materiel approaches are addressed and evaluated in the Ideas for Materiel Solutions (IMA) section. The IMAs provide a possible near- or far-term resolution to identified deficiencies within the individual capabilities.

Most of the TASUST tasks involve the process of decontamination of such things as equipment, vehicles, weapons, facilities, open areas, and personnel. According to current doctrine, the possible spectrum of decontaminants is quite broad, including standard, nonstandard, and natural materials. This effort limits consideration of decontaminants within the capability assessment to those items that are readily available to units and personnel. Typically, these encompass primarily standard and natural decontaminants.

Tasks associated with personnel, such as decontaminating casualties or diagnosing and treating CBRN effects, also include military working animals (MWAs), specifically military working dogs (MWDs). Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel.

The remaining tasks address CBRND medical diagnostics and medical therapeutics, as well as relevant CBRND joint tactical and Service component tactical tasks.

17.0.2 FNA Summary

Table 17.0-1 below summarizes the overall current and projected capability to perform the TASUST tasks identified in the CBRND FAA. The overall capability to conduct these tasks in the current time frame is assessed as “yellow.” There are key deficiencies in the U.S. Department of Defense’s (DoD’s) ability to decontaminate sensitive equipment, aircraft, fixed facilities and open areas, along with deficiencies in producing potable water in a contaminated environment (on an individual basis). It is projected that the overall status will remain “yellow” in the near/mid term in spite of the fielding of item-specific, initial decontamination capabilities resulting from targeted developmental programs and technology demonstrations. This status is primarily due to ongoing logistical challenges in the decontamination of open areas and remains, as well as shortfalls in the low-level verification of decontamination efficacy for chemical and biological agents.

More specific decontamination capability gaps revealed by the analysis include efficacy, the ability to decontaminate a wider range of agents/hazards, thorough decontamination processing rates, materiel compatibility, and logistics challenges presented when conducting decontamination operations. Future decontamination processes should achieve efficacy levels that will allow unprotected post-decontamination exposures for long periods with minimal hazards, preferably meeting both civilian and military standards, although specific policy guidance is lacking on acceptable levels for residual contamination levels. Capabilities are needed to decontaminate all potential residual hazards in the battlespace that may require multiple processes, systems, and/or decontaminants to achieve. Future processes and systems should lessen the time required to carry out decontamination to provide warfighters more rapid relief from Mission-Oriented Protective Posture (MOPP). Decontamination processes, systems, and decontaminants must be compatible with a wide range of materiel and facilities to avoid degrading readiness and capabilities due to damage from decontamination processes. Technology thrusts are needed to lessen logistical burdens and cut manpower requirements associated with decontamination for both current and existing developmental programs.

To determine current decontamination capabilities, the following standard decontaminants, systems and other capabilities to perform decontamination at the immediate, operational and thorough levels were evaluated (identified as “I” for immediate, “O” for operational, and “T” for thorough below each measure in the capability/deficiency assessment tables that follow):

M291 Skin Decontamination Kit (SDK). The M291 has six packets of applicator pads filled with decontamination powder. The powder absorbs and neutralizes liquid chemical agents on skin and personal nonsensitive equipment.

M100 Sorbent Decontamination System (SDS). The M100 consists of two 0.7-pound bags of powdered reactive sorbent and two mitts. It is used on small areas that must be touched and crew-served weapons.

M295 Individual Equipment Decontamination Kit. One M295 pouch contains four wipe-down mitts used on masks/hoods, gloves, helmet, and weapons using the same powder as the M100 SDS.

M17-series Lightweight Decontamination System (LDS). A relatively small engine-powered pump and water-heating unit with two wand assemblies and 1580–3000 gallon collapsible water tanks. Lightweight Decontamination Systems are primarily used for operational and thorough decontamination of vehicles and equipment. They may also be used for personnel showers.

M12A1 Power-Driven Decontamination Apparatus (PDDA). The M12A1 is a large engine-powered pump and water-heating unit with two spray wand assemblies and a metal 500-gallon tank capable of mixing decontaminants and water in the tank. It is an aging system used for larger-scale decontamination missions to include terrain decontamination. Only the Army currently utilizes the M12A1.

Super Tropical Bleach (STB). A standard military decontaminant utilized in powder form or diluted with water as slurry.

High-Test Hypochlorite (HTH). A standard military decontaminant utilized in water-diluted solution mixtures.

Various other existing capabilities that are used to support decontamination processes were also evaluated. Many standard soaps and detergents are readily available and commonly used to remove but not neutralize contamination. Soaps and detergents are the primary decontaminants used to remove radioactive fallout or other particles. Many common disinfectants are effective against non-spore-forming biological agents. Decontamination sites utilize most of the existing decontamination systems in accordance with doctrine and tactics, techniques, and procedures (TTPs) to methodically carry out various decontamination processes. Naval ships possess countermeasures washdown systems (CMWDs) used to prewet exterior shipboard surfaces when it is suspected the ship may become contaminated and to assist with post-event decontamination efforts. Firemain and steam sources available on ships can also assist with decontamination. Physical removal of contamination may also be specified, particularly for ships undergoing maintenance and in some terrain decontamination scenarios.

To determine near-/mid-/far-term decontamination capabilities, current ongoing developmental decontamination programs were assessed assuming that these programs would meet all specified key performance parameters. The following developmental programs to perform decontamination at the immediate, operational and thorough levels were evaluated (identified as “I,” “O,” and “T” below each measure in the capability/deficiency assessment tables):

- Joint Service Personnel/Skin Decontamination System (JSPDS). JSPDS will replace the M291 Skin Decontaminating Kit. All four Services are participating in this program. Increment I will provide operational capabilities equal to, and efficacy capabilities greater than, the M291 Skin Decontaminating Kit. Increment II capabilities will address percutaneous hazards for which existing systems (i.e., M291 Skin Decontaminating Kit) are not effective and add system capabilities to include decontamination of personnel with open wounds, thorough whole-body decontamination, radiological decontamination, and handling of contaminated personnel remains.

- Joint Service Transportable Decontamination Systems (JSTDS). JSTDS will develop two decontamination systems, small-scale and large scale. The small-scale system (JSTDS-SS) will replace all existing M17-series Lightweight Decontamination Systems in Service inventories. All four Services are participating in this program. The large-scale system (JSTDS-LS) will replace the M12A1 system used by the Army and will also be employed by the Air Force. Both small- and large-scale decontamination systems will be developed using an incremental approach. Increment I will provide improved capabilities over current systems to decontaminate tactical and nontactical vehicles, ship exterior surfaces, crew-served weapons, aircraft, and aircraft support equipment, building/facility exteriors, and terrain. Increment II will focus on improving overarching decontamination processes, efficacy, and system capabilities for operational and thorough decontamination of equipment, aircraft, and nonsensitive building/facility interior spaces.
- Joint Portable Decontamination System (JPDS). JPDS will replace capabilities formerly provided by the M11 and M13 Decontamination Apparatuses using Decontamination Solution #2 (DS-2). All Services stopped using DS-2 during FY2004 due to storage and health hazards. All Services except the Marine Corps are participating in this program. Increment I will provide initial or improved capabilities to decontaminate a broad range of equipment (e.g., ships, tactical vehicles, and crew-served weapons). In addition, JPDS may be used for immediate decontamination of individual equipment. JPDS will be used with existing approved soaps to perform decontamination operations on aircraft and aircraft support equipment. Increment II will focus on improving decontamination processes, efficacy, and system capabilities to include thorough decontamination of select aircraft and nonsensitive building/facility interior spaces.
- Joint Service Sensitive Equipment Decontamination (JSSED). JSSED will provide a new capability. All four Services are participating in this program. Increment I will provide initial or improved capabilities to decontaminate sensitive equipment. Increment I improvements will standardize sensitive equipment decontamination processes, lessen potential to damage or degrade sensitive equipment, and provide greater assurance that decontaminated items can be safely handled and employed after being decontaminated. Increment II will focus on further improving decontamination efficacy and range of agents that can be decontaminated, lessen time required for decontamination cycles, eliminate equipment degradation, and provide initial capabilities for JSSED to decontaminate large sensitive equipment items.
- Joint Platform Interior Decontamination (JPID). JPID will provide a new capability. All Services except the Marine Corps are participating in this program. Increment I will provide initial or improved capabilities to decontaminate vehicles, ships, fixed-site facilities, aircraft, and mobile maintenance facility interiors. Increment I improvements will lessen the potential to damage or degrade sensitive equipment and provide greater assurance that decontaminated interior spaces can be safely occupied after being decontaminated. Increment II will focus on further improving decontamination efficacy and the range of agents that can be decontaminated, lessen time required for decontamination processes, allow for the decontamination of aircraft cargo spaces and cargo while in flight, and eliminate equipment degradation.

There are also key deficiencies in CBRN diagnosis and treatment of personnel and MWDs. First, in regards to chemical exposure diagnostics, there are no definite clinical tests to confirm mustard agent or phosgene exposure. This lack is important since signs and symptoms of mustard and phosgene exposure can be delayed and may not be immediately recognizable to medical and veterinary staff. Signs and symptoms of early stages of biological agent infection are frequently nonspecific; consequently, there is a lack of capability to identify illnesses during prodromal stages. In some cases, clinical diagnosis can presumptively identify infected personnel and MWDs during presymptomatic and prodromal stages; however, this task usually requires reliable sampling capabilities, which currently do not exist. Signs and symptoms of radiation exposure can easily be confused for those caused by other conditions. For example, many acute radiation syndrome prodromal symptoms can also be caused by psychological stress. For this reason, clinical diagnosis is critical to diagnosing exposed personnel and MWDs. However, there is no clinical test that can rapidly identify personnel and MWDs that either were exposed to radiation or have internalized radioactive contamination.

In terms of treatment capabilities, there is a lack of Food and Drug Administration (FDA)–approved chemical exposure countermeasures that can be self- or buddy-administered (Self/Buddy Aid is basically limited to autoinjectors for nerve agent exposure). Furthermore, many, if not most, of these countermeasures have major contraindications. In addition, there is a lack of effective antivirals and antitoxins for personnel and MWDs infected by viruses and toxins of interest, respectively. For example, there are no effective antivirals for Ebola/Marburg viruses, the equine encephalitis viruses, and smallpox; and there are no effective antitoxins for ricin, SEB, and T-2 mycotoxins. Radiological exposure countermeasures are primarily limited to therapeutics and symptomatic care. Though there are chelating, blocking, diluting, and mobilizing agents, many of these must be administered promptly after internalization or they lose their effectiveness. Also, many can have toxic effects on the body.

The capability assessment provided by this FNA is provided as a tool to show where capability gaps exist. All capability gaps will continue to be prioritized by the Joint Priority List (JPL) in accordance with Paragraph 3.2.1.5 of the Implementation Plan for the Management of the Chemical and Biological Defense Program. The FNA/FSA is not used to specifically support the planning, programming and budgeting for the Chemical and Biological Defense Program but is used to support the Joint Capabilities Integration and Development System (JCIDS) process.

Table 17.0-1. Tactical Sustain Summary FNA Findings

Task Number	CBRN Tactical Sustain Task Title	Capabilities		
		Current	Near/Mid-Term	Far-Term
TASUST 1	Decontaminate personnel.	●	●	●
TASUST 2	Decontaminate casualties.	●	●	●
TASUST 3	Decontaminate wounds.	●	●	●
TASUST 4	Decontaminate remains.	●	●	●

Task Number	CBRN Tactical Sustain Task Title	Capabilities		
		Current	Near/Mid-Term	Far-Term
TASUST 5	Diagnose chemical effects on personnel and MWAs.	●	●	●
TASUST 6	Diagnose biological effects on personnel and MWAs.	●	●	●
TASUST 7	Diagnose radiological effects on personnel and MWAs.	●	●	●
TASUST 8.	Treat chemical effects on personnel and MWAs.	●	●	●
TASUST 9	Treat biological effects on personnel and MWAs.	●	●	●
TASUST 10	Treat radiological effects on personnel and MWAs.	●	●	●
TASUST 11	Decontaminate individual and crew-served weapons.	●	●	●
TASUST 12	Decontaminate vehicles, weapons, and nonsensitive equipment.	●	●	●
TASUST 13	Decontaminate sensitive equipment.	●	●	●
TASUST 14	Decontaminate ship exteriors.	●	●	●
TASUST 15	Decontaminate ship interiors.	●	●	●
TASUST 16	Decontaminate assault craft.	●	●	●
TASUST 17	Decontaminate aircraft.	●	●	●
TASUST 18	Decontaminate fixed facility exteriors.	●	●	●
TASUST 19	Decontaminate fixed facility interiors.	●	●	●
TASUST 20	Decontaminate open areas.	●	●	●
TASUST 21	Decontaminate cargo and supplies, including POL, ammunition, and packaged food.	●	●	●
TASUST 22	Conduct transload operations.	●	●	●

Task Number	CBRN Tactical Sustain Task Title	Capabilities		
		Current	Near/Mid-Term	Far-Term
TASUST 23	Produce potable water in a contaminated environment.	●	●	●
TASUST 24	Conduct tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.	●	●	●
TASUST 25	Assess the impact of restoration activities on tactical objectives.	●	●	●
TASUST 26	Provide tactical guidance to forces with contaminated units.	●	●	●
TASUST 27	Conduct salvage operations to recover critical materiel.	●	●	●
TASUST 28	Conduct exploitation operations.	N/A	N/A	N/A
TASUST 29	Conduct disposition/destruction operations.	N/A	N/A	N/A
TASUST 30	Conduct monitoring and redirection operations.	N/A	N/A	N/A
OVERALL		●	●	●

17.0.3 FSA Summary

The paragraphs below summarize the assessment of all potential doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) (non-materiel and materiel) solutions for the capability gaps identified in the FNA section. The materiel approaches address current, developmental, and emerging technologies for possible materiel solutions.

17.0.3.1 DOTMLPF

The DOTMLPF solutions identified in this chapter are associated primarily with decontamination and CBRND medical operations for joint forces. Non-materiel and materiel solutions have been identified. Non-materiel solutions include such things as development of TTPs for operational and thorough decontamination of sensitive equipment and fixed facilities (interior and exterior), along with applicable training programs. Non-materiel solutions for the treatment of personnel and MWAs involve the updating of doctrine and training to include most up-to-date treatment guidelines. Remaining materiel requirements include the need for decontaminants that are nontoxic, noncorrosive, and environmentally friendly. These decontaminants must neutralize agents on a variety of surfaces, such as aircraft skin and sensitive equipment, while using little or no water. In addition, they must be compatible with each other. Other remaining decontamination materiel requirements include application devices that allow

for decontamination of porous surfaces, along with hard-to-reach and large areas while protecting the operator from spray-back or extensive individual protective equipment (IPE) requirements. Remaining materiel requirements for the treatment and diagnosis of personnel and MWAs includes the development of therapeutics and diagnostic systems.

17.0.3.2 IMA

The following are the Key Attributes for Sustain. The near- to mid-term procedures and equipment used to support operational and thorough decontamination of personnel and their associated equipment must be improved to significantly increase throughput while reducing personnel and logistics support. Decontamination of individual equipment and weapons (not sensitive) should eliminate the need for manual scrubbing and provide for throughput rates sufficient to support operational decontamination of personnel. Standard equipment coatings should be developed to prevent agent penetration and/or neutralize the agent. The far-term operational decontamination capabilities should eliminate the requirement for thorough decontamination. This may be accomplished through a combination of IPE design, new technology, and TTPs to allow individuals to remove contaminated IPE without logistical support or assistance from other personnel. All CBRN IPE should be capable of being decontaminated and reissued. Future decontamination capabilities should be capable of removing contamination from equipment down to a level that allows its return to the continental United States (CONUS).

Table 17.0-2 summarizes possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment for decontamination tasks. These approaches are in various stages of development. Therefore, some are more readily applicable than others. There are seven IMAs that relate to decontaminants that remove chemical and biological agents through a chemical process and an additional six that remove chemical and biological agents through physical processes. Additionally, there are 10 IMAs that could resolve identified deficiencies in current applicators used for decontamination operations throughout the joint forces.

Table 17.0-3 summarizes possible materiel approaches that address the remaining materiel requirements of the DOTMLPF assessment for the treatment and diagnosis tasks.

Table 17.0-2. Decontamination IMAs

Materiel Approach	Description
<i>Chemical Processes</i>	
1. Enzymes <ul style="list-style-type: none"> • Stored physical state: powder, liquid • Delivered physical state: liquid, foams, gels, aerosols • Related system(s): containment 	Based on highly specialized catalysts of biological derivation that speed up the rate of reactions at physiological temperatures. Though enzymes can be stored in powder form, enzymatic-based decontaminants are typically delivered in buffered water solutions. A particular advantage of enzyme systems is that they are generally nontoxic, noncorrosive, nonflammable, and environmentally safe. Enzymes of interest include organophosphorous acid anhydrolase (OPAA), squid diisopropylfluorophosphotase (DFPase), and organophosphorous hydrolase (OPH).
2. Aqueous oxidants/nucleophiles <ul style="list-style-type: none"> • Stored physical state: liquid, powder • Delivered physical state: liquid, foams, gels, wipes, aerosols, • Related system(s): containment 	Aqueous solutions containing oxidants and nucleophiles that neutralize chemical and biological agents. Some examples include calcium hypochlorite, chloramines-B, DF200 (Sandia foam), fchlor, oxime, and chlorine dioxide solutions.
3. Mixed (water/nonaqueous solvent) oxidants/nucleophiles <ul style="list-style-type: none"> • Stored physical state: liquid • Delivered physical state: liquid, foams, gels, wipes, aerosols • Related system(s): containment, recycle 	Oxidants and nucleophiles contained within mixed aqueous/nonaqueous solutions. This idea for materiel approach includes microemulsions, i.e., thermodynamically stable mixtures of water, oil, surfactants, and cosurfactants that appear macroscopically as a homogenous phase. Water-insoluble agents are dissolved into the organic phase of the microemulsion and react with the water-soluble decontaminant at the water/nonaqueous solvent interface. Some examples include mixed sodium hydroxide and sodium sulfide solution.
4. Reactive nonaqueous liquids <ul style="list-style-type: none"> • Stored physical state: liquid • Delivered physical state: liquid, foams, gels, aerosols • Related system(s): containment, recycle 	Nonaqueous solutions containing nucleophiles that neutralize chemical and biological agents. Some examples include monoethanolamine, and CD-1.

<p>5. Reactive gases and vapors</p> <ul style="list-style-type: none"> • Stored physical state: compressed gas • Delivered physical state: gas, vapor • Related system(s): containment, recycle 	<p>Volatile chemicals that can neutralize chemical agents and inactivate biological agents. Reactive gases and vapors are useful for the decontamination of interior surfaces. Some examples include ozone, chlorine, chlorine dioxide, and vaporized hydrogen peroxide.</p>
<p>6. Active (self-decontaminating) coatings</p> <ul style="list-style-type: none"> • Stored physical state: N/A • Delivered physical state: N/A • Related system(s): N/A 	<p>Coatings that contain catalytically reactive sites, such as fluorine substituents, that decontaminate chemical and biological agents on contact. Self-decontaminating coatings would most likely be applied to vehicle exterior surfaces, filters, and shelter materials. Examples include reactive ion exchange resins and polyoxometalate catalysts for chemical agents and Triosyn quaternary ammonium triiodide coatings and Veridian aerogel coatings for biological agents. Some biocidal coatings are already available.</p>
<p>7. Plasmas</p> <ul style="list-style-type: none"> • Stored physical state: feed gas (possibly) • Delivered physical states: gas • Related system(s): containment, recycle 	<p>A gas capable of conducting an electric current is ionized through energetic electron impact. As a result, reactive ions and radicals are formed, which can decompose chemical agents and denature biological agents. Cold (not thermal) plasmas, which are most likely to be used for decontamination, are most effective if used within a closed container. Small personal gear and sensitive equipment are the most likely targets for decontamination. Plasmas should be able to penetrate porous surfaces and little or no waste will be produced, as the plasma will decompose the agent to benign, typically gaseous, by-products. Technology is in the research and development (R&D) phase, and Markland Technologies, AGT, and MicroEnergy Technologies are developing platforms.</p>
<i>Physical Processes</i>	
<p>8. Low-temperature thermal (accelerated weathering)</p> <ul style="list-style-type: none"> • Stored physical state: N/A • Delivered physical state: gas • Related system(s): containment, recycle 	<p>Physical removal of chemical agents and possibly neutralize biological agents through the application of hot air. The effectiveness of hot air decontamination varies with respect to the physical properties of the agent and the surface being decontaminated. For example, additional heat and time are required to fully remove neat chemical agent deposited on a porous or adsorbent surface than on a nonporous, nonadsorbent surface.</p>
<p>9. Sorption</p> <ul style="list-style-type: none"> • Stored physical state: wipe • Delivered physical state: wipe • Related system(s): N/A 	<p>Materials that physically remove agent from surfaces (e.g., skin) via adsorption or absorption. The agent either remains intact within the sorbent material and makes the sorbent toxic or is detoxified in situ by reactive species placed into the sorbent material. Fuller's earth is an inert sorbent, whereas the M100 SDS sorbent is reactive.</p>

<p>10. Water/steam wash</p> <ul style="list-style-type: none"> • Stored physical state: liquid • Delivered physical states: liquid, gas (steam) • Related system(s): containment, recycle 	<p>Physically removed agents through the application of water or steam to surfaces at low to high pressures. Removal of agents from surfaces is highly dependent upon the nature of the surfaces (i.e., surfaces which are flat and smooth can be more readily decontaminated than curved porous surfaces). Low-pressure water can be used to decontaminate skin. The addition of soap can enhance dissolution of water-insoluble contamination.</p>
<p>11. (Nonaqueous) solvent wash</p> <ul style="list-style-type: none"> • Stored physical state: liquid • Delivered physical states: liquid • Related system(s): containment, recycle 	<p>Physical removal of agents from a surface by washing the molecules away using alcohol, nonozone-depleting fluorocarbon compounds, diesel fuel, etc. The agent is diluted, though not likely detoxified (particularly for chemical agents). In open environments, solvents are often applied using pressurized sprayers such a power washer or aerosol sprayer. Solvents can also be used in an enclosed environment to effectively decontaminate sensitive equipment. In closed environments, their decontamination effectiveness can be enhanced by heating them or using them in conjunction with ultrasonics or supersonic sprays. After a decontamination cycle, the solvents can often be recycled for further use before being discarded and detoxified. Examples include alcohols, ethers, ketones, aromatics, and hexane.</p>
<p>12. Ionizing/nonionizing radiation</p> <ul style="list-style-type: none"> • Stored physical state: N/A • Delivered physical states: N/A • Related system(s): containment 	<p>Radiation of sufficient energy to cause denaturing/inactivation of biological agents and degradation of chemical agents. Ionizing radiation (e.g., gamma, x-ray, and electron beam) causes ionization of exposed molecules. Gamma irradiation has been widely used for the sterilization of medical and pharmaceutical supplies and foods. Nonionizing radiation (e.g., ultraviolet [UV] radiation) can promote activation of exposed molecules, which may lead to chemical reactions such as rearrangement and dissociation. Both chemical and biological agents could be degraded through nonionizing radiation. Radiation-based decontamination systems could prove effective for biological decontamination of personal gear and small equipment and possibly human remains. There may also be potential applications associated with biological decontamination of vehicles, aircraft and facility interiors. The Surebeam Ebeam System is an example of an electron beam system that is used to irradiate mail.</p>
<p>13. Electrostatic decontamination system (EDS)</p>	<p>A system that operates on a simple interaction of UV light rays and a photooxidative solution (patent pending). The system works by spraying a thin layer (25 µm) of liquid photosensitizer onto a contaminated surface, then illuminating the surface with high-fluence UV light.</p>
<i>Application Systems</i>	
<p>14. Multiheaded nozzle accessories</p>	<p>Based on the inability to decontaminate hard-to-reach places with current applicators, may require modification/new development, including multiheaded nozzle accessories to increase the spray pattern. May also require ability disseminate various physical states of decontaminants.</p>

15. Extended range	Based on the inability to decontaminate hard-to-reach places with current applicators, there is a requirement to modify or develop a sprayer that is able to reach high and low areas by extending its length as necessary. Also it may require the ability to disseminate various physical states of decontaminants.
16. CMWD (ship) modification	Based on the inability to neutralize agents on ship's surfaces because of the utilization of saltwater through the CMWD. The current system could be modified to allow the injection of a decontaminant into the CMWD saltwater flow.
17. Large coverage (operator-encapsulated) sprayer system	Based on the inability to decontaminate large open areas or large facility exteriors with current applicators, a large-scale applicator must be developed that will provide a large coverage of decontaminant but at the same time provide total protection for the operator from backsplash, possibly some type of encapsulation.
18. Aerial platform application systems	Various aerial platforms, both fixed and rotary wing, have proven capabilities to deliver water and retardants in support of fighting wildfires. These same capabilities could potentially have utility supporting wide area decontamination.
19. Enhanced thorough personnel decontamination processing systems	A system of systems approach to enhance thorough personnel decontamination capabilities. A system of systems approach can more rapidly and effectively decontaminate personnel and their associated individual protective equipment and other individual equipment to include weapons and sensitive equipment.
20. Robotic or semiautonomous systems	Robotic or semiautonomous systems that reduce equipment and manpower requirements. System must be versatile and able to utilize all decontaminants in various physical forms and also be effective in reducing time requirements.
<i>Miscellaneous</i>	
21. Containment	The ability to control and contain decontamination waste (e.g., runoff) to minimize cross-contamination hazards and enable safe waste disposition. Containment is not an independent system, can be a property of decontamination system. All chemical and physical process IMAs are amenable to containment. (Note: Containment is an intrinsic property of active coatings and sorbents.)
22. Recycling	The ability to recover, reprocesses, and reuse the decontaminant. Recycling is not an independent system, can be a property of decontamination system. Enzymatic, mixed (water/nonaqueous solvent) oxidants/nucleophiles, reactive nonaqueous liquids, reactive gases and vapors, plasmas, low-temperature thermal, water/steam wash, and (nonaqueous) solvent wash systems may be amenable to recycling.

23. Decontaminating bandage	Neutralizes agent and does not damage underlying tissue or inhibit wound healing. Could be a cloth bandage impregnated with decontamination product or be applied as a liquid bandage.
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Table 17.0-3. Diagnostics/Treatment Ideas for Materiel Approaches

Materiel Approach	Description
<i>Chemical Effects Diagnostics</i>	
1. Portable chemical agent identification tests and diagnostic methods	Field-hardened, compact, and portable kits capable of presumptive detection, identification, and quantification of chemical agents in clinical samples.
2. Advanced laboratory tests and diagnostic methods	Laboratory-based tests and diagnostic methods capable of confirmatory detection, identification, and quantification of chemical agents (and high-priority toxic industrial chemical [TICs]) in clinical samples.
3. Large-volume laboratory diagnostic testing	Laboratory-based automated testing capable of presumptive detection, identification, and quantification of chemical agents (and high-priority TICs) in clinical samples. Has the capability to process large numbers of samples in a short amount of time. Gives a quick “go/no-go” indication as to the need for and type of treatment required.
<i>Biological Effects Diagnostics</i>	
1. Portable biological agent identification tests and diagnostic methods	Field-hardened, compact, and portable kits capable of rapid presumptive detection, identification, and quantification of biological agents in clinical samples.
2. Advanced laboratory tests and diagnostic methods	Laboratory-based tests and diagnostic methods capable of rapid confirmatory detection, identification, and quantification of biological agents in clinical samples from patients in early stages of infection. May use antigen/antibody testing methodologies to eliminate the need for culturing live agents to perform diagnosis.
3. Large-volume laboratory diagnostic testing	Laboratory-based automated testing capable of presumptive detection, identification, and quantification of biological agents in clinical samples from patients in early stages of infection. Has the capability to process large numbers of samples in a short amount of time.
<i>Radiological Effects Diagnostics</i>	
1. Individual dosimeters	Lightweight and provides accurate indication of whole and partial body exposure. Can also differentiate different types and amounts of exposure. Advanced technologies/dosimeters that identify dose rate of exposure over time. Can be worn by individual or MWAs.

2. Laboratory dosimeters	Lightweight and provides accurate indication of whole- and partial-body exposure. Can also differentiate different types and amounts of exposure. Advanced technologies/dosimeters that identify dose rate of exposure over time.
3. Rapid diagnostics	Rapid identification tests and diagnostic methods that are field-hardened, compact, and portable. Should be easy to use and require minimal amount of sample preparation. Simple and sensitive field-portable diagnostic assays for radiation exposure. Gives accurate indication of radiation exposure. Eliminates the need for shipping specimens for confirmatory testing.
4. Individual detector	Detector that can be worn by individual or MWAs. Provides rapid identification of type and amount of radiation. Is simple to use, field-hardened, compact, and easy to use and maintain.
<i>Chemical Effects Treatment</i>	
<i>Nerve Agent Exposure</i>	
1. Next-generation oximes	AKA, “Next-Generation Oxime Candidate for Nerve Agent Treatment.” Development of new oxime(s) more effective than 2-pralidoxime (2-PAM) against classic and nontraditional nerve agents.
2. Nontraditional nerve agent medical countermeasures	Compounds or medical strategies that demonstrate the ability to prevent, interrupt, or terminate the action of nontraditional nerve agents.
3. Injectable nanoparticles for in vivo removal of overdose toxins from blood	Several potential drugs being investigated.
<i>Cyanide Exposure Treatment</i>	
4. Next-generation cyanide antidotes	Cyanide antidotes that do not have significant adverse and contraindications and that can be administered by buddy-aid, MWD handler, or other non-VS personnel. Compounds/ biomolecules of interest include Stroma-free methemoglobin, 8-aminoquinoline analogs of primaquine (e.g., WR242511), and alpha-ketoglutaric acid.
<i>Blister Agent Exposure Treatment</i>	
5. Intracellular scavengers	Biomolecules that prevent DNA alkylation through intracellular scavengers. N-acetyl cysteine is an example.
6. Biochemical inhibitors/modulators	Biomolecules that affect the cellular processes related to vesicant exposure. Examples include mimosine (cell cycle inhibitors that prevent deoxyribose nucleic acid [DNA] strand breaks), niacinamide (PARP inhibitors that prevents PARP [poly(ADP)-ribose polymerase] activation), BAPTA, Dimercaprol (calcium modulators that prevents disruption of calcium), and sulfonyl fluorides (protease inhibitors that prevent proteolytic activation).

<i>Pulmonary Agent Exposure Treatment</i>	
7. Vesicant agent antidote	Licensed therapeutic for vesicant exposure (FY2010–19) is expected to reduce, if not eliminate, deficiency.
8. Antiinflammatories	Nonsteroidal, antiinflammatory drugs (NSAIDs) that can be administered by buddy-aid or MWD handler.
9. Pulmonary edema–reducing treatments	Post-exposure pulmonary agent antidote that reduces pulmonary edema and consequently decreases the requirement for supplemental oxygen therapy and chance of developing pneumonia.
10. Next-generation bronchodilators	Nonaminophylline bronchodilator that can be administered by buddy-aid or MWD handler and has minimal side effects.
<i>Biological Effects Treatment</i>	
1. Immunostimulants	Induce a short-term, nonantigen-specific enhancement of the immune system. Could benefit humans and MWDs with potential exposure to many different pathogens.
2. Monoclonal antibodies	Provide immediate protection from specific bacterial or viral agents. If used as post-exposure treatment, need rapid diagnostic to correctly identify pathogen involved, since this dictates the appropriate antibodies to be used.
3. Next-generation/new antibiotics	Improvement/development of medications produced by or derived from certain fungi, bacteria, and other organisms that can destroy or inhibit the growth of other microorganisms. Used to treat bacterial infections. Antibiotics may also be synthetically produced in a laboratory.
4. Next-generation/new antitoxins	Improvement/development of substances (sometimes the product of a specific microorganism and sometimes naturally present in the blood or tissues of an animal), capable of producing immunity from certain diseases, or of counteracting the poisonous effects of pathogenic bacteria.
5. Next-generation/new antivirals	Improvement/development of herbs, drugs, or agents capable of destroying viruses or inhibiting their growth or multiplication until the body is capable of destroying the virus itself.
6. Immunomodulators	Disease-modifying chemicals that alter, suppress, or stimulate the body’s immune system.
7. Next-generation/new vaccines	Vaccines are typically indicated as prophylaxis either pre- or post-exposure; however, use of vaccines as treatment.
8. New therapeutics	Potential development of new therapeutics using following technologies: systemic corticosteroids, platelet activating factor antagonists, transition state inhibitors, bioadhesion, and anticoagulant proteins.

<i>Radiological Effects Treatment</i>	
1. Radioprotectants	Exposure to ionizing radiation causes defects in hemopoiesis that result in low numbers of circulating blood cells and platelets as well as in an increased susceptibility to infection and hemorrhage. Need to conduct research on drugs that enhance recovery from the hemopoietic syndrome. Drugs designed to ameliorate or prevent damage caused by radiation. Develop radioprotective drugs that have low toxicity when used over long periods of time. Develop next generation of radioprotective drugs with longer duration of activity. Could be delivered through slow-release system (i.e., dermal patch) to reduce need for daily dosing.
2. Immunomodulators	Drugs that increase the immune system's capability to respond to a foreign substance.
3. Countermeasures	Cytokines can help stimulate production of white blood cells. Cell line stimulants capable of restoring the immune competence of bone marrow that would allow survival from a previously lethal dose of radiation.
4. Next-generation/new blocking agents	Drugs that block the effects of radiation within the body. Example is potassium iodide, which blocks the absorption of radioactive iodide by the thyroid.
5. Next-generation/new chelating agents	Chelating drugs reduce the amount of time the isotope stays in the body. Develop next-generation chelating agents that have reduced toxicity for the removal of internally deposited radioisotopes.
6. Cell line stimulants	Cell line stimulants capable of restoring the immune competence of bone marrow that would allow survival from a previously lethal dose of radiation.
7. New antibiotics	Development of new antibiotics and testing of current antibiotics to determine which are most effective at controlling the infections that occur after high-dose-radiation injury. Probiotics are one class that should be considered.
8. Nitroxides	Over the past decade, stable nitroxide compounds have been identified as a unique class of antioxidants with demonstrated radioprotective properties. Studies have shown that nitroxides protect against radiation-induced DNA damage, chromosome aberrations, mutation induction, cell killing, and lethality in mice that receive whole-body irradiation. Whether these agents provide radioprotection for low-level radiation doses remains to be determined. They are currently in clinical trials to evaluate their anticarcinogenic potential.
9. Cytoprotectants	The ability to prevent radiotherapy-induced toxicity without affecting antitumor efficacy has the potential to enhance the therapeutic benefit for cancer patients without increasing their risk of serious adverse effects. In vitro studies with the active metabolite of amifostine (WR-1065) have shown it to prevent both radiation-induced cell death and radiation-induced mutagenesis.

17.1 Task TASUST 1: Decontaminate personnel**17.1.1 Functional Area Analysis****17.1.1.1 Definition**

To decontaminate all personnel: military and eligible civilians. This task assumes that individuals are in protective MOPP gear. Levels of personnel decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Minimize casualties, save lives, and minimize spread of contamination.
- Operational: Via MOPP gear exchange, reduce level of contamination to regenerate combat power.
- Thorough: Reduce CBRN/ toxic industrial material (TIM) contamination to the lowest possible levels to permit partial or total removal of IPE and maintain operations with minimum degradation.

17.1.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.1.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.1.1.2.2 Lateral Task: TASHA 24

17.1.1.2.3 Supporting Task: N/A

17.1.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Some or no interoperability. (C2.2.6)
6. Low personnel capability. (C2.2.4)
7. Negligible personnel experience. (C2.2.4.5)
8. Severe personnel fatigue. (C2.2.4.6)
9. Limited, little, or no lift assets. (C2.5.2)
10. Limited or no host-nation support. (C2.8.5)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. Few or negligible translators. (C3.2.1.2)
5. Significant customs adjustment. (C3.2.2)
6. Significant refugee-care responsibility. (C3.3.2.3)

17.1.1 Functional Needs Analysis**17.1.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.1-1 presents overall current, near-/mid-term, and far-term capabilities to perform the task. There are seven current capabilities and two projected capabilities to be added in the future (JSPDS Increment I in the near/mid term and JSPDS Increment II in the far term).

Current Capabilities and Deficiencies

Current capabilities to decontaminate personnel require the use of M291 kits, bleach solutions, soap and water, STB and HTH mixtures, and seawater. Capability gaps associated with personnel decontamination include the excessive amount of time it takes to manually process large numbers of personnel and their associated individual equipment and weapons through thorough decontamination processes; STB and HTH decontaminants can be toxic and corrosive, requiring large amounts of water for dilution; runoff from personnel decontamination processes may be contaminated; and current decontaminants are effective against only a limited range of chemical and biological agents. In addition, current thorough personnel decontamination processes may not be feasible in many operational situations due to time and space requirements.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSPDS, Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSPDS Increment II.

Table 17.1-1. TASUST 1: Capabilities and Deficiencies Assessment

Capabilities	M1			M2	M3	M4	M5			M6			M7			M8			M9			M10		
	I	O	T	T	I	O	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T
Current																								
M291 and M295 Kits	7 ¹	7	7	N/A	8 ²	N/A	7 ³	7	7	3 ⁴	3	3	1 ⁵	1	1	N/A	N/A	N/A	7 ⁶	7	7	10 ⁷	10	10
HTH/Household Bleach	N/A	5 ⁸	5	N/A	N/A	N/A	N/A	5 ⁹	5	N/A	3	3	N/A	5 ¹⁰	5	N/A	N/A	N/A	N/A	5 ¹¹	5	N/A	7 ¹²	7
Soap and Water	N/A	3 ¹³	3	N/A	N/A	N/A	N/A	3 ¹⁴	3	N/A	0 ¹⁵	0	N/A	3 ¹⁶	3	N/A	6 ¹⁷	8	N/A	5	5	N/A	7	7
Removal/Brush and/or Wipe	3	3	3	N/A	N/A	N/A	3	3	3	N/A	N/A	N/A	N/A	N/A	N/A	2 ¹⁸	4 ¹⁹	N/A	7	7	7	5 ²⁰	5	7
STB	N/A	5	5	N/A	N/A	N/A	N/A	5	5	N/A	3	3	N/A	5	5	N/A	N/A	N/A	N/A	5	5	N/A	7	7
Seawater/Hoses and Nozzles	N/A	3	3	N/A	N/A	N/A	N/A	3	3	N/A	0	0	N/A	5	N/A	N/A	6	8	N/A	5	5	N/A	7	7
Decontamination Station/Site	N/A	7	7	2 ²¹	N/A	5 ²²	N/A	7	7	N/A	3	3	N/A	4 ²³	4	N/A	6	8 ²⁴	N/A	3 ²⁵	3	7	7	7
Near/Mid-Term																								
JSPDS Increment I	7	7	7	2	8	5	7	7	7	3	3	3	1	5	5	N/A	N/A	N/A	7	7	7	7 ¹⁵	7 ¹⁵	7 ¹⁵
Far-Term																								
JSPDS Increment II	7	7	7	2	8	5	7	7	7	5	5 ²⁶	5	5	5	5	4	4	N/A	7	7	7	10 ⁶	10 ⁶	10 ⁶
Current Overall Capabilities	5	5	5	2	8	5	5	5	5	3	2	2	1	4	4	2	6	8	7	5	5	7 ¹⁵	7 ¹⁵	7 ¹⁵
Near/Mid-Term Overall Capabilities	7	7	7	2	8	5	7	7	7	3	3	3	1	5	5	4	6	8	7	7	7	7 ¹⁵	7 ¹⁵	7 ¹⁵
Far-Term Overall Capabilities	7	7	7	2	8	5	7	7	7	5	5	5	5	5	5	4	6	8	7	7	7	10 ⁶	10 ⁶	10 ⁶

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Scale represents range from no control to complete control of contamination. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%) 7: Yes, Substantial (~75%) 5: Yes, Partial (~50%) 3: Yes, Minimal (~25%) 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.

M2	(Quantity) Personnel per hour to complete thorough decontamination process.	Sufficient number of personnel per hour can be processed through a thorough decontamination system or process to maximize restoration of full individual combat capabilities. Thorough decontamination of personnel includes the decontamination of individually carried equipment.	10: >150 9: 125–150 8: 100–124 7: 80–99 6: 60–79 5: 50–59 4: 40–49 3: 30–39 2: 20–29 1: 10–19 0: <10
M3	(Time) To initiate immediate decontamination procedures.	Initiate and complete immediate decontamination of the hands, face, and neck within a measured amount of time to prevent a casualty-producing exposure.	10: Immediately 9: <10 seconds 8: <30 seconds 7: <45 seconds 6: <1 minute 5: <1 minute, 15 seconds 4: <1 minute, 30 seconds 3: <1 minute, 45 seconds 2: <2 minutes 1: <3 minutes 0: >3 minutes
M4	(Quantity) Personnel per hour to complete operational decontamination process.	Sufficient number of personnel per hour can be processed through an operational decontamination system or process (MOPP gear exchange or equivalent process). Operational decontamination of personnel includes the decontamination of individually carried equipment.	10: >300 9: 250–300 8: 200–249 7: 160–199 6: 120–159 5: 100–119 4: 80–99 3: 60–79 2: 40–59 1: 20–39 0: <20
M5	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Scale represents range of no control to complete control of by-products. Where contaminated by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%) 7: Yes, Substantial (~75%) 5: Yes, Limited (~50%) 3: Yes, Minimal (~25%) 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.

M6	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination procedures. Agents defined as: current generation chemical warfare agents (CWAs), nontraditional agents (NTAs) and toxic industrial materials and chemicals (TIMs).	<p>10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits; must also be FDA approved.</p> <p>7: Decontaminate all CWAs, all NTAs, some TIMs to a level that will allow unprotected exposure; must also be FDA approved.</p> <p>5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure; must also be FDA approved.</p> <p>3: Decontaminate most CWAs to a level that will allow unprotected exposure.</p> <p>0: No effective decontaminant or process.</p>
M7	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in colony-forming units/square meter (CFU/m ²), and viruses are measured in plaque-forming units/square meter (PFU/m ²).	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents and also must be FDA approved.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents and also must be FDA approved.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents and also must be FDA approved.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents and also must be FDA approved.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents and also must be FDA approved.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more key threat agents and also must be FDA approved.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents and also must be FDA approved.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>

M8	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination procedures. 0.33 centigray per hour (cGy/hour) equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.
M9	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability 3: Major negative impact on operational capability 0: Not logistically supportable.
M10	There is effective DOTLPP in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPP is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPP is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPP for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPP for the task to be performed with this system are addressed. 0: DOTLPP is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

² M2 – (Quantity) Personnel per hour to complete thorough decontamination process. 2: 20–29.

³ M5 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

⁴ M6 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most chemical warfare agents (CWAs) to a level that will allow unprotected exposure.

⁵ M7 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin-exposure levels against one key threat agent.

⁶ M9 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.

⁷ M10 – There is effective DOTLPP in place to conduct task? 10: DOTLPP is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

⁸ M1 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).

⁹ M5 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Limited (~50%).

¹⁰ M7 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more key threat agents and also must be FDA approved.

¹¹ M9 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

-
- ¹² M10 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹³ M1 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).
- ¹⁴ M5 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ¹⁵ M6 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ¹⁶ M7 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.
- ¹⁷ M8 – (Level) Of radiological contamination after decontamination procedures. 6: ≤ 0.22 cGy/hour residual dose rate.
- ¹⁸ M8 – (Level) Of radiological contamination after decontamination procedures. 2: 0.33 cGy residual dose rate.
- ¹⁹ M8 – (Level) Of radiological contamination after decontamination procedures. 4: < 0.33 cGy/hour residual dose rate.
- ²⁰ M10 – There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ²¹ M2 – (Quantity) Personnel per hour to complete thorough decontamination process. 2: 20–29.
- ²² M4 – (Quantity) Personnel per hour to complete operational decontamination process. 5: 100–119.
- ²³ M7 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents and also must be FDA approved.
- ²⁴ M8 – (Level) Of radiological contamination after decontamination procedures. 8: ≤ 0.11 cGy/hour residual dose rate.
- ²⁵ M9 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ²⁶ M6 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWA, some nontraditional agents (NTAs) to a level that will allow unprotected exposure; must also be FDA approved.

17.1.2 Functional Solution Analysis

17.1.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Current array of decontaminants may not neutralize all chemical and biological hazards.
Non-Materiel Solutions: None.
- 2. Deficiency:** High concentrations of HTH or STB are may be harmful to personnel.
Non-Materiel Solutions: *Doctrine (partial):* Expand presentation of basic decontamination concepts using HTH and STB into other doctrinal products beyond only CBRND. *Training (partial):* Enhance training on basic decontamination procedures using HTH and STB to mitigate the personnel hazards these products can produce.
- 3. Deficiency:** Current procedures may not be feasible due to time and space requirements.
Non-Materiel Solutions: None.
- 4. Deficiency:** Lack of doctrine and training for aircrew radiological decontamination procedures.
Non-Materiel Solutions: *Doctrine:* Incorporate aircrew decontamination procedures for radiological environments into current doctrine.
- 5. Deficiency:** Operational and thorough procedures require large amounts of water.
Non-Materiel Solutions: *Training (partial):* Develop resource management training to minimize water usage level to lowest possible level.
- 6. Deficiency:** Runoff may be contaminated.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff.

17.1.3.2 IMA Assessment Summary

Table 17.1-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.1-2. TASUST 1: IMA Assessment

Ideas for Materiel Approaches (IMA)	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Nonaqueous Solvent Wash*	Reactive Gases and Vapors*	Low-Temperature Thermal (Accelerated Weathering)*	Sorption	(Nonaqueous) Solutions*	Containment System	Recycling Decontaminant System	Enhanced Thorough Personnel Decontamination System	Electrostatic Decontamination System*
Identified Gaps													
Current array of decontaminants may not neutralize all chemical and biological hazards.	X	X	X	X	X	X			X			X	
High concentrations of HTH or STB may be harmful to personnel.	X	X	X	X	X	X	X	X	X			X	X
Current procedures may not be feasible due to time and space requirements.	X				X		X	X	X			X	
Operational and thorough procedures require large amounts of water.	X		X	X	X	X	X	X	X		X	X	X
Runoff may be contaminated.	X			X		X	X			X	X	X	X

*Individual equipment and weapons only.

17.2 Task TASUST 2: Decontaminate casualties and potentially exposed personnel**17.2.1 Functional Area Analysis****17.2.1.1 Definition**

To decontaminate all casualties and potentially exposed personnel, ambulatory and nonambulatory, as well as MWAs, specifically MWDs that have been exposed to CBRN/TIM hazards. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel. Levels of decontamination are immediate and thorough. There is no operational level of decontamination for casualties. Objectives of each of these levels are identified as follows:

- Immediate: Immediate removal of gross contamination to minimize casualties, save lives, and minimize spread of contamination.
- Operational: N/A
- Thorough: Reduce CBRN/TIM contamination to the lowest possible levels to permit partial or total removal of IPE and maintain operations with minimum degradation.

17.2.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.2.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.2.1.2.2 Lateral Task: TASHA 24

17.2.1.2.3 Supporting Task: N/A

17.2.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)
3. Minimal time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Limited, little, or no lift assets. (C2.5.2)
10. Limited or no host-nation support. (C2.8.5)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)
4. Few or negligible translators. (C3.2.1.2)
5. Significant customs adjustment. (C3.2.2)
6. Significant refugee-care responsibility. (C3.3.2.3)

17.2.2 Functional Needs Analysis**17.2.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.2-1 presents individual and overall current capabilities to perform the task to the designated standards. There are five current capabilities used to accomplish this task and two projected capabilities to be added in the future (JSPDS Increment I in the near/mid term, JSPDS Increment II in the far).

Current Capabilities and Deficiencies

Current capabilities to conduct casualty decontamination include the use of M291 kits, bleach solutions, soap and water, brushes/removal and patient decontamination stations. The possibility of cross-contamination and contaminated by-products during patient decontamination operations will always be a challenge, especially if a mass casualty event occurs where a large number of patients must be decontaminated. The decontamination procedures for animals use the same tactics, techniques, and procedures as patient decontamination. Effectively decontaminating MWDs is a challenge due to their hair coat. In addition, MWDs are naturally resistant to most biological agents likely to be used as a WMD.

There are some deficiencies associated with casualty decontamination that exist at the immediate and thorough levels. There is no single capability that can perform the task to all of the designated standards. In general, thorough decontamination is a time and resource intensive

process, especially in a mass casualty environment, large amounts of water may be needed for the prescribed capabilities, and run-off might be contaminated. An additional deficiency is that the M291 kit cannot be used on wounds. Veterinary Services personnel and MWD handlers will generally be responsible for conducting MWA decontamination. MWD handlers normally carry one additional M291 kit for use on the dog.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSPDS, Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSPDS, Increment II.

Table 17.2-1. TASUST 2: Capabilities and Deficiencies Assessment

Capabilities	M1		M2	M3	M4		M5		M6		M7		M8		M9	
	I	T	T	I	I	T	I	T	I	T	I	T	I	T	I	T
Current																
M291 Kit	7 ¹	7	N/A	8 ²	3 ³	3	1 ⁴	1	N/A	N/A	7 ⁵	7	7 ⁶	7	10 ⁷	10
Soap and Water	N/A	3 ⁸	N/A	N/A	N/A	0 ⁹	N/A	3 ¹⁰	N/A	8 ¹¹	N/A	3 ¹²	N/A	5 ¹³	N/A	7 ¹⁴
HTH/Household Bleach	N/A	5 ¹⁵	N/A	N/A	N/A	3	N/A	5 ¹⁶	N/A	N/A	N/A	5 ¹⁷	N/A	5	N/A	7
Removal/Brush and/or Wipe	3	3	N/A	N/A	N/A	N/A	N/A	N/A	4 ¹⁸	4	3	3	7	7	7	7
Patient Decontamination Station	N/A	7	1 ¹⁹	N/A	N/A	3	N/A	5	N/A	8	N/A	7	N/A	3 ²⁰	N/A	7
Near/Mid-Term																
JSPDS Increment I	7	7	1	8	3	3	1	1	N/A	N/A	7	7	7	7	7	7
Far-Term																
JSPDS Increment II	7	7	2 ²¹	8	5 ²²	5	5	5	4	4	7	7	7	7	10	10
Current Overall Capabilities	5	5	1	8	3	3	1	4 ²³	4	8	5	5	5	5	7	7
Near/Mid-Term Overall Capabilities	7	7	1	8	3	3	1	4	4	8	7	7	7	7	10	10
Far-Term Overall Capabilities	7	7	2	8	5	5	5	5	4	8	7	7	7	7	10	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%) 7: Yes, Substantial (~75%) 5: Yes, Limited (~50%) 3: Yes, Minimal (~25%) 0: No, cross-contamination cannot be controlled and presents an unacceptable hazard

M2	(Quantity) Casualties/ personnel per hour to complete thorough decontamination process.	An adequate number of casualties can be thoroughly decontaminated per hour to minimize delays before receiving full medical treatment.	10: >60 9: 50-60 8: 40-49 7: 35-39 6: 30-34 5: 25-29 4: 20-24 3: 15-19 2: 10-14 1: 5-9 0: <5
M3	(Time) To initiate immediate decontamination procedures.	Initiate and complete immediate decontamination procedures within an adequate amount of time to preclude additional injury to casualties from chemical exposure. Time factors equate to the time required to decontaminate 1300 cm ² of skin surface area.	10: Immediately 9: <10 seconds 8: <30 seconds 7: <45 seconds 6: <1 minute 5: <1 minute, 15 seconds 4: <1 minute, 30 seconds 3: <1 minute, 45 seconds 2: <2 minutes 1: <3 minutes 0: >3 minutes
M4	(Level) Of chemical contamination after decontamination procedures.	Chemical decontamination can be performed to a level that no longer poses an imminent health threat to casualties or health care providers. The level of chemical contamination is acceptable after decontamination procedures. Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits, must also be FDA approved. 7: Decontaminate all CWAs, all NTAs, some TIMs to a level that will allow unprotected exposure; must also be FDA approved. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure; must also be FDA approved. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M5	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents, and also must be FDA approved.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents, and also must be FDA approved.</p> <p>8: 0 CFU/PFU/m² – total removal or neutralization of toxins against 15 or more key threat agents, and also must be FDA approved.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents, and also must be FDA approved.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents, and also must be FDA approved.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents, and also must be FDA approved.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents, and also must be FDA approved.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M6	(Level) Of radiological contamination after decontamination procedures.	Radiological decontamination can be performed to a level that no longer poses an imminent health threat to casualties or health care providers. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level.</p> <p>8: ≤0.11 cGy/hour residual dose rate.</p> <p>6: ≤0.22 cGy/hour residual dose rate.</p> <p>4: <0.33 cGy/hour residual dose rate.</p> <p>2: 0.33 cGy/hour residual dose rate.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.</p>
M7	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where contaminated by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	<p>10: Yes, Complete (100%).</p> <p>7: Yes, Substantial (~75%).</p> <p>5: Yes, Partial (~50%).</p> <p>3: Yes, Minimal (~25%).</p> <p>0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.</p>

M8	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M9	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

² M3 – (Time) To initiate immediate decontamination procedures. 8: <30 Seconds.

³ M4 – (Level) Of chemical contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

⁴ M5 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin-exposure levels against one key threat agent.

⁵ M7 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

⁶ M8 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.

⁷ M9 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

⁸ M1 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

⁹ M4 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

¹⁰ M5 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

¹¹ M6 – (Level) Of radiological contamination after decontamination procedures. 8: ≤0.11 cGy/hour residual dose rate.

¹² M7 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

¹³ M8 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

¹⁴ M9 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

¹⁵ M1 – (Yes/No) Cross-contamination is controlled? 5: Yes, Limited (~50%).

¹⁶ M5 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents, and also must be FDA approved.

¹⁷ M7 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

¹⁸ M6 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

¹⁹ M2 – (Quantity) Casualties/personnel per hour to complete thorough decontamination process. 1: 5–9.

²⁰ M8 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability

²¹ M2 – (Quantity) Casualties/personnel per hour to complete thorough decontamination process. 2: 10–14.

²² M4 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure; must also be FDA approved.

²³ M5 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents, and also must be FDA approved.

17.2.3 Functional Solution Analysis

17.2.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** Decontamination process causes delay in treatment.
Non-Materiel Solutions: *Doctrine:* Doctrine should clearly define those medical treatments that should be performed in a contaminated environment and during the decontamination process. *Training:* Prepare and practice decontamination procedures to gain proficiency and to determine the approximate number of people that can be processed per hour for each decontamination method.
2. **Deficiency:** Current decontaminants may not neutralize all hazards.
Non-Materiel Solutions: None.
3. **Deficiency:** Large amount of water may be needed.
Non-Materiel Solutions: None.
4. **Deficiency:** Cross-contamination may be difficult to control due to insufficient or uncontrolled drainage and water flow.
Non-Materiel Solutions: *Training (partial):* Cross-contamination can be minimized through adequate training of personnel performing decontamination tasks.
5. **Deficiency:** Time- and resource-intensive.
Non-Materiel Solutions: None.
6. **Deficiency:** Runoff may be contaminated.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff. *Facilities (partial):* Supporting infrastructure to neutralize or dispose of captured contaminated runoff.
7. **Deficiency:** M291 kit cannot be used on wounds.
Non-Materiel Solutions: None.
8. **Deficiency:** Internal decontamination of inhaled biological organisms is not possible.
Non-Materiel Solutions: Since it is not possible to decontaminate internal biological contamination, patients exposed to potential contamination must be referred for medical treatment (prophylaxis and/or treatment). *Doctrine:* Doctrine can reinforce the importance of early identification and referral. *Training:* Training can provide the skills necessary for early identification and referral.

- 9. Deficiency:** The dog handler carries only one additional skin decontaminating kit for the dog.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to allow veterinary service personnel and MWD handlers to carry more than one additional skin decontaminating kit.
- 10. Deficiency:** Doctrine does not address decontamination procedures for individuals not in MOPP gear.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to include procedures for casualties not in MOPP gear.
- 11. Deficiency:** Doctrine does not address all methods of decontamination available for MWDs.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to include all methods of decontamination.
- 12. Deficiency:** Some decontaminants produce contaminated by-products.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to address proper disposal of contaminated by-products.

17.2.3.2 IMA Assessment Summary

Although early physical removal of any agent is the most important aspect of decontamination, there are potential future technologies that may improve capabilities to conduct casualty decontamination. Table 17.2-2 links materiel alternatives to the identified gaps. Rapid adaptation of some materiel solutions to dogs is no doubt possible and desirable, while other solutions deserve a directed research effort to determine their applicability for decontamination of working dogs.

Table 17.2-2. TASUST 2: IMA Assessment

Identified Gaps	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Sorption	Cold Plasma	Recycled Decontaminant System	Containment System
Current decontaminants may not neutralize all hazards.	X	X	X	X	X	X		
M291 kit cannot be used on wounds.				X	X			
Time- and resource-intensive.	X	X	X	X	X	X		
Large amounts of water may be needed.	X		X	X	X	X	X	
Runoff may be contaminated.	X	X	X	X	X	X	X	X
Cross-contamination may be difficult to control due to insufficient or uncontrolled drainage and water flow.	X						X	X
Some decontaminants produce contaminated by-products.	X						X	X

17.3 Task TASUST 3: Decontaminate wounds

17.3.1 Functional Area Analysis

17.3.1.1 Definition

To decontaminate external wounds. External wounds damage skin, penetrate skin, or open skin. Internal wounds resulting from inhalation, ingestion, or absorption are not decontaminated but rather medically treated and are discussed in another task. This task includes MWAs, specifically MWDs that have been exposed to CBRN/TIM hazards. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel. Levels of decontamination include immediate, operational, and thorough. There is no operational decontamination of wounds. Objectives of each of these levels are identified as follows:

- Immediate: Immediate removal of gross contamination to minimize casualties, save lives, and minimize spread of contamination.
- Operational: N/A
- Thorough: Reduce CBRN/TIM contamination to the lowest possible levels to permit partial or total removal of IPE and maintain operations with minimum degradation.

17.3.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.3.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.3.1.2.2 Lateral Task: TASHA 24

17.3.1.2.3 Supporting Task: N/A

17.3.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Nuclear effects. (C1.3.3.1)
3. Chemical effects. (C1.3.3.2)
4. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)
3. Minimal time available. (C2.1.5)

4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)
4. Significant refugee-care responsibility. (C3.3.2.3)

17.3.2 Functional Needs Analysis**17.3.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.3-1 presents individual and overall current capabilities to perform the task to the designated standards. There are three current capabilities used to accomplish this task and one projected capability to be added in the future, JSPDS Increment II in the far term).

Current/Near/Mid-Term Capabilities and Deficiencies

The current capabilities and deficiencies for wound decontamination procedures involve the use of soap and water, diluted bleach, and surgical debridement. Although skin areas adjacent to wounds can be decontaminated using current existing materiel and procedures, current deficiencies include the difficulty in decontaminating hard-to-reach areas, contaminated by-products, and the potential to retard natural healing of the wound or cause additional injury as a result of the decontamination process or decontaminant exposure.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSPDS Increment II. JSPDS Increment II will introduce radiological decontamination capabilities and systematic capabilities to process casualties and human remains. It will also provide a capability to decontaminate casualties with open wounds without making the wound worse or retard healing.

Table 17.3-1. TASUST 3: Capabilities and Deficiencies Assessment

Capabilities	M1		M2		M3		M4		M5		M6		M7		M8	
	I	T	I	T	I	T	I	T	I	T	I	T	I	T	I	T
Current/Near/Mid-Term																
Soap and Water	N/A	3 ¹	N/A	0 ²	N/A	3 ³	N/A	8 ⁴	N/A	N/A	N/A	3 ⁵	N/A	5 ⁶	N/A	10 ⁷
HTH/Household Bleach	N/A	5 ⁸	N/A	3 ⁹	N/A	5 ¹⁰	N/A	N/A	N/A	N/A	N/A	5 ¹¹	N/A	5	N/A	10
Debridement	N/A	7 ¹²	N/A	5 ¹³	N/A	5 ¹⁴	N/A	8	N/A	N/A	N/A	10 ¹⁵	N/A	5	N/A	10
Far-Term																
JSPDS Increment II	7	7	5	5	5	5	4 ¹⁶	4	8 ¹⁷	N/A	7 ¹⁸	7	7 ¹⁹	7	10	10
Current/Near/Mid-Term Overall Capabilities	N/A	5	N/A	3	N/A	5	N/A	8	N/A	N/A	N/A	5	5	5	N/A	10
Far-Term Overall Capabilities	7	7	5	5	5	5	4	8	8	N/A	7	7	7	7	10	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Cross-contamination is controlled?	Cross-contamination and contaminated by-products are controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, cross-contamination cannot be controlled and presents an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	Chemical decontamination can be performed on or around a wound to a level that no longer poses an imminent health threat to casualties or health care providers. Compatibility with wounds assumes decontaminant will not otherwise hinder healing of a wound that it comes in contact with. The level of chemical contamination is acceptable after decontamination procedures. Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits, must also be FDA approved. 7: Decontaminate all CWAs, all NTAs, some TIMs to a level that will allow unprotected exposure; must also be FDA approved. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure; must also be FDA approved. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M3	(Level) Of biological contamination after decontamination procedures.	Biological decontamination (to include toxins) can be performed on or around a wound to a level that no longer poses an imminent health threat to casualties or health care providers. Compatibility with wounds assumes decontaminant will not otherwise hinder healing of a wound that it comes in contact with. Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents, and also must be FDA approved.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents, and also must be FDA approved.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents, and also must be FDA approved.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents, and also must be FDA approved.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents, and also must be FDA approved.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents, and also must be FDA approved.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents, and also must be FDA approved.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents, and also must be FDA approved.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M4	(Level) Of radiological contamination after decontamination procedures.	Radiological decontamination can be performed on or around a wound to a level that no longer poses an imminent health threat to casualties or health care providers. Compatibility with wounds assumes decontaminant will not otherwise hinder healing of a wound that it comes in contact with. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level, will decontaminate wounds if required.</p> <p>8: ≤0.11 cGy/hour residual dose rate, will decontaminate wounds if required.</p> <p>6: ≤0.22 cGy/hour residual dose rate, compatible with wounds.</p> <p>4: <0.33 cGy/hour residual dose rate, compatible with wounds.</p> <p>2: 0.33 cGy residual dose rate, wounds should not be exposed to decontaminant.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates.</p> <p>>0.33 cGy/hour, wounds should not be exposed to decontaminant.</p>

M5	(Time) To initiate immediate decontamination procedures.	Initiate and complete immediate decontamination procedures on or within (if compatible) or around a wound within an adequate amount of time to preclude additional injury to casualty from chemical exposure. Time factors equate to the time required to decontaminate 1300 cm ² of skin surface area.	10: Immediately 9: <10 seconds 8: <30 seconds 7: <45 seconds 6: <1 minute 5: <1 minute, 15 seconds 4: <1 minute, 30 seconds 3: <1 minute, 45 seconds 2: <2 minutes 1: <3 minutes 0: >3 minutes
M6	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where contaminated by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M7	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M8	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

³ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents and also must be FDA approved.

⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 8: ≤0.11 cGy/hour residual dose rate, will decontaminate wounds if required.

⁵ M6 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

⁶ M7 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

⁷ M8 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

⁸ M1 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).

⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

¹⁰ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents, and also must be FDA approved.

¹¹ M6 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

¹² M1 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

¹³ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure; must also be FDA approved.

¹⁴ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents, and also must be FDA approved.

¹⁵ M6 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).

¹⁶ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate, compatible with wounds.

¹⁷ M5 – (Time) To initiate immediate decontamination procedures. 8: <30 Seconds.

¹⁸ M6 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

¹⁹ M7 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.

17.3.3 Functional Solution Analysis

17.3.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Some capabilities produce contaminated by-products.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to ensure that proper procedures are in place to handle and dispose of contaminated by-products.
- 2. Deficiency:** Current decontaminants may not neutralize all agents.
Non-Materiel Solutions: None.
- 3. Deficiency:** Wounds may be further damaged by decontaminants.
Non-Materiel Solutions: *Doctrine (partial):* Develop doctrine that clearly outlines how wounds should be cleaned to minimize damage in an immediate situation. *Training (partial):* At self/buddy-aid levels, train individuals to properly clean wounds in an effort to minimize any wound damage.
- 4. Deficiency:** May be difficult to decontaminate all wound surfaces or deep wounds.
Non-Materiel Solutions: None.
- 5. Deficiency:** Process may be time- and resource-intensive.
Non-Materiel Solutions: None.

17.3.3.2 IMA Assessment Summary

There is a need to improve the wound decontamination process to make it more effective and less resource-intensive. Table 17.3-2 links materiel alternatives to the identified gaps.

Table 17.3-2. TASUST 3: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p>	<p style="text-align: center;">Enzymes</p>	<p style="text-align: center;">Aqueous Oxidants/ Nucleophiles</p>	<p style="text-align: center;">Mixed (Water/ Nonaqueous Solvent) Oxidants/Nucleophiles</p>	<p style="text-align: center;">Reactive Nonaqueous Liquids</p>	<p style="text-align: center;">Sorption</p>	<p style="text-align: center;">Cold Plasma</p>	<p style="text-align: center;">Decontaminating Bandage</p>
Some capabilities produce contaminated by-products.	X	X	X	X		X	
Current decontaminants may not neutralize all agents.	X	X	X	X			
Wounds may be further damaged by decontaminants.	X	X	X	X	X	X	X
May be difficult to decontaminate all wound surfaces or deep wounds.	X	X	X	X		X	
Process may be time- and resource-intensive.	X	X	X	X	X	X	

17.4 Task TASUST 4: Decontaminate remains

17.4.1 Functional Area Analysis

17.4.1.1 Definition

To decontaminate human remains. Remains of MWAs will not normally be decontaminated. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: N/A
- Operational: Reduce CBRN contamination to negligible risk until remains can be checked for contamination and thoroughly decontaminated at the Mortuary Affairs Decontamination Collection Point (MADCP).
- Thorough: Reduce CBRN contamination to negligible risk.

17.4.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.4.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11, OPSUST 12

17.4.1.2.2 Lateral Task: TASHA 24

17.4.1.2.3 Supporting Task: N/A

17.4.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)

3. Marginal forces allocated. (C2.2.3)
4. Low personnel capability. (C2.2.4)
5. Poor personnel morale. (C2.2.4.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Limited, little, or no lift assets. (C2.5.2)
9. Limited or no host-nation support. (C2.8.5)

Civil

1. Adversarial media relations. (C3.1.1.5)
2. Limited or negative foreign government support. (C3.1.2.3)
3. Aggressively opposed foreign public opinion. (C3.1.2.4)
4. Low mission priority. (C3.1.3.2)
5. Few or negligible translators. (C3.2.1.2)
6. Significant customs adjustment. (C3.2.2)

17.4.2 Functional Needs Analysis

17.4.2.1 Capabilities and Deficiencies Assessment Summary

An analysis was conducted to determine the capabilities and deficiencies of DoD to decontaminate CBRN contaminated remains and personal effects (PE). Tables 17.4-1 and 17.4-2 depict external and internal decontamination overall current and near/mid-term capabilities.

Currently, there are five capabilities that will decontaminate remains and PE to varying degrees, depending on the threat and capability used. One additional known capability is projected to be added in the future (JSPDS Increment I in the near/mid term, JSPDS Increment II in the far term), and actions are in progress to add a second.

Current Capabilities and Deficiencies

Normally, decontamination of remains and PE is conducted at a MADCP established as close to the incident site as safety permits. Depending on the situation, however, decontamination operations or temporary interment of contaminated remains may have to be conducted by in-theater forces prior to the arrival of MADCP personnel and equipment. And, depending on the threat, MADCP personnel may use soap and water, diluted chlorine solutions, or DF 200 (Sandia Foam), once approved, to decontaminate remains and PE. None of these capabilities have the ability to neutralize bacterial and viral pathogens that may remain viable inside the body following external remains decontamination. For this reason, in the event mass fatalities should result from a biological incident in a theater of operations outside the continental United States (OCONUS), in accordance with DoD policy, biologically contaminated remains will be temporarily interred in theater until an effective decontamination method has been identified or developed that is capable of neutralizing bacterial and viral pathogens that may remain viable inside the body or until the remains have been thoroughly decontaminated by the environment and can be safely disinterred and returned to CONUS for final processing. Should a biological

mass fatality incident occur in CONUS, biologically contaminated remains may also have to be temporarily interred.

Handling biologically contaminated remains is further complicated by the fact that DoD does not have a containment system to safely transport biologically contaminated remains and personal effects from the incident site to the MADCP or decontamination facility. The inability to safely transport and decontaminate biologically contaminated remains is a significant capability deficiency that DoD must resolve to counter current and anticipated threats.

Projected Near/Mid-Term Capabilities and Deficiencies

Current, The Combined Arms Support Command (CASCOM) is working with JRO-CBRND to determine the feasibility of fielding an Interim Mortuary Affairs Remains Decontamination System based on the Small Shelter Decontamination System evaluated under the Contamination Avoidance at Sea Ports of Debarkation Advanced Capability Technology Demonstration conducted by the Defense Threat Reduction Agency (DTRA). Fielding a limited quantity of these systems will provide DoD the capability to decontaminate the majority of remains and PE resulting from a CBRN incident. Currently, DoD has limited Mortuary Affairs (MA) equipment and force structure to support total force requirements, and MA personnel are only marginally trained to accomplish this mission.

CASCOM is also working with DTRA to test military and commercial products to safely transport contaminated remains from an incident site to a decontamination site. In conjunction with Dugway Proving Ground, DTRA is planning to conduct a swatch test, using live agents, of the military unique and commercial Human Remains Pouches (HRP) currently used by DoD (Military Type II and IIA), as well as BioSeal[®] material, and commercial Contaminated Remains Pouches (CRP). Based on the swatch test results, the selected technologies will be tested as a unit in a live-agent test chamber. For example: an HRP, BioSeal[®] material, and a CRP. If the selected technologies configured as a unit pass the technical test, an operational demonstration will be recommended to assess the technologies. Military Utility Testing is scheduled to be conducted in September 2005.

Projected Far-Term Capabilities and Deficiencies

To identify far-term requirements and identify potential solutions, CASCOM is conducting a JCIDS study to formally analyze the DoD MA program. Existing capabilities and capability gaps, potential solutions, and recommended courses of action will be proposed to eliminate identified capability deficiencies. One potential far-term solution may be realized through JSPDS Increment II developmental efforts, which will provide the capability to neutralize all H-series, V-series, and G-series chemical and biological warfare agents, as well as T-2 mycotoxins, TICs, and TIMs.

Additional far-term solutions to identify and neutralize both known and unknown warfare agents may be identified through the JCIDS process being conducted by CASCOM.

Table 17.4-1. TASUST 4: External Decontamination—Capabilities and Deficiencies Assessment

Capabilities	M1		M2		M3		M4		M5		M6		M7	
	O	T	O	T	O	T	O	T	O	T	O	T	O	T
Current														
Soap and Water	3 ¹	3	0 ²	0	4 ³	4	8 ⁴	8	3 ⁵	3	5 ⁶	5	5 ⁷	7 ⁸
Diluted HTH Household Bleach	5 ⁹	5	3 ¹⁰	3	6 ¹¹	6	N/A	N/A	5 ¹²	5	5	5	5	7
Temporary Interment	7 ¹³	7	7 ¹⁴	7	0 ¹⁵	0	4 ¹⁶	4	N/A	7 ¹⁷	3 ¹⁸	3	7	7
Embalming	N/A	7	N/A	7	N/A	8 ¹⁹	N/A	N/A	N/A	7	N/A	3	N/A	5
Near/Mid-Term														
DF 200	7	7	3	3	8	8	N/A	N/A	7	7	5	5	0 ²⁰	7
Far-Term														
JSPDS Increment II	10 ²¹	10	5 ²²	5	8	8	8	8	7	7	5	5	10 ²³	10
Current Overall Capabilities*	5	6	3	5	3	6	6	6	5	7	5	5	5	7
Near/Mid-Term Overall Capabilities	7	7	3	5	8	8	8	8	7	7	5	5	5	7
Far-Term Overall Capabilities	10	10	5	5	8	8	8	8	7	7	5	5	10	10

*This table suggests that current overall capabilities should be labeled “yellow”; however, Mortuary Affairs units and personnel do not have a standard remains decontamination system to utilize the capabilities currently available, which were evaluated in the table. This deficiency suggests the need to develop a standardized remains decontamination system to effectively utilize existing and developmental capabilities. Development of an effective system for external remains decontamination is not technology constrained.

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where contaminated by-products are controlled less than 100%, measures must be in place to prevent them from becoming an unacceptable hazard or safety risk. NOTE: The definition of “contaminated by-products” is the residual waste created during the decontamination process.	10: Complete (100%). 7: Substantial (~75%). 5: Partial (~50%). 3: Minimal (~25%). 0: No, cross-contamination cannot be controlled and presents an unacceptable hazard.

M2	(Level) Of chemical contamination after decontamination procedures.	Chemically contaminated remains can be decontaminated to reduce the level of contamination to a low enough level that remains no longer pose an imminent health threat to the living. Every effort is made to render remains safe for immediate return to families. “Agents” defined as current-generation CWAs, NTAs, TIMS, and TICs.	10: Decontaminate all CWAs, NTAs, and TIMs to general population exposure limits. 7: Decontaminate all CWAs and NTAs and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	Biologically contaminated (to include toxins) remains can be decontaminated to reduce the level of contamination low enough that remains no longer pose an imminent health threat to the living. Every effort is made to make remains safe for immediate return to families. Vegetative and nonvegetative bacteria are measured in CFU/m ² and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins without causing any visual effects to remains. 8: Less than infective dose levels/casualty-producing toxin exposure levels; no visual effects on remains. 6: Less than infective dose levels/casualty-producing toxin exposure levels; minor visual effects on remains. 4: Less than infective dose levels/casualty-producing toxin exposure levels; significant visual effects on remains. 2: Less than infective dose levels/casualty-producing toxin exposure levels; remains may not be viewable due to disfigurement by decontamination process 0: More than infective dose levels/casualty-producing toxin exposure levels, and remains cannot be immediately transported and returned to families
M4	(Level) Of radiological contamination after decontamination procedures.	Radiologically contaminated remains can be decontaminated to reduce the level of contamination low enough that remains no longer pose an imminent health threat to the living. Every effort is made to make remains safe for immediate return to families.	10: Total removal to natural background level; no visual effects on remains. 8: <0.4 Bq/cm ² beta/gamma activity and <0.04 Bq/cm ² alpha activity; no visual effects on remains. 6: <0.4 Bq/cm ² beta/gamma activity and <0.04 Bq/cm ² alpha activity; minor visual effects on remains. 4: <0.4 Bq/cm ² beta/gamma activity and <0.04 Bq/cm ² alpha activity; significant visual effects on remains. 2: <0.4 Bq/cm ² beta/gamma a activity and <0.04 Bq/cm ² alpha activity; remains may not be viewable due to disfigurement by decontamination process. 0: Partial removal; remains cannot be immediately transported and returned to families due to excessive residual dose rate.

M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must in place to prevent cross-contamination from becoming an unacceptable hazard or safety risk.	10: Complete (100%). 7: Substantial (~75%). 5: Partial (~50%). 3: Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard
M6	(Yes/No) Decontamination procedures are logistically supportable?	Procedures required to implement the capabilities necessary to decontaminate remains against a given threat are logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M7	There is effective DOTLPF in place to conduct task?	The non-materiel elements associated with executing the tasks required to implement a given capability have been established and are available.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Minimal (~25%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

³ M3 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels, significant visual effects on remains.

⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 8: <0.4 bequerel/square centimeter (Bq/cm²) beta/gamma activity and <0.04 Bq/cm² alpha activity; no visual effects on remains.

⁵ M5 – (Yes/No) Cross-contamination is controlled? 3: Minimal (~25%).

⁶ M6 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

⁷ M7 – There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.

⁸ M7 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

⁹ M1 – (Yes/No) Contaminated by-products are controlled? 5: Partial (~50%).

¹⁰ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

¹¹ M3 – (Level) Of biological contamination after decontamination procedures. 6: Less than infective dose levels/casualty-producing toxin-exposure levels; minor visual effects on remains.

¹² M5 – (Yes/No) Cross-contamination is controlled? 5: Partial (~50%)

¹³ M1 – (Yes/No) Contaminated by-products are controlled? 7: Substantial (~75%).

- ¹⁴ M2 – (Level) Of chemical contamination after decontamination procedures. 7: Decontaminate all CWAs, all NTAs, some TIMs to a level that will allow unprotected exposure.
- ¹⁵ M3 – (Level) Of biological contamination after decontamination procedures. 0: More than infective dose levels/casualty-producing toxin-exposure levels, and remains cannot be immediately transported and returned to families.
- ¹⁶ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.4 Bq/cm² beta/gamma activity and <0.04 Bq/cm² alpha activity; significant visual effects on remains.
- ¹⁷ M5 – (Yes/No) Cross-contamination is controlled? 7: Substantial (~75%).
- ¹⁸ M6 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ¹⁹ M3 – (Level) Of biological contamination after decontamination procedures. 8: Less than infective dose levels/casualty-producing toxin-exposure levels; no visual effects on remains.
- ²⁰ M7 – There is effective DOTLPF in place to conduct task? 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.
- ²¹ M1 – (Yes/No) Contaminated by-products are controlled? 10: Complete (100%).
- ²² M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ²³ M7 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

Table 17.4-2. TASUST 4: Internal Decontamination—Capabilities and Deficiencies Assessment

Capabilities	M1		M2		M3		M4		M5		M6		M7	
	O	T	O	T	O	T	O	T	O	T	O	T	O	T
Current/Near/Mid/Far-Term														
Temporary Interment*	7 ¹	7	7 ²	7	0 ³	0	4 ⁴	4	7	7 ⁵	3 ⁶	3	7 ⁷	7
Embalming*	N/A	7	N/A	7	N/A	8 ⁸	N/A	N/A	N/A	7	3	3	N/A	5 ⁹
Cremation	N/A	7	N/A	10 ¹⁰	N/A	2 ¹¹	N/A	N/A	N/A	7	0 ¹²	0	N/A	0 ¹³
Current/ Near/Mid/Far-Term Overall Capabilities*	7	7	7	7	0	6	4	4	7	7	3	3	7	5

*Temporary interment, embalming, and cremation, while offering various capabilities, are either not allowed by current policies or are not desired solutions for the expeditious return of previously contaminated remains to families. These are stop-gap and extreme measures utilized only in the case of lacking other decontamination capabilities. There are no formal capability development programs currently under way to decontaminate remains with residual internal hazards.

- ¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Substantial (~75%).
- ² M2 – (Level) Of chemical contamination after decontamination procedures. 7: Decontaminate all CWAs, all NTAs, some TIMs to a level that will allow unprotected exposure.
- ³ M3 – (Level) Of biological contamination after decontamination procedures. 0: More than infective dose levels/casualty-producing toxin-exposure levels, and remains cannot be immediately transported and returned to families.
- ⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.4 Bq/cm² beta/gamma activity and <0.04 Bq/cm² alpha activity; significant visual effects on remains
- ⁵ M5 – (Yes/No) Cross-contamination is controlled? 7: Substantial (~75%).
- ⁶ M6 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ⁷ M7 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

⁸ M3 – (Level) Of biological contamination after decontamination procedures. 8: Less than infective dose levels/casualty-producing toxin-exposure levels; no visual effects on remains.

⁹ M7 – There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.

¹⁰ M2 – (Level) Of chemical contamination after decontamination procedures. 10: Decontaminate all CWAs, NTAs, and TIMs to general population exposure limits.

¹¹ M3 – (Level) Of biological contamination after decontamination procedures. 2: Less than infective dose levels/casualty-producing toxin-exposure levels; remains may not be viewable due to disfigurement by decontamination process.

¹² M6 – (Yes/No) Decontamination procedures are logistically supportable? 0: Not logistically supportable.

¹³ M7 – There is effective DOTLPF in place to conduct task? 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

17.4.3 Functional Solution Analysis

17.4.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Inadequate expeditionary capabilities to perform remains decontamination.
Non-Materiel Solutions: *Doctrine (partial):* Doctrine establishes policy—i.e., what must be done, not how to do it—and history has demonstrated repeatedly that doctrine cannot always be implemented during combat as envisioned. This principle is especially true on the ambiguous, nonlinear battlefield of today where personnel from all Services are evacuating remains from the battlefield. Doctrine must be updated to take into account the force structure changes taking place in all the Services to enhance their capability to rapidly deploy and to efficiently and effectively fight in a joint, combined, and/or multinational environment. Above all, however, it is essential that doctrine be updated to emphasize the need for a capability to safely transport and decontaminate biologically contaminated remains and PE.
- 2. Deficiency:** Inadequate force structure and equipment to perform expeditionary remains decontamination.
Non-Materiel Solutions: *Organizations (partial):* CASCOM is currently drafting a Force Design Update to restructure U.S. Army MA companies to enable them to better support the full spectrum of MA operations. And other Service components are changing their force structure as well to increase their organic MA operational capability. Changing the current structure of military organizations or adding additional activities to the military force structure may provide personnel assets to support transporting and decontaminating biologically contaminated remains and PE, but without the right equipment to perform these functions, these serious capability gaps will not be eliminated. To ensure U.S. Army MA companies, as well as the other Service component organizations, are able to perform MA decontamination functions as required, CASCOM is currently working with JRO-CBRND to determine the feasibility of fielding an Interim Mortuary Affairs Remains Decontamination System to provide DoD the capability to decontaminate the exterior of CBRN contaminated remains and PE. If approved, this equipment will be added to the MA company tables of organization and equipment (TOEs). Other Service components will also be able to add it to their authorized equipment lists, as well. CASCOM is also working with DTRA to develop and test a containment system to safely transport contaminated remains from an incident site to a decontamination site. CASCOM anticipates this effort will be successful. If so, depending on the solution identified and approved through the JCIDS process to decontaminate biologically contaminated remains, the equipment may be added to the MA Company TOEs, and other Service Component equipment lists. *Personnel (partial):* An increase or decrease in personnel authorizations cannot resolve this urgent requirement, and until specific materiel solutions are identified and approved to support these requirements, the need for changes in personnel authorizations will not be known. Certain military occupational specialties for existing military positions, and/or job descriptions for existing

DoD civilian personnel may very well need to be modified to incorporate operation of this equipment as a primary duty.

- 3. Deficiency:** Training to perform remains decontamination is inadequate.

Non-Materiel Solutions: *Training (partial):* Changes to existing Service Component professional development and training plans will not address this deficiency by themselves. As previously mentioned, materiel solutions are required to provide DoD the capability to safely transport and decontaminate biologically contaminated remains. The addition of new equipment to support this requirement, will however, require the development of new training plans on how to operate and maintain the equipment; as well as the procedures to be followed to transport and decontaminate biologically contaminated remains and PE.

Leadership Development (partial): Like training, changes to existing leadership development programs will not correct these capability gaps. The addition of new technology equipment to the military inventory, and the subsequent processes developed for the implementation of this technology may/ require the addition of, or changes to leadership development programs.

- 4. Deficiency:** A lack of fixed facilities with capabilities to support remains decontamination.

Non-Materiel Solutions: None. Existing facilities do not have the capability or can be modified to provide this critical requirement, however, a materiel solution to decontaminate biologically contaminated remains may require equipment to be installed and maintained in fixed facilities. Until a specific solution is identified and approved, however, the answer to this question will not be known. If fixed facilities are required, they may need to be strategically located at multiple sites within CONUS to enable them to support both CONUS and OCONUS requirements. Facilities may also need to be identified in overseas theaters of operation that can be used to house the system in the event a bioterrorist attack is launched against United States interests overseas.

17.4.3.2 IMA Assessment Summary

Table 17.4-3 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.4-3. TASUST 4: IMA Assessment

Identified Gaps	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Sorption	(Nonaqueous) Solutions	Ionizing/Nonionizing Radiation	Plasmas	Containment System	Reactive Gases and Vapors	Electrostatic Decontamination System	Mortuary Affairs Remains Decontamination System
Current array of decontaminants may not neutralize all chemical and biological hazards.	X	X	X	X	X	X	X		X	X	X
Lack of capability decontaminate biologically and chemically contaminated internal organs of contaminated human remains.						X			X		X
No containment system to safely transport internally biologically contaminated human remains.						X		X	X		X

17.5 Task TASUST 5: Diagnose chemical effects on personnel and MWAs**17.5.1 Functional Area Analysis****17.5.1.1 Definition**

To use medical diagnostic tools and procedures to identify and confirm chemical hazard exposure in both personnel and MWAs, specifically MWDs. Also includes monitoring presymptomatic levels of exposure. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel.

17.5.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.5.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.5.1.2.2 Lateral Tasks: TASHA 12, TASHA 13

17.5.1.2.3 Supporting Task: N/A

17.5.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Chemical effects. (C1.3.3.2)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)

4. Significant refugee-care responsibility. (C3.3.2.3)

17.5.2 Functional Needs Analysis

17.5.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.5-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There are eight current capabilities used to accomplish this task. The individual capabilities include signs/symptomatology and clinical diagnosis capabilities for nerve, blister, cyanide, and pulmonary agent exposure.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” High-level chemical exposure typically causes a rapid onset of recognizable signs and symptoms; however, signs and symptoms of mustard and phosgene exposure as well as low-level exposure by all chemical agents may not be immediately recognizable to medical and veterinary services personnel. Diagnostic tools are available to presumptively identify and quantify chemical agent exposure by class (with the exception of phosgene intoxication). However, there are no clinical laboratory tests that confirm blister agent or phosgene exposure. Furthermore, laboratory diagnosis typically cannot be completed in sufficient time frame to reduce morbidity and mortality.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 17.5-1. TASUST 5: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
Signs and Symptomatology – Nerve Agents	5	5	N/A	N/A	N/A	10
Clinical Diagnosis – Nerve Agents	N/A	5	10	5	5	10
Signs and Symptomatology – Vesicant Agents	5	10	N/A	N/A	N/A	10
Clinical Diagnosis – Vesicant Agents	N/A	5	5	5	5	10
Signs and Symptomatology – Cyanides	5	10	N/A	N/A	N/A	10
Clinical Diagnosis – Cyanides	N/A	10	10	5	5	10
Signs and Symptomatology – Pulmonary Agents	5	10	N/A	N/A	N/A	5
Clinical Diagnosis – Pulmonary Agents	N/A	5	5	5	5	10
Current Overall Capabilities	5	8	8	5	5	9
Near/Mid-Term Overall Capabilities	5	8	8	5	5	9
Far-Term Overall Capabilities	5	8	8	5	5	9

	FAA Measure	Elaboration	Scale
M1	Signs and symptoms of chemical exposure can be recognized?	Applies to sign and symptomatology capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.
M2	All chemical hazard effects can be identified during diagnostic evaluation?		10: Complete capability (e.g., specific agent identified). 5: Partial capability (e.g., agent type identified). 0: No capability.
M3	All chemical hazard effects can be quantified during diagnostic evaluation?	Applies to clinical diagnosis capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.
M4	Time to prepare sample?	Applies to clinical diagnosis capabilities only.	10: Sample collection/preparation can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample collection/preparation cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Samples cannot be collected and prepared for analysis.
M5	Time to confirm hazard presence in sample?	Applies to clinical diagnosis capabilities only.	10: Sample analysis can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample analysis cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Sample analysis capability does not exist.

M6	Capability (DOTLPF) exists to diagnose chemical exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task cannot be effectively accomplished.
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17.5.3 Functional Solution Analysis

17.5.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Inability to immediately recognize low-level exposure to chemical agents or confusing it for other maladies.
Non-Materiel Solutions: *Training:* Increase Medical and Veterinary Services personnel training on recognizing signs and symptom of chemical agent exposures in personnel and MWAs.
- 2. Deficiency:** Lack of recognition of early signs and symptoms that indicate chemical exposure in MWAs.
Non-Materiel Solutions: *Training:* Develop course for Veterinary Services personnel (based on existing course for human chemical agent casualties) and provide initial and refresher training on medical identification and management of chemical effects in MWAs.
- 3. Deficiency:** Inability to definitively identify mustard and phosgene casualties during early post-exposure period.
Non-Materiel Solutions: None.
- 4. Deficiency:** General inability to identify, during diagnosis, actual agent that caused exposure.
Non-Materiel Solutions: None.
- 5. Deficiency:** Lack of clinical laboratory tests that confirm blister agent or phosgene exposure.
Non-Materiel Solutions: None.
- 6. Deficiency:** Inability to complete clinical diagnosis in sufficient time frame to reduce morbidity and mortality.
Non-Materiel Solutions: None.
- 7. Deficiency:** Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.
Non-Materiel Solutions: *Doctrine (partial):* Incorporate guidelines for an MOU/A with external laboratory resources. Revise doctrine to define those circumstances when assistance from alternative laboratories would be needed, to identify which staff and what equipment would be readily available to conduct diagnostics, to clarify DoD requirements for personnel (i.e., clearance, experience, etc.), to identify what protocol for diagnosing/analyzing samples are to be followed, and to ensure adequate training of personnel. *Training (partial):* Coordinate training and certify personnel from alternative laboratories. *Organization (partial):* Develop MOU/As with civilian and/or commercial laboratories to assist with diagnostic requirements.

- 8. Deficiency:** Inadequate chain-of-custody procedures and/or special packaging and handling.
Non-Materiel Solutions: *Doctrine (partial):* Clearly define chain-of-custody process, handling, and packaging procedures. *Training (partial):* Train personnel on chain-of-custody, handling, and packaging procedures.

17.5.3.2 IMA Assessment Summary

Table 17.5-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.5-2. TASUST 5: IMA Assessment

<p style="text-align: center;">Identified Gap</p> <p style="text-align: center;">Idea for Materiel Approach (IMA)</p>	<p style="text-align: center;">Portable Chemical Agent Identification Tests and Diagnostic Methods</p>	<p style="text-align: center;">Advanced Laboratory Tests and Diagnostic Methods</p>	<p style="text-align: center;">Large-Volume Laboratory Diagnostic Testing</p>
<p>Inability to definitively identify mustard and phosgene casualties during early post-exposure period.</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>General inability to identify, during diagnosis, actual agent that caused exposure.</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Lack of clinical laboratory tests that confirm blister agent or phosgene exposure.</p>		<p>X</p>	<p>X</p>
<p>Inability to complete clinical diagnosis in sufficient time frame to reduce morbidity and mortality.</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.</p>			<p>X</p>
<p>Inadequate chain-of-custody procedures and/or special packaging and handling.</p>	<p>X</p>		

17.6 Task TASUST 6: Diagnose biological effects on personnel and MWAs**17.6.1 Functional Area Analysis****17.6.1.1 Definition**

To use medical diagnostic tools and procedures to identify and confirm biological hazard exposure in both personnel and MWAs, specifically MWDs. Also includes monitoring presymptomatic levels of exposure. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel.

17.6.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.6.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.6.1.2.2 Lateral Tasks: TASHA 12, TASHA 13

17.6.1.2.3 Supporting Task: N/A

17.6.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Biological effects. (C1.3.3.3)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)

4. Moderate or high health risk. (C3.3.1.5)
5. Significant refugee-care responsibility. (C3.3.2.3)

17.6.2 Functional Needs Analysis

17.6.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.6-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There are six current capabilities and three projected to be added in the future (actually two: Joint Biological Agent Identification and Diagnostic System [JBAIDS] Block I and II in the near/mid term). The individual capabilities include signs/symptomatology and clinical diagnosis capabilities for bacteria/rickettsia, viruses, and toxins.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Signs and symptomatology, in addition to currently available diagnostic tools, partially meet most standards for diagnosing biological effects on personnel and MWAs¹. They partially meet confirmatory standards since, with the exception of toxins, cultivation and identification of pathogen is usually required and this process can take days.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” Near-future capability JBAIDS Block I will rapidly identify and quantify all bacterial/rickettsia agents of interest and most viral agents of interest in clinical samples. JBAIDS Block II will also detect all toxins or interest.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

¹ In general, diseases produced by the offensive use of biological warfare (BW) agents against U.S. forces could be lethal and/or disabling. These BW agents could also infect the animal population within the contaminated area; however, most of the diseases that are likely to be used in BW are unlikely to cause illness in MWDs, primarily due to varied species susceptibility between dogs and humans for most BW agents. (For definitive information on BW agents, see FM 8-284). Of the diseases considered to be likely BW agents, MWDs are likely to be susceptible to only plague (*Yersinia pestis*), tularemia, brucellosis, Q-fever, and anthrax. In all of these diseases, the MWD is believed to be less susceptible than man.

Table 17.6-1. TASUST 6: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
Bacteria/Rickettsia						
Signs and Symptoms	5	5	N/A	N/A	N/A	10
Clinical Diagnosis	N/A	5	5	5	5	10
Viruses						
Signs and Symptoms	5	5	N/A	N/A	N/A	10
Clinical Diagnosis	N/A	5	5	5	5	10
Toxins						
Signs and Symptoms	5	5	N/A	N/A	N/A	10
Clinical Diagnosis	N/A	10	10	10	10	10
Near/Mid-Term						
JBAIDS Block I/II – Bacteria/ Rickettsia	N/A	10	10	10	10	N/A
JBAIDS Block I/II – Viruses	N/A	5	10	10	10	N/A
JBAIDS Block II – Toxins	N/A	10	10	10	10	N/A
Current and Overall Capabilities	5	6	7	7	7	10
Near/Mid-Term Overall Capabilities	5	7	8	8	8	N/A
Far-Term Overall Capabilities	5	7	8	8	8	N/A

	FAA Measure	Elaboration	Scale
M1	Signs and symptoms of biological exposure can be recognized?	Applies to signs and symptomatology capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.
M2	All biological hazard effects can be identified during diagnostic evaluation?		10: Complete capability (e.g., specific agent identified). 5: Partial capability (e.g., agent type identified). 0: No capability.
M3	All biological hazard effects can be quantified during diagnostic evaluation?	Applies to clinical diagnosis capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.

M4	Time to prepare sample?	Applies to clinical diagnosis capabilities only.	10: Sample collection/preparation can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample collection/preparation cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Samples cannot be collected and prepared for analysis.
M5	Time to confirm hazard presence in sample?	Applies to clinical diagnosis capabilities only.	10: Sample analysis can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample analysis cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Sample analysis capability does not exist.
M6	Capability (DOTLPF) exists to diagnose biological exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task cannot be effectively accomplished.

17.6.3 Functional Solution Analysis

17.6.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Inability to perform presumptive identification during early stages of illness.
Non-Materiel Solutions: None.
- 2. Deficiency:** Unacceptable amount of time (i.e., order of days) required for confirmation of bacterial and viral etiologic agents.
Non-Materiel Solutions: None.
- 3. Deficiency:** Limited capability for forward-deployed medical personnel to rapidly analyze biological specimens.
Non-Materiel Solutions: None.
- 4. Deficiency:** Limited capability for forward-deployed medical personnel to collect and prepare samples.
Non-Materiel Solutions: None.
- 5. Deficiency:** Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.
Non-Materiel Solutions: *Doctrine (partial):* Revise doctrine to define those circumstances when assistance from alternative laboratories would be needed, to identify which staff and what equipment would be readily available to conduct diagnostics, to clarify DoD requirements for personnel (i.e., clearance, experience, etc.), to identify what protocol for diagnosing/analyzing samples are to be followed, and to ensure adequate training of personnel. *Organization (partial):* Develop MOU/As with civilian and/or commercial laboratories to assist with diagnostic requirements. *Training (partial):* Coordinate training and certify personnel from alternative laboratories.
- 6. Deficiency:** Inability to presumptively differentiate between bacterial diseases during early illness through recognition of signs and symptoms.
Partial Non-Materiel Solutions: *Training (Partial):* Develop course for Veterinary Services personnel (based on existing course for human biological agent casualties) and provide initial and refresher training on medical identification and management of biological warfare agents effects in MWAs.
- 7. Deficiency:** Unacceptable risk of infecting laboratory personnel during clinical specimen analysis.
Non-Materiel Solutions: *Training (partial):* Train laboratory personnel on safe handling and testing procedures and protocols.

8. Deficiency: Lack of specificity of most routine laboratory tests.

Non-Materiel Solutions: None.

9. Deficiency: Inadequate chain-of-custody procedures and/or special packaging and handling.

Non-Materiel Solutions: *Doctrine (partial):* Clearly define chain-of-custody process, handling, and packaging procedures. *Training (partial):* Train personnel on chain-of-custody, handling, and packaging procedures.

17.6.3.2 IMA Assessment Summary

Table 17.6-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.6-2. TASUST 6: IMA Assessment

<p style="text-align: center;">Identified Gap</p> <p style="text-align: center;">Idea for Materiel Approach (IMA)</p>	<p style="text-align: center;">Portable Biological Agent Identification Tests and Diagnostic Methods</p>	<p style="text-align: center;">Advanced Laboratory Tests and Diagnostic Methods</p>	<p style="text-align: center;">Large-Volume Laboratory Diagnostic Testing</p>
<p>Inability to perform presumptive identification during early stages of illness.</p>		X	X
<p>Unacceptable amount of time (i.e., order of days) required for confirmation of bacterial and viral etiologic agents.</p>		X	X
<p>Limited capability for forward-deployed medical personnel to rapidly analyze biological specimens.</p>	X		
<p>Limited capability for forward-deployed medical personnel to collect and prepare samples.</p>	X		
<p>Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.</p>			X
<p>Inability to presumptively differentiate between bacterial diseases during early illness through recognition of signs and symptoms.</p>	X	X	X
<p>Unacceptable risk of infecting laboratory personnel during clinical specimen analysis.</p>	X		
<p>Lack of specificity of most routine laboratory tests.</p>		X	X
<p>Inadequate chain-of-custody procedures and/or special packaging and handling.</p>	X		

17.7 Task TASUST 7: Diagnose radiological effects on personnel and MWAs

17.7.1 Functional Area Analysis

17.7.1.1 Definition

To use medical diagnostic tools and procedures to identify and confirm radiological hazard exposure in both personnel and MWAs, specifically MWDs. Also includes monitoring presymptomatic levels of exposure. Several animal species are used as MWAs; however, MWDs are the predominant species and are most likely to be deployed with military personnel.

17.7.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.7.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.7.1.2.2 Lateral Tasks: TASHA 12, TASHA 13

17.7.1.2.3 Supporting Task: N/A

17.7.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Nuclear effects. (C1.3.3.1)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)

- 4. Significant refugee-care responsibility. (C3.3.2.3)

17.7.2 Functional Needs Analysis

17.7.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.7-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There are two current capabilities used to accomplish this task. The individual capabilities include signs/symptomatology and clinical diagnosis capabilities for detecting, identifying, and quantifying radiation exposure.

Current Capabilities and Deficiencies

Since effects from radiation resemble other common illnesses, laboratory findings are essential. Current deficiencies include limited capability for forward-deployed medical personnel to rapidly identify radiological agents in clinical specimens, lack of diagnostic tools at all levels of care to identify or quantify exposure in the absence of recognizable signs and symptoms.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 17.5-1. TASUST 7: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3	M4	M5	M6
Current						
Signs and Symptoms	5	5	N/A	N/A	N/A	10
Clinical Diagnosis	N/A	5	5	10	5	10
Current and Overall Capabilities	5	5	5	10	5	10
Near/Mid-Term Overall Capabilities	5	5	5	10	5	10
Far-Term Overall Capabilities	5	5	5	10	5	10

	FAA Measure	Elaboration	Scale
M1	Signs and symptoms of radiological exposure can be recognized?	Applies to signs and symptomatology capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.
M2	All radiological hazard effects can be identified during diagnostic evaluation?		10: Complete capability 5: Partial capability. 0: No capability.
M3	All radiological hazard effects can be quantified during diagnostic evaluation?	Applies to clinical diagnosis capabilities only.	10: Complete capability. 5: Partial capability. 0: No capability.
M4	Time to prepare sample?	Applies to clinical diagnosis capabilities only.	10: Sample collection/preparation can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample collection/preparation cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Samples cannot be collected and prepared for analysis.
M5	Time to confirm hazard presence in sample?	Applies to clinical diagnosis capabilities only.	10: Sample analysis can be completed in sufficient time frame to reduce morbidity and mortality. 5: Sample analysis cannot be completed in sufficient time frame to reduce morbidity and mortality. 0: Sample analysis capability does not exist.
M6	Capability (DOTLPF) exists to diagnose radiological exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task cannot be effectively accomplished.

17.7.3 Functional Solution Analysis

17.7.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Inability of physical dosimeter to differentiate between whole-body and partial-body exposure.
Non-Materiel Solutions: None.
- 2. Deficiency:** Inability to determine dose rate of exposure from most physical dosimeters.
Non-Materiel Solutions: None.
- 3. Deficiency:** Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.
Non-Materiel Solutions: *Doctrine:* Revise doctrine to define those circumstances when assistance from alternative laboratories would be needed, to identify which staff and what equipment would be readily available to conduct diagnostics, to clarify DoD requirements for personnel (i.e., clearance, experience, etc.), to identify what protocol for diagnosing/analyzing samples are to be followed, and to ensure adequate training of personnel.
Organization: Develop MOU/As with civilian and/or commercial laboratories to assist with diagnostic requirements. *Training:* Coordinate training and certify personnel from alternative laboratories.
- 4. Deficiency:** Lack of recognition of early signs and symptoms that indicate radiation exposure.
Non-Materiel Solutions: *Training:* Continue to provide initial and refresher training on medical identification and management of radiation casualties. Adapt existing courses for human casualties to MWAs for Veterinary Services personnel. *Leadership:* Leadership may be required to divert nontraditional medical evacuation assets in order to evacuate casualties to higher levels of care required for life saving diagnosis and treatment.
- 5. Deficiency:** Limited capability for forward-deployed medical personnel to rapidly identify radiological agents in clinical specimens.
Non-Materiel Solutions: *Doctrine (Partial):* Clearly define under what conditions medical prophylaxis and treatment should be initiated (prior to confirmatory testing). If decision is made after results of confirmatory testing the morbidity and mortality rate significantly increases.
- 6. Deficiency:** Inability to diagnose radiation effects in sufficient time frame to reduce morbidity and mortality.
Non-Materiel Solutions: None.
- 7. Deficiency:** Inadequate chain-of-custody procedures and/or special packaging and handling.

Non-Materiel Solutions: *Doctrine (partial):* Clearly define chain-of-custody process, handling, and packaging procedures. *Training (partial):* Train personnel on chain-of-custody, handling, and packaging procedures.

17.7.3.2 IMA Assessment Summary

Table 17.7-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment. Advances in individual dosimeters may be able to address all identified deficiencies.

Table 17.7-2. TASUST 7: IMA Assessment

Identified Gaps	Idea for Materiel Approach (IMA)	Individual Dosimeters	Laboratory Dosimeters	Rapid Diagnostics	Individual Detector
Inability of physical dosimeter cannot to differentiate between whole-body and partial-body exposure.		X	X		
Inability to determine dose rate of exposure from most physical dosimeters.		X	X		
Limited capability for forward-deployed medical personnel to rapidly identify radiological agents in clinical specimens.		X	X	X	X
Inability to diagnose radiation effects in sufficient time frame to reduce morbidity and mortality.		X	X	X	X
Inadequate chain-of-custody procedures and/or special packaging and handling.		X	X	X	X

17.8 Task TASUST 8: Treat chemical effects on personnel and MWAs**17.8.1 Functional Area Analysis****17.8.1.1 Definition**

To provide rapid treatment and mitigation of health effects of chemical agents, including TICs, exposure to personnel and MWAs, specifically MWDs. Treatment includes the protocols and procedures for the administration of the treatment regime as well as the logistical requirements necessary to support surge operations required by the mass exposure of personnel.

17.8.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.8.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.8.1.2.2 Lateral Task: TASHA 24

17.8.1.2.3 Supporting Task: N/A

17.8.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Chemical effects. (C1.3.3.2)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)

4. Significant refugee-care responsibility. (C3.3.2.3)

17.8.2 Functional Needs Analysis

17.8.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.8-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There are 13 current capabilities used to accomplish this task and one projected capability to be added in the future (one in the near/mid term). The capabilities include a range of MWD handler and Veterinary Services personnel-administered post-exposure therapeutics with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies.

The overall current capability is assessed as “yellow.” Multiple nerve agent therapeutics exist for personnel, and many of these can also be used “extra label” in MWAs. If administered immediately after exposure, they are usually effective. Nevertheless, there are severe contraindications associated with many of these therapeutics, and most of them are required to be given under the supervision of medical or veterinary personnel.

There are no FDA-approved therapeutics for personnel or MWA exposure to blister agents with the exception of symptomatic treatment and supportive care. Dimercaprol (a.k.a. British Anti-Lewisite) is not FDA approved for either personnel or MWAs, though it can be used “extra label” in MWAs.

Effective therapeutics for cyanide intoxication (both through respiration and ingestion) exist. However, many are given intravenously, and most require medical or veterinary personnel for administration. Though none of the cyanide therapeutics are FDA approved for MWAs, they can be used “extra label” for MWAs.

Like blister agent therapeutics, pulmonary agent therapeutics are based on symptomatic treatment and supportive care. Many of these therapeutics have major contraindications and are not readily available for MWA care, and most, if not all, must be administered under the supervision of medical or veterinary personnel.

Current deficiencies include the lack of vesicant and pulmonary agent antidotes and the lack of effective nerve, vesicant, and pulmonary agent exposure therapeutics that do not have significant adverse effects and that can be readily administered by MWD handlers.

Projected Near/Mid-Term Capabilities and Deficiencies

The overall projected near/mid-term capability is assessed as “yellow.” In the near/mid-term future, the Advanced Anticonvulsant System (AAS) is expected to replace the convulsive antidote for nerve agent. The protection against seizures caused by nontraditional chemical agents provided by the midazolam-containing AAS will be superior to that provided by the

diazepam-containing convulsive antidote for nerve agent, since midazolam has a broader window of time for effective administration than diazepam.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 17.8-1. TASUST 8: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3
Current			
<i>Nerve Agents</i>			
ATNAA	5	10	10
Benzodiazepine Anticonvulsants	10	10	10
MANAA	5	10	10
Muscarinic Receptor Antagonists	5	10	5
Oximes	5	5	5
<i>Blister Agents</i>			
Dimercaprol	5	5	10
Symptomatic Treatment and Supportive Care	5	5	5
<i>Cyanides</i>			
Cyanide-binding drugs	5	10	5
Pasadena Cyanide Antidote Kit	5	10	5
Sodium Bicarbonate	5	5	5
Sodium Thiosulfate	5	10	5
Superactivated Charcoal	5	10	5
<i>Pulmonary Agents</i>			
Symptomatic Treatment and Supportive Care	5	5	5
Near/Mid-Term			
<i>Nerve Agents</i>			
AAS	5	5	N/A
Current and Overall Capabilities	5	8	7
Near/Mid-Term Overall Capabilities	5	8	N/A
Far-Term Overall Capabilities	5	8	N/A

Measures

	FAA Measure	Elaboration	Scale
M1	Therapeutics are FDA approved?		10: FDA approved for use in both personnel and MWAs. 5: Not FDA approved in personnel and/or MWAs; can be used “extra label” for personnel and/or MWAs. 0: Cannot be used in either personnel or MWAs.
M2	Therapeutics exist for all chemical hazards?	Effectiveness of a particular therapeutic for chemical hazards of a certain type (i.e., nerve agents, blister agents, cyanides, and pulmonary agents).	10: Complete capability (effective for all chemical hazards of a certain type). 5: Partial capability (limited effectiveness for one or more chemical hazards of a certain type). 0: No capability.
M3	Capability (DOTLPF) exists to treat chemical exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task cannot be effectively accomplished.

17.8.3 Functional Solution Analysis

17.8.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Lack of animal testing to support efficacy and administration of many therapeutics for nerve agent exposure.
Non-Materiel Solutions: *Doctrine:* Develop doctrine based on results of future tests on animal models.
- 2. Deficiency:** Limited efficacy of oximes on quickly “aging” agents such as soman.
Non-Materiel Solutions: None.
- 3. Deficiency:** Significant adverse effects or contraindications for some nerve agent therapeutics, including ATNAA and benzodiazepine receptor agonists.
Non-Materiel Solutions: None.
- 4. Deficiency:** Lack of therapeutics including MANAA, memantine, midazolam, and lorazepam that are packaged for self- or buddy-administration or administration by a MWD handler (These usually require administration by a physician or veterinarian).
Non-Materiel Solutions: *Personnel (Partial):* Increase number of physicians and veterinarians that can administer and monitor treatment. *Training (Partial):* Train nonmedical personnel and MWD handlers to administer therapeutics under limited circumstances.
- 5. Deficiency:** Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.
Non-Materiel Solutions: *Doctrine (Partial):* Revise doctrine to define those circumstances when assistance from alternative laboratories would be needed, to identify which staff and what equipment would be readily available to conduct diagnostics, to clarify DoD requirements for personnel (i.e., clearance, experience, etc.), to identify what protocol for diagnosing/analyzing samples are to be followed, and to ensure adequate training of personnel. *Organization (Partial):* Develop MOU/As with civilian and/or commercial laboratories to assist with diagnostic requirements. *Training (Partial):* Coordinate training and certify personnel from alternative laboratories.
- 6. Deficiency:** Lack of effective and rapidly acting therapeutics for high-level cyanide exposure.
Non-Materiel Solutions: None.
- 7. Deficiency:** Significant adverse effects and contraindications of cyanide therapeutics such as Pasadena Cyanide Antidote Kit and Sodium Thiosulfate.
Non-Materiel Solutions: None.

- 8. Deficiency:** Required physician or veterinarian administration and monitoring of cyanide therapeutics such as Pasadena Cyanide Antidote and Sodium Thiosulfate.
Non-Materiel Solutions: *Personnel (Partial):* Increase number of physicians and veterinarians that can administer and monitor treatment.
- 9. Deficiency:** Inability of MWD handlers to give current pulmonary agent therapeutics (must be given at Level II, III or IV).
Non-Materiel Solutions: None.
- 10. Deficiency:** Lack of pulmonary agent antidote.
Non-Materiel Solutions: None.
- 11. Deficiency:** Significant adverse effects and contraindications of symptomatic treatment and supportive care for pulmonary agent exposure.
Non-Materiel Solutions: None.
- 12. Deficiency:** Required physician or veterinarian supervision and monitoring of intravenously administered drugs such as corticosteroids and aminophylline.
Non-Materiel Solutions: *Personnel (Partial):* Increase number of physicians and veterinarians that can administer and monitor treatment. *Training (Partial):* Train nonmedical personnel and MWD handlers to administer therapeutics under limited circumstances.
- 13. Deficiency:** Lack of animal testing to support efficacy and administration of many therapeutics for pulmonary agent exposure.
Non-Materiel Solutions: *Doctrine (Partial):* Develop doctrine based on results of future tests on animal models.
- 14. Deficiency:** Lack of vesicant agent antidote.
Non-Materiel Solutions: None.
- 15. Deficiency:** Lack of animal testing to support efficacy and administration of many therapeutics for vesicant agent exposure.
Non-Materiel Solutions: *Doctrine:* Develop doctrine based on results of tests on animal models.

17.8.3.2 IMA Assessment Summary

Table 17.8-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.8-2. TASUST 8: IMA Assessment

Identified Gap	Next Generation Oximes	Nontraditional Nerve Agent Medical Countermeasures	Injectable Nanoparticles	Next-Generation Cyanide Antidotes	Vesicant Agent Antidote	Antiinflammatories	Pulmonary Edema–Reducing Treatments	Next-Generation Bronchodilators	Intracellular Scavengers	Biochemical Inhibitors/Modulators
<i>Nerve Agents</i>										
Limited efficacy of oximes on quickly “aging” agents such soman.	X									
Significant adverse effects or contraindications for some nerve agent therapeutics including ATNAA and benzodiazepine receptor agonists.		X	X							
Lack of therapeutics including MANAA, memantine, midazolam and lorazepam that packaged for self- or buddy-administration or administration by a MWD handler (these usually require administration by a physician or veterinarian).										
<i>Cyanides</i>										
Lack of effective and rapidly acting therapeutics for high-level cyanide exposure.				X						
Significant adverse effects and contraindications of cyanide therapeutics such as Pasadena Cyanide Antidote Kit and Sodium Thiosulfate.				X						
Required physician or veterinarian administration and monitoring of Pasadena Cyanide Antidote and Sodium Thiosulfate.				X						
<i>Pulmonary Agents</i>										
Inability of MWD handlers to give current pulmonary agent therapeutics (must be given at Level II, III or IV).					X	X		X		
Lack of pulmonary agent antidote.					X					

Significant adverse effects and contraindications of symptomatic treatment and supportive care for pulmonary agent exposure.					X	X	X			
Required physician or veterinarian supervision and monitoring of intravenously administered drugs such as corticosteroids and aminophylline.					X	X		X		
<i>Vesicants</i>										
Lack of vesicant agent antidote.									X	X

17.9 Task TASUST 9: Treat biological effects on personnel and MWAs**17.9.1 Functional Area Analysis****17.9.1.1 Definition**

To provide rapid treatment and mitigation of health effects of biological agent exposure to personnel and MWAs, specifically MWDs. Treatment includes the protocols and procedures for the administration of the treatment regime as well as the logistical requirements necessary to support surge operations required by the mass exposure of personnel.

17.9.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.9.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.9.1.2.2 Lateral Task: TASHA 24

17.9.1.2.3 Supporting Task: N/A

17.9.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Biological effects. (C1.3.3.3)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. High mission priority. (C3.1.3.2)
2. Few or negligible translators. (C3.2.1.2)
3. Significant customs adjustment. (C3.2.2)

4. Moderate or high health risk. (C3.3.1.5)
5. Significant refugee-care responsibility. (C3.3.2.3)

17.9.2 Functional Needs Analysis

17.9.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.9-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There are three current capabilities used to accomplish this task and one projected capability to be added in the future (one in the near/mid term). The capabilities include a range of physician-administered post-exposure therapeutics with differing capabilities to meet the identified standards.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Many effective antibiotics exist to treat personnel and MWAs¹ infected with bacteria/rickettsia of interest. Many are FDA approved for use in both personnel and MWAs²; those that are not can usually be used “extra label.”

There are very few effective antivirals for viruses of interest. Ribavirin is an investigational new drug (IND) for Lassa fever. There are no effective antivirals for Ebola/Marburg, the equine encephalitis viruses, or smallpox.

There are no antitoxins for most toxins of interest. While an FDA-approved trivalent antitoxin exists for botulinum, there are no effective antitoxins (FDA-approved, IND, or otherwise) for ricin, SEB, or T-2 mycotoxins.

Projected Near/Mid-Term Capabilities and Deficiencies

According to the analysis methodology, the overall projected near/mid-term capability is assessed as “red.” The apparent decrement in capability from the current to near/mid-term future is actually an artifact of the analysis. In all assessed tasks, DOTLPF is evaluated for the current capability, but not for future capabilities. The projected near/mid-term capability will not likely be inferior to the current capability. Near/mid-term future capability ABthraxTM is currently under development in Phase I clinical trials.

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “red.” Once again, the apparent decrement in capability from the

¹ Of the diseases considered to be likely BW agents, MWDs are likely to be susceptible to only plague (*Yersinia pestis*), tularemia, brucellosis, Q-fever, and anthrax. In all of these diseases the MWD is believed to be less susceptible than man.

² One of the key doctrinal elements is that the DoD MWD Veterinary Service currently recommends that all MWDs deployed to areas with high risk of natural tick-borne rickettsial disease be placed on prophylactic doxycycline at 6 mg/kg/day. Doxycycline is generally considered efficacious against each of the diseases of concern and this prophylactic dose may provide additional protection for MWDs against BW agents. Doxycycline is not currently approved by the FDA for use in animals.

current to far-term future is an artifact of the analysis. The projected far-term capability will not likely be inferior to the current capability.

Table 17.9-1. TASUST 9: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3
Current			
Bacteria/Rickettsia			
Antibiotics	5	10	5
Viruses			
Antivirals	0	0	5
Toxins			
Antitoxins	0	0	5
Near/Mid-Term			
Bacteria/Rickettsia			
Antibiotics	Unk	Unk	N/A
Current and Overall Capabilities	2	3	5
Near/Mid-Term Overall Capabilities	2	3	N/A
Far-Term Overall Capabilities	2	3	N/A

	FAA Measure	Elaboration	Scale
M1	Therapeutics are FDA approved?		10: FDA approved for use in both personnel and MWAs. 5: Not FDA approved in personnel and/or MWAs; can be used “extra label” for personnel and/or MWAs. 0: Not FDA approved in either personnel or MWAs; cannot be used “extra label” for personnel and/or MWAs.
M2	Therapeutics exist for all biological hazards?	Effectiveness of a particular therapeutic for biological hazards of a certain type (i.e., bacteria/ rickettsia, viruses, and toxins).	10: Complete capability (effective for all biological hazards of a certain type). 5: Partial capability (limited effectiveness for one or more biological hazards of a certain type). 0: No capability.
M3	Capability (DOTLPF) exists to treat biological exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task cannot be effectively accomplished.

17.9.3 Functional Solution Analysis

17.9.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

1. **Deficiency:** Lack of FDA-approved therapeutic for Glanders/Melioidosis.
Non-Materiel Solutions: *Leadership:* Obtain FDA-approval for off-label antibiotics effective for treating glanders/melioidosis.
2. **Deficiency:** Doctrine does not reflect the most up-to-date treatment recommendations.
Non-Materiel Solutions: *Doctrine:* Update doctrine to reflect most up-to-date treatment guidelines, or identify source of most up-to-date guidelines (Centers for Disease Control, Military Surgeon General, etc).
3. **Deficiency:** Training does not include the most up-to-date treatment recommendations.
Non-Materiel Solutions: *Training:* Update training to reflect most up-to-date treatment guidelines.
4. **Deficiency:** Lack of resources to prevent mass casualty diagnostic requirements from overwhelming the laboratory system.
Non-Materiel Solutions: *Doctrine (Partial):* Revise doctrine to define those circumstances when assistance from alternative laboratories would be needed, to identify which staff and what equipment would be readily available to conduct diagnostics, to clarify DoD requirements for personnel (i.e., clearance, experience, etc.), to identify what protocol for diagnosing/analyzing samples are to be followed, and to ensure adequate training of personnel. *Organization (Partial):* Develop MOU/As with civilian and/or commercial laboratories to assist with diagnostic requirements. *Training (Partial):* Coordinate training and certify personnel from alternative laboratories.
5. **Deficiency:** Insufficient medical facilities, resources, and personnel to deal with casualties.
Non-Materiel Solutions: *Doctrine (Partial):* Revise doctrine to define those circumstances when supplemental medical care would be needed; to identify which staff and what equipment could be readily transported for situations where medical resources need to be deployed (i.e., for cases when transporting large numbers of casualties to medical treatment facilities is not an option). *Organization (Partial):* Establish MOU/As with neighboring medical facilities (civilian hospitals, clinics, etc) to assist with surge capacity. *Training:* Coordinate exercises and training with personnel from alternate medical resources. *Personnel:* Obtain alternate sources of personnel or cross train individuals. *Facilities:* Obtain surge capacity through use of nonmilitary assets or use other military facilities for medical purposes (dual use).
6. **Deficiency:** Lack of therapeutics for any of the toxins of interest, except for botulinum toxin.
Non-Materiel Solutions: None.

- 7. Deficiency:** Lack of therapeutics for most viral infections of interest.
Non-Materiel Solutions: None.

- 8. Deficiency:** Lack of FDA-approval for Ciprofloxacin in MWAs.
Non-Materiel Solutions: *Leadership:* Obtain FDA approval for ciprofloxacin use in MWAs.

- 9. Deficiency:** Limited treatment window for effective administration of antibiotics.
Non-Materiel Solutions: *Training (partial):* Provide training to medical/veterinary personnel and MWD handlers to recognize the early signs and symptoms of biological agent exposure.

17.9.3.2 IMA Assessment Summary

Table 17.9-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.9-2. TASUST 9: IMA Assessment

Identified Gap / Idea for Materiel Approach (IMA)	Immunostimulants	Monoclonal Antibodies	Next-Generation/ New Antibiotics	Next-Generation/ New Antitoxins	Next-Generation/ New Antivirals	Immunomodulators	Next-Generation/ New Vaccines	New Therapeutics
Lack of therapeutics for any of the toxins of interest, except for botulinum toxin.	X			X		X	X	X
Lack of therapeutics for most viral infections.	X	X			X	X	X	X
Limited treatment window for effective administration of antibiotics.	X	X	X			X	X	X

17.10 Task TASUST 10: Treat radiological effects on personnel and MWAs**17.10.1 Functional Area Analysis****17.10.1.1 Definition**

To provide rapid treatment and mitigation of health effects of radiological agent exposure to personnel and MWAs, specifically MWDs. Treatment includes the protocols and procedures for the administration of the treatment regime as well as the logistical requirements necessary to support surge operations required by the mass exposure of personnel.

17.10.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.10.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.10.1.2.2 Lateral Task: TASHA 24

17.10.1.2.3 Supporting Task: N/A

17.10.1.3 Condition

Perform this task under conditions of:

Physical

1. Negligible light. (C1.3.2.1)
2. Nuclear effects. (C1.3.3.1)

Military

1. Severe health status. (NEW)
2. Stressful mission. (C2.1)
3. Minimal or short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Limited or negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Some or no interoperability. (C2.2.6)
9. Restricted information exchange. (C2.3.1.8)

Civil

1. Few or negligible translators. (C3.2.1.2)
2. Significant customs adjustment. (C3.2.2)
3. Significant refugee-care responsibility. (C3.3.2.3)

17.10.2 Functional Needs Analysis

17.10.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.10-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standards. There is one family of current capabilities used to accomplish this task. It includes a range of MWD handler-, Veterinary Services-, and medical personnel-administered post-exposure therapeutics.

Current Capabilities and Deficiencies

The overall current capability is assessed as “yellow.” Therapeutics and symptomatic care are available for all radiological agents, though they typically have short-lived activity and can have toxic effects. Most therapeutics simply block absorption or expedite excretion of internalized radiological materials. Symptomatic care can include treatment to bolster the immune system as radiation exposure can cause immunosuppression. Current deficiencies include a need for FDA-approved therapeutics and countermeasures to treat radiological effects.

Projected Near/Mid-Term Capabilities and Deficiencies

No changes in capability are projected in the near/mid term for this task, so the overall projected near/mid-term capability will remain “yellow.”

Projected Far-Term Capabilities and Deficiencies

No changes in capability are projected in the far term for this task, so the overall projected far-term capability will remain “yellow.”

Table 17.10-1. TASUST 10: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3
Current			
Radiological Exposure Therapeutics and Supportive Care	5	5	5
Current and Overall Capabilities	5	5	5
Near/Mid-Term Overall Capabilities	5	5	5
Far-Term Overall Capabilities	5	5	5

	FAA Measure	Elaboration	Scale
M1	Therapeutics are FDA approved?		10: FDA approved for use in both personnel and MWAs. 5: Not FDA approved in personnel and/or MWAs; can be used “extra label” for personnel and/or MWAs. 0: Not FDA approved in either personnel or MWAs; cannot be used “extra label” for personnel and/or MWAs.
M2	Therapeutics exist for all radiological hazards?	Effectiveness of a particular therapeutic for radiological hazards of a certain type (i.e., alpha emitters, beta emitters, gamma emitters, neutron emitters; alpha radiation, beta radiation, gamma radiation, neutron radiation).	10: Complete capability (effective for all radiological hazards). 5: Partial capability (limited effectiveness for one or more radioisotope internalizations or radiation type exposures). 0: No capability.
M3	Capability (DOTLPF) exists to treat radiological exposure?		10: DOTLPF exists and is adequate for this task. Task can be effectively performed with minor limitations with little or no direct impact upon operations. 5: Most critical aspects of DOTLPF for this task are addressed. 0: DOTLPF is inadequate or does not exist for this task. Task can not be effectively accomplished.

17.10.3 Functional Solution Analysis

17.10.3.1 DOTLFP Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, that deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Lack of FDA-approved therapeutics and alternative therapeutic delivery systems that are quick-acting, long-lasting, and easy to carry and use on the battlefield.
Non-Materiel Solutions: *Leadership (partial):* Obtain FDA-approval for therapeutics and alternative therapeutic delivery systems
- 2. Deficiency:** Lack of guidance of when INDs can be used to treat radiological effects.
Non-Materiel Solutions: *Doctrine:* Define those circumstances when use of INDs can be considered to treat radiological effects.
- 3. Deficiency:** Significant toxic effects of therapeutics such as chelating agents.
Non-Materiel Solutions: None.
- 4. Deficiency:** Lack of ability to evacuate casualties in a timely manner to level of care that can provide definitive care.
Non-Materiel Solutions: *Doctrine:* Define theater evacuation policy to maximize evacuation of casualties within critical time frame that will ensure casualties receive definitive medical care.
- 5. Deficiency:** Lack of animal model for current therapeutic initiatives.
Non-Materiel Solutions: *Doctrine:* Perform necessary animal model testing to create doctrinal animal model for therapeutic initiatives.
- 6. Deficiency:** Lack of drugs to prevent onset of radiation-induced performance decrements.
Non-Materiel Solutions: None.

17.10.3.2 IMA Assessment Summary

Table 17.10-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.10-2. TASUST 10: IMA Assessment

<p>Identified Gap</p> <p>Idea for Materiel Approaches (IMA)</p>	<p>Radioprotectants</p>	<p>Immunomodulators</p>	<p>Countermeasures</p>	<p>Next-Generation/New Blocking Agents</p>	<p>Next-Generation/New Chelating Agents</p>	<p>Cell Line Stimulants</p>	<p>New Antibiotics</p>	<p>Nitroxides</p>	<p>Cytoprotectants</p>
<p>Lack of FDA-approved therapeutics and alternative therapeutic delivery systems that are quick-acting, long-lasting, and easy to carry and use on the battlefield.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>
<p>Significant toxic effects of therapeutics such as chelating agents.</p>					<p>X</p>				
<p>Lack of drugs to prevent onset of radiation-induced performance decrements.</p>	<p>X</p>								

17.11 Task TASUST 11: Decontaminate individual and crew-served weapons**17.11.1 Functional Area Analysis****17.11.1.1 Definition**

To decontaminate individual and crew-served weapons such as the 9-mm hand gun; M-16 rifle; M60 machine gun; M203 grenade launcher; tube-launched, optically tracked, wire-guided (TOW) missile; 81-mm mortar; M198 howitzer; etc. Includes minimizing effects of contaminants and decontaminants on operations. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Reduce/limit the spread of CBRN contamination.
- Operational: Reduce CBRN contamination to regenerate combat effectiveness.
- Thorough: Reduce CBRN contamination to negligible risk.

17.11.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.11.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.11.1.2.2 Lateral Task: TASHA 24

17.11.1.2.3 Supporting Task: N/A

17.11.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)

3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Limited, little, or no lift assets. (C2.5.2)
9. Some or no interoperability. (C2.2.6)
10. Limited or no host-nation support. (C2.8.5)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

17.11.2 Functional Needs Analysis

17.11.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.11-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of four current capabilities used to accomplish this task and three projected capabilities to be added in the future. Capabilities exist at the immediate, operational, and thorough levels of decontamination.

Current Capabilities and Deficiencies

Current capabilities to decontaminate individual and crew-served weapons require the use of M291/M295 kits, M100 SDS, soap and water, solvents and STB/HTH bleach mixtures. Capability gaps associated with individual and crew-served weapons decontamination include the excessive amount of time it takes to manually process large quantities of weapons through thorough decontamination processes. STB and HTH decontaminants can be toxic and corrosive requiring large amounts of water for dilution. Runoff from decontamination sites may be contaminated and current decontaminants are only effective against a limited range of chemical and biological agents. In addition, current thorough decontamination processes may not be feasible in many operational situations due to time and space requirements.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSPDS Increment I and JSTDS-SS Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSPDS Increment II, JSTDS-SS Increment II and JPDS Increments I/II.

Table 17.11-1. TASUST 11: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6			M7			M8			M9			M10	M11		
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	T	I	O	T
Current																															
M291/M295 Kits/ Exterior	7 ¹	7	N/A	3 ²	3	N/A	1 ³	N/A	N/A	N/A	N/A	N/A	7 ⁴	7	N/A	8 ⁵	1 ⁶	N/A	9 ⁷	N/A	8 ⁸	8	N/A	7 ⁹	7	N/A	N/A	7 ¹⁰	7	N/A	
M100 SDS	7	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	N/A	N/A	8	N/A	9	N/A	N/A	8	N/A	N/A	7	N/A	N/A	N/A	7	N/A	N/A	
Hot Soapy Water	N/A	3 ¹¹	5	N/A	0 ¹²	0	N/A	3	3	N/A	4 ¹³	4	N/A	3 ¹⁴	5 ¹⁵	N/A	1	N/A	9	9	N/A	7 ¹⁶	7	N/A	5 ¹⁷	5	1 ¹⁸	N/A	7	7	
HTH/STB	N/A	3	5	N/A	3	3	N/A	5 ¹⁹	5	N/A	N/A	N/A	N/A	3	5	N/A	1	N/A	9	9	N/A	7	7	N/A	5	5	1	N/A	7	7	
Near/Mid-Term																															
JSPDS Increment I	7	7	N/A	3	3	N/A	N/A	5	5	N/A	N/A	N/A	7	7	N/A	9 ²⁰	1	9	9	N/A	8	8	N/A	7	7	N/A	N/A	7	7	N/A	
JSTDS-SS Increment I	N/A	7	7	N/A	3	3	1	N/A	N/A	N/A	4	4	N/A	3	5	N/A	1	N/A	9	9	N/A	8	8	N/A	5	5	2 ²¹	N/A	7	7	
Far-Term																															
JSPDS Increment II	7	10	N/A	5 ²²	5	N/A	5	5	N/A	4	4	N/A	7	7	N/A	9	1	9	9	N/A	8	8	N/A	7	7	N/A	N/A	10 ²³	10	N/A	
JSTDS-SS Increment II	N/A	10 ²⁴	10	N/A	5	5	N/A	5	5	N/A	8 ²⁵	8	N/A	10 ²⁶	10	N/A	1	N/A	9	9	N/A	8	8	N/A	5	5	2	N/A	10	10	
JPDS Increment I/II	7	10	10	5	5	5	5	5	N/A	N/A	N/A	10	10	10	8	1	9	9	9	8	8	8	7	7	7	2	10	10	10		
Current Overall Capabilities	7	5 ²⁷	5	3	3	3	1	4 ²⁸	4	N/A	4	4	7	5	5	8	1	9	9	9	8	8	7	7	5	5	1	7	7	7	
Near/Mid-Term Overall Capabilities	7	7	7	3	3	3	1	5	5	N/A	4	4	7	5	5	9	1	9	9	9	8	8	8	7	7	5	2	7	7	7	
Far-Term Overall Capabilities	7	10	10	5	5	5	5	5	4	6 ²⁹	8	7	10	10	9	1	9	9	9	8	8	8	7	7	7	2	10	10	10		

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	The by-products from the decontamination process are controlled. Where the control of by-products is less than 100%, measures must be in place to prevent by-products from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.

M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	<p>10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits.</p> <p>7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure.</p> <p>5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.</p> <p>3: Decontaminate most CWAs to a level that will allow unprotected exposure.</p> <p>0: No effective decontaminant or process.</p>
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate 0. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where contaminated by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, cross-contamination cannot be controlled and present an unacceptable hazard.	
M6	(Time) To initiate and conduct immediate and operational decontamination procedures.	Initiate and complete immediate weapon decontamination procedures in minimal amount of time. Number of weapons that can be operationally decontaminated per hour.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: >300 9: 250–300 8: 200–249 7: 160–199 6: 120–159 5: 100–119 4: 80–99 3: 60–79 2: 40–59 1: 20–39 0: <20
M7	(Percent) Of systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%	

M8	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M10	(Time) To conduct thorough decontamination procedures.	Number of weapons that can be thoroughly decontaminated per hour.	10: >150 9: 125–150 8: 100–124 7: 80–99 6: 60–79 5: 50–59 4: 40–49 3: 30–39 2: 20–29 1: 10–19 0: <10
M11	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

- ³ M3 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent.
- ⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).
- ⁵ M6 – (Time) To initiate and conduct immediate decontamination procedures. 8: <2 minutes.
- ⁶ M6 – (Time) To initiate and conduct operational decontamination procedures. 1: 20–39 weapons can be operationally decontaminated per hour.
- ⁷ M7 – (Percent) Of systems unusable due to the effects of decontamination. 9: <1%.
- ⁸ M8 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 8: <2%.
- ⁹ M9 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.
- ¹⁰ M11 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ¹² M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ¹³ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.
- ¹⁴ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).
- ¹⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ¹⁶ M8 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 7: <3%.
- ¹⁷ M9 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ¹⁸ M10 – (Time) To conduct thorough decontamination procedures. 1: 10–19 weapons can be thoroughly decontaminated per hour.
- ¹⁹ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more key threat agents.
- ²⁰ M6 – (Time) To initiate and conduct immediate decontamination procedures. 9: <1 minute.
- ²¹ M10 – (Time) To conduct thorough decontamination procedures. 2: 20–29 weapons can be thoroughly decontaminated per hour.
- ²² M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ²³ M11 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ²⁴ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ²⁵ M4 – (Level) Of radiological contamination after decontamination procedures. 8: ≤0.11 cGy/hour residual dose rate.
- ²⁶ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ²⁷ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ²⁸ M3 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents.
- ²⁹ M4 – (Level) Of radiological contamination after decontamination procedures. 6: ≤0.22 cGy/hour residual dose rate.

17.11.3 Functional Solution Analysis

17.11.3.1. DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

Current capabilities to decontaminate individual and crew-served weapons require using M291/M295 kits, M100 SDS, soap and water, and STB/HTH bleach mixtures. Capability gaps associated with individual and crew-served weapons decontamination include the excessive amount of time it takes to manually process large quantities of weapons through thorough decontamination processes, STB and HTH decontaminants can be toxic and corrosive requiring water for dilution, runoff from decontamination sites may be contaminated, and runoff must be controlled.

- 1. Deficiency:** Current decontaminants are effective against only a limited range of chemical and biological agents.
Non-Materiel Solutions: None.
- 2. Deficiency:** Risk of damage to sensitive parts.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to ensure applicable decontaminants are used on sensitive equipment.
- 3. Deficiency:** Runoff may be contaminated.
Partial Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff.
- 4. Deficiency:** The inability to decontaminate porous materiel.
Non-Materiel Solutions: None.
- 5. Deficiency:** Large amounts of water are required to support current decontamination processes.
Non-Materiel Solutions: None.
- 6. Deficiency:** Current thorough decontamination processes may not be feasible in many operational situations due to time and space requirements.
Non-Materiel Solutions: None.
- 7. Deficiency:** Powder from sorbent-based (M291/M295/M100) decontamination kits can cause weapons malfunctions.
Non-Materiel Solutions: *Training:* Proper training on weapons decontamination and associated post-decontamination maintenance.

17.11.3.2 IMA Assessment Summary

Table 17.11-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.11-18. TASUST 11: IMA Assessment

<p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p> <p style="text-align: center;">Identified Gaps</p>	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	(Nonaqueous) Solvent Wash	Irradiation	Cold Plasma	Containment System	Enhanced Thorough Personnel Decontamination Processing System	Electrostatic Decontamination System
Current decontaminants are effective against only a limited range of chemical and biological agents.	X	X	X	X	X	X			X	X	X		X	X
Risk of damage to sensitive weapon parts.	X	X	X	X	X	X	X	X	X				X	
Runoff may be contaminated.	X				X	X	X			X	X	X	X	X
Inability to decontaminate porous materiel.	X	X			X	X			X	X			X	
Large amounts of water are required to support current decontamination processes	X			X	X	X	X		X	X	X		X	X
Current decontamination processes may not be feasible in many operational situations due to time and space requirements.													X	X

17.12 Task TASUST 12: Decontaminate vehicles, weapons, and nonsensitive equipment**17.12.1 Functional Area Analysis****17.12.1.1 Definition**

To decontaminate ground vehicles and hardened equipment, such as tanks, high-mobility multipurpose wheeled vehicles, commercial utility cargo vehicles, 5-ton trucks, materiel-handling equipment, ground support equipment, etc. Includes minimizing effects of contaminants and decontaminants on operations. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Limit spread of contamination.
- Operational: Gross removal of exterior contamination.
- Thorough: Reduce contamination to negligible levels.

17.12.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.12.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.12.1.2.2 Lateral Task: TASHA 24

17.12.1.2.3 Supporting Task: N/A

17.12.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)

3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Some or no interoperability. (C2.2.6)
6. Low personnel capability. (C2.2.4)
7. Negligible personnel experience. (C2.2.4.5)
8. Severe personnel fatigue. (C2.2.4.6)
9. Limited, little, or no lift assets. (C2.5.2)
10. Limited or no host-nation support. (C2.8.5)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)

17.12.2 Functional Needs Analysis

17.12.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.12-1 present individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of four current capabilities used to accomplish this task and four projected capabilities to be added in the future. Capabilities exist at the immediate, operational, and thorough levels of decontamination.

Current Capabilities and Deficiencies

The most current capabilities associated with vehicles, along with vehicle-mounted weapons and nonsensitive equipment include a variety of decontaminants such as soap and water, STB, and HTH, along with appropriate applicators. However, there are minimal capabilities to decontaminate vehicle interiors, particularly if porous material is involved. Primary deficiencies include the potential damage to vehicles, weapons, and nonsensitive equipment surfaces with the use of corrosive decontaminants, as well as dangerous chemical reactions occurring with the combination of certain decontaminants. Other deficiencies include the requirement for large amounts of water, time, and personnel; controlling contaminated runoff; and the inability to decontaminate porous materials.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSPDS Increment I, JSTDS-SS Increment I and JPID Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment II, JSTDS-LS Increments I and II, JPID Increment II, and JPDS Increments I and II.

Table 17.12-1. TASUST 12: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6		M7		M8			M9			M10			M11	M12			
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	I	O	I	O	T	I	O	T	I	O	T	T	I	O	T	
Current																																	
HTH/STB	N/A	5 ¹	5	N/A	3 ²	3	N/A	5 ³	5	N/A	N/A	N/A	N/A	3 ⁴	5 ⁵	N/A	8 ⁶	N/A	N/A	N/A	9 ⁷	9	N/A	7 ⁸	7	N/A	5 ⁹	5	0 ¹⁰	N/A	7 ¹¹	7	
M291/M295 Kits/Spot Cleaning	7 ¹²	7	N/A	3	3	N/A	1 ¹³	N/A	N/A	N/A	N/A	7 ¹⁴	7	N/A	8 ¹⁵	9 ¹⁶	7 ¹⁷	7	9	9	N/A	8 ¹⁸	8	N/A	7 ¹⁹	7	N/A	N/A	7	7	N/A		
M100 SDS/Spot Cleaning	7	N/A	N/A	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7	N/A	N/A	8	N/A	7	N/A	9	N/A	N/A	8	N/A	N/A	7	N/A	N/A	N/A	7	N/A	N/A		
Hot Soapy Water	N/A	3	3	N/A	0 ²⁰	0	N/A	3 ²¹	3	N/A	4 ²²	4	N/A	3	5	N/A	8	N/A	1 ²³	N/A	9	9	N/A	7	7	N/A	5	5	0	N/A	7	7	
Near/Mid-Term																																	
JSTDS-SS Increment I	N/A	7	7	N/A	3	3	N/A	N/A	5	N/A	4	4	N/A	3	5	N/A	9	N/A	1	N/A	9	9	N/A	8	8	N/A	5	5	1 ²⁴	N/A	7	7	
JPID Increment I	7	7	7	3	3	3	7 ²⁵	7	7	4	4	4	7	7	7 ²⁶	9 ²⁷	9	5 ²⁸	0 ²⁹	9	9	9	8	8	8	7	5	5	0	7	7	7	
JSPDS Increment I	7	7	N/A	3	3	N/A	1	N/A	N/A	N/A	N/A	7	7	N/A	9	9	9	6 ³⁰	9	9	N/A	8	8	N/A	7	7	N/A	N/A	7	7	N/A		
Far-Term																																	
JSTDS-SS Increment II	N/A	10 ³¹	10	N/A	5 ³²	5	N/A	5	5	N/A	8 ³³	8	N/A	10 ³⁴	10	N/A	10 ³⁵	N/A	4 ³⁶	N/A	9	9	N/A	8	8	N/A	5	5	6 ³⁷	N/A	10 ³⁸	10	
JSTDS-LS Increment I/II	N/A	10	10	N/A	5	5	N/A	5	5	N/A	8	8	N/A	10	10	N/A	9	N/A	4	N/A	9	9	N/A	8	8	N/A	5	5	6	N/A	10	10	
JPDS Increment I/II	7	7	7	5	5	5	5	5	5	N/A	N/A	N/A	7	7	7	9	9	9	6	9	9	9	8	8	N/A	7	7	7	1	10	10	10	
JPID Increment II	10	10	10	7	7	7	8	8	8	8	8	8	10	10	10	9	9	5	0	9	9	9	9	9	9	9	7	7	7	1	10	10	10
Current Overall Capabilities	7	5	5	3	2	2	1	4	4	N/A	4	4	7	5	5	8	8	7	4	9	9	9	8	7	7	7	5	5	0	7	7	7	
Near/Mid-Term Overall Capabilities	7	7	7	3	3	3	4	7	6	4	4	4	7	7	7	9	9	7	4	9	9	9	8	8	8	7	5	5	1	7	7	7	
Far-Term Overall Capabilities	10	10	10	5	5	5	7	6	6	8	8	8	10	10	10	9	9	7	4	9	9	9	9	8	8	7	5	5	4	10	10	10	

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins against all 25 threat agents. 9: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 20 or more key threat agents. 8: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 15 or more key threat agents. 7: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 10 or more key threat agents. 6: 0 CFU/PFU/m ² —total removal or neutralization of toxins against eight or more key threat agents. 5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more threat agents. 4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents. 3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents. 2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent. 0: More than infective dose levels/casualty-producing toxin exposure levels.

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² of insoluble radioactive contaminants, 37–200 µm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Complete (100%). 7: Substantial (~75%). 5: Partial (~50%). 3: Minimal (~25%). 0: No, cross-contamination cannot be controlled and present an unacceptable hazard.	
M6	(Time) To initiate immediate and operational decontamination procedures.	Initiate immediate decontamination procedures within a minimal amount of time. Initiate operational decontamination procedures within a minimal amount of time.	<u>Immediate</u> 10: Immediately 9: <10 seconds 8: <30 seconds 7: <45 seconds 6: <1 minute 5: <1 minute, 15 seconds 4: <1 minute, 30 seconds 3: <1 minute, 45 seconds 2: <2 minutes 1: <3 minutes 0: >3 minutes	<u>Operational</u> 10: Immediately 9: <1 hour 8: <2 hours 7: <3 hours 6: <4 hours 5: <5 hours 4: <6 hours 3: <7 hours 2: <8 hours 1: <9 hours 0: >9 hours
M7	(Time) To conduct immediate and operational decontamination procedures.	Complete immediate decontamination procedures within a minimal amount of time. Number of vehicles/other large equipment items operationally decontaminated in one hour.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: >100 9: 90–100 8: 80–89 7: 70–79 6: 60–69 5: 50–59 4: 40–49 3: 30–39 2: 20–29 1: 10–19 0: <10

M8	(Percent) Of systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M10	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M11	(Quantity) Vehicles, weapons, and nonsensitive equipment decontaminated per hour.	Number of vehicles/other large equipment items thoroughly decontaminated in one hour	10: >50 9: 45–49 8: 40–44 7: 35–39 6: 30–34 5: 25–29 4: 20–24 3: 15–19 2: 10–14 1: 5–9 0: <5

M12	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	<p>10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.</p>
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¹ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

³ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more threat agents.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 3: Minimal (~25%).

⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Partial (~50%).

⁶ M6 – (Time) To initiate operational decontamination procedures. 8: <2 hours.

⁷ M8 – (Percent) Of systems unusable due to the effects of decontamination. 9: <1%.

⁸ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 7: <3%.

⁹ M10 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

¹⁰ M11 – (Quantity) Vehicles, weapons, and nonsensitive equipment decontaminated per hour. 0: <5.

¹¹ M12 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

¹² M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

¹³ M3 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent.

¹⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Substantial (~75%).

¹⁵ M6 – (Time) To initiate immediate decontamination procedures. 8: <30 seconds.

¹⁶ M6 – (Time) To initiate operational decontamination procedures. 9: <1 hour.

¹⁷ M7 – (Time) To conduct immediate decontamination procedures. 7: <3 minutes.

¹⁸ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 8: <2%.

¹⁹ M10 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.

²⁰ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

²¹ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

²² M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

²³ M7 – (Time) To conduct operational decontamination procedures. 1: 10-19 vehicles/other large equipment items operationally decontaminated in one hour.

²⁴ M11 – (Quantity) Vehicles, weapons, and nonsensitive equipment decontaminated per hour. 1: 5-9.

²⁵ M3 – (Level) Of biological contamination after decontamination procedures. 7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents.

²⁶ M5 – (Yes/No) Cross-contamination is controlled? 7: Substantial (~75%).

²⁷ M6 – (Time) To initiate immediate decontamination procedures. 9: <10 seconds.

- ²⁸ M7 – (Time) To conduct immediate decontamination procedures. 5: <5 minutes.
- ²⁹ M7 – (Time) To conduct operational decontamination procedures. 0: <10 vehicles/other large equipment items operationally decontaminated in one hour.
- ³⁰ M7 – (Time) To conduct operational decontamination procedures. 6: 60–69 vehicles/other large equipment items operationally decontaminated in one hour.
- ³¹ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ³² M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ³³ M4 – (Level) Of radiological contamination after decontamination procedures. 8: ≤ 0.11 cGy/hour residual dose rate.
- ³⁴ M5 – (Yes/No) Cross-contamination is controlled? 10: Complete (100%)
- ³⁵ M6 – (Time) To initiate operational decontamination procedures. 10: Immediately.
- ³⁶ M7 – (Time) To conduct operational decontamination procedures. 4: 40–49 vehicles/other large equipment items operationally decontaminated in one hour.
- ³⁷ M11 – (Quantity) Vehicles, weapons, and nonsensitive equipment thoroughly decontaminated per hour. 6: 30–34.
- ³⁸ M12 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

17.12.3 Functional Solution Analysis

17.12.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Some decontaminants used in current procedures are corrosive, including STB, and HTH.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine, policy, procedures, and TTPs to address noncorrosive decontamination and emphasize for selected systems and materials.
- 2. Deficiency:** Runoff may be contaminated.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff. *Facilities (partial):* Supporting infrastructure to neutralize or dispose of captured contaminated runoff.
- 3. Deficiency:** Current decontaminants may not neutralize all hazards.
Non-Materiel Solutions: None.
- 4. Deficiency:** Current operational and thorough procedures require large amounts of water.
Non-Materiel Solutions: *Doctrine (partial):* Modify existing doctrine, policy, and procedures to address reduced water decontamination. *Training (partial):* Units should be trained to recognize water requirements for decontamination operations, and plan accordingly.
- 5. Deficiency:** Operational and thorough procedures are manpower and equipment intensive.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include procedures for removing or replacing porous materials from vehicles. *Training (partial):* Modify institutional and unit-level training to include reduced manpower and equipment requirements for decontamination.
- 6. Deficiency:** Inability to decontaminate porous materials.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include procedures for removing or replacing porous materials from vehicles.
- 7. Deficiency:** Inability to decontaminate hard-to-reach places using current applicators.
Non-Materiel Solutions: None.

17.12.3.2 IMA Assessment Summary

Table 17.12-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.12-2. TASUST 12: IMA Assessment

<p>Ideas for Materiel Approaches (IMA)</p> <p>Identified Gaps</p>	<p>Enzymes</p>	<p>Aqueous Oxidants/ Nucleophiles</p>	<p>Mixed (Water/ Nonaqueous Solvent) Oxidants/Nucleophiles</p>	<p>Reactive Nonaqueous Liquids</p>	<p>Low-Temperature Thermal (Accelerated Weathering)</p>	<p>Sorption</p>	<p>Water/Steam Wash</p>	<p>Self-Decontaminating Coatings</p>	<p>Containment System</p>	<p>Recycling Decontaminant System*</p>	<p>Multiheaded Nozzle Accessories</p>	<p>Extended Range</p>	<p>Robotic or Semiautonomous system</p>	<p>Electrostatic Decontamination System</p>
<p>Some decontaminants used in current procedures are corrosive, including STB and HTH.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>						<p>X</p>
<p>Runoff may be contaminated.</p>					<p>X</p>	<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>				<p>X</p>
<p>Current decontaminants may not neutralize all hazards.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>						<p>X</p>
<p>Current operational and thorough procedures require large amounts of water.</p>			<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>		<p>X</p>						<p>X</p>
<p>Operational and thorough procedures are manpower- and equipment-intensive.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>							<p>X</p>	
<p>Inability to decontaminate porous materials.</p>					<p>X</p>									
<p>Inability to decontaminate hard-to-reach places using current applicators.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>						<p>X</p>	<p>X</p>		

17.13 Task TASUST 13: Decontaminate sensitive equipment**17.13.1 Functional Area Analysis****17.13.1.1 Definition**

To decontaminate equipment for command and control, communications and computers, along with optic systems such as night vision goggles, infrared-imaging systems, laser spotting devices, etc. Includes minimizing effects of contaminants and decontaminants on operations. Sensitive equipment may be decontaminated individually or decontaminated as part of interior decontamination if large and bulky or not readily removable from within a platform or facility. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Reduce contact hazard and limit spread of contamination.
- Operational: Gross removal of contamination.
- Thorough: Eliminate contamination prior to reissue or further use.

17.13.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.13.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11**17.13.1.2.2 Lateral Task:** TASHA 24**17.13.1.2.3 Supporting Task:** N/A**17.13.1.3 Condition**

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat/airborne. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Limited, little, or no lift assets. (C2.5.2)
8. Some or no interoperability. (C2.2.6)
9. Limited or no host-nation support. (C2.8.5)
10. Ambiguous threat existence. (C2.9.3)

Civil

1. High mission priority. (C3.1.3.2)

17.13.2 Functional Needs Analysis**17.13.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.13-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of three current capabilities used to accomplish this task and two projected capabilities to be added in the future. Capabilities exist at the immediate, operational, and thorough levels of decontamination.

Current Capabilities and Deficiencies

There are limited capabilities to decontaminate electronics and optics using decontaminants such as HTH, STB, soapy water, vacuums, pressurized air, and M291/M295 chemical decontamination kits. Deficiencies include the potential damage to electronic and optical systems with the use of corrosive decontaminants, as well as the inability to decontaminate circuit boards, porous, and hard-to-reach surfaces. Also, in the case of biological hazards, some capabilities, such as soap and water, may not remove all biological spores and may require a combination of decontaminants and applied procedures.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSSED Increment I and JPID Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSSED Increment II and JPID Increment II.

Table 17.13-1. TASUST 13: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6			M7			M8			M9			M10			M11	M12			
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	T	I	O	T				
Current																																			
M291/M295 Kits	7 ¹	7	7	3 ²	3	3	1 ³	1	1	N/A	N/A	N/A	7 ⁴	7	7	8 ⁵	8 ⁶	8 ⁷	5 ⁸	5	1 ⁹	0 ¹⁰	0	0	0 ¹¹	0	0	5 ¹²	5	5	1 ¹³	3 ¹⁴	3	3	
Hot Soapy Water	N/A	3 ¹⁵	3	N/A	0 ¹⁶	0	N/A	3 ¹⁷	3	N/A	4 ¹⁸	4	N/A	3 ¹⁹	3	N/A	6 ²⁰	7 ²¹	N/A	5	1	N/A	0	0	N/A	0	0	N/A	3 ²²	3	1	N/A	3	3	
HTH/STB	N/A	5 ²³	5	N/A	3	3	N/A	5 ²⁴	5	N/A	N/A	N/A	N/A	5 ²⁵	5	N/A	6	7	N/A	5	1	N/A	0	0	N/A	0	0	N/A	3	3	1	N/A	3	3	
Near/Mid-Term																																			
JSSD Increment I	N/A	10	10 ²⁶	N/A	3	3	N/A	8	8 ²⁷	N/A	4	4	N/A	10	10 ²⁸	N/A	8	8	N/A	3	3 ²⁹	N/A	9	9 ³⁰	N/A	9	9 ³¹	N/A	5	5	2 ³²	N/A	10	10 ³³	
JPID Increment I	7	7	10	3	3	3	5	5	8	4	4	4	7	7	10	8	8	6	5	5	1	9	9	9	9	9	9	9	7 ³⁴	5	5	1	10	10	10
Far-Term																																			
JSSD Increment II	N/A	10	10	N/A	5	5	N/A	9	9 ³⁵	N/A	10	10 ³⁶	N/A	10	10	N/A	8	8	N/A	3	3	N/A	9	9	N/A	9	9	N/A	5	5	10 ³⁷	N/A	10	10	
JPID Increment II	7	7	10	3	3	5	5	5	9	4	4	10	7	7	10	8	8	6	5	5	1	9	9	9	9	9	9	7	5	5	1	10	10	10	
Current Overall Capabilities	5	5	5	3	3 ³⁸	2	1	3	3	N/A	4	4	7	5	5	8	7	7	5	5	1	0	0	0	0	0	0	5	3	3	1	3	3	3	
Near/Mid-Term Overall Capabilities	7	7	10	3	3	5	5	5	8	4	4	4	7	7	10	8	8	7	5	5	2	9	9	9	9	9	9	7	5	5	2	10	10	10	
Far-Term Overall Capabilities	7	7	10	3	3	5	5	5	9	4	4	10	7	7	10	8	8	7	5	5	2	9	9	9	9	9	9	7	5	5	5 ³⁹	10	10	10	

M1	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent by-products from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.

M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 1 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins against all 25 threat agents. 9: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 20 or more key threat agents. 8: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 15 or more key threat agents. 7: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 10 or more key threat agents. 6: 0 CFU/PFU/m ² —total removal or neutralization of toxins against eight or more key threat agents. 5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more key threat agents. 4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents. 3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents. 2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent. 0: More than infective dose levels/casualty-producing toxin exposure levels.
M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 0.4 g/m ² of insoluble radioactive contaminants, 37200 µm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.

M6	(Time) To initiate immediate, operational, and thorough decontamination procedures.	<p>Initiate immediate decontamination procedures within adequate amount of time.</p> <p>Initiate operational decontamination procedures within adequate amount of time.</p> <p>Initiate thorough decontamination procedures within adequate amount of time.</p>	<p><u>Immediate</u></p> <p>10: Immediate 9: <10 seconds 8: <30 seconds 7: <45 seconds 6: <1 minute 5: <1 minute, 15 seconds 4: <1 minute, 30 seconds 3: <1 minute, 45 seconds 2: <2 minutes 1: <3 minutes 0: >3 minutes</p>	<p><u>Operational</u></p> <p>10: Immediate 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours</p>	<p><u>Thorough</u></p> <p>10 :Immediate 9: 30 minutes 8: 45 minutes 7: 1 hour 6: <2 hours 5: <3 hours 4: <4 hours 3: <5 hours 2: <6 hours 1: <8 hours 0: >8 hours</p>
M7	(Time) To conduct immediate, operational, and thorough decontamination procedures	Minimize time required to decontaminate each sensitive equipment item.	<p>10: Immediate 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <6 minutes 3: <8 minutes 2: <10 minutes 1: <30 minutes 0: >30 minutes</p>		
M8	(Percent) Of systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized.	<p>10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%</p>		

M9	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M10	Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M11	(Quantity) Sensitive equipment decontaminated per hour.	Number of sensitive equipment items that can be thoroughly decontaminated per hour.	10: >45 9: 41–45 8: 36–40 7: 31–35 6: 26–30 5: 21–25 4: 16–20 3: 11–15 2: 6–10 1: 2–5 0: <2
M12	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

³ M3 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

⁵ M6 – (Time) To initiate immediate decontamination procedures. 8: <30 seconds.

⁶ M6 – (Time) To initiate operational decontamination procedures. 8: 30 minutes.

⁷ M6 – (Time) To initiate thorough decontamination procedures. 8: 45 minutes.

⁸ M7 – (Time) To conduct immediate, operational, and thorough decontamination procedures. 5: <5 minutes.

- ⁹ M7 – (Time) To conduct immediate, operational, and thorough decontamination procedures. 1: <30 minutes.
- ¹⁰ M8 – (Percent) Of systems unusable due to the effects of decontamination. 0: $\geq 10\%$.
- ¹¹ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 0: $\geq 10\%$.
- ¹² M10 – Yes/No Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ¹³ M11 – (Quantity) Sensitive equipment decontaminated per hour. 1: 2–5.
- ¹⁴ M12 – There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ¹⁵ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ¹⁶ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ¹⁷ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.
- ¹⁸ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.
- ¹⁹ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).
- ²⁰ M6 – (Time) To initiate operational decontamination procedures. 6: <1 hour.
- ²¹ M6 – (Time) To initiate thorough decontamination procedures. 7: 45 minutes.
- ²² M10 – Yes/No Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ²³ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ²⁴ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more key threat agents.
- ²⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ²⁶ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ²⁷ M3 – (Level) Of biological contamination after decontamination procedures. 8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents.
- ²⁸ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ²⁹ M7 – (Time) To conduct immediate, operational, and thorough decontamination procedures. 3: <8 minutes.
- ³⁰ M8 – (Percent) Of systems unusable due to the effects of decontamination. 9: <1%.
- ³¹ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 9: <1%.
- ³² M11 – (Quantity) Sensitive equipment decontaminated per hour. 2: 6–10.
- ³³ M12 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ³⁴ M10 – Yes/No Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.
- ³⁵ M3 – (Level) Of biological contamination after decontamination procedures. 9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents.
- ³⁶ M4 – (Level) Of radiological contamination after decontamination procedures. 10: Total removal to natural background level.
- ³⁷ M11 – (Quantity) Sensitive equipment decontaminated per hour. 10: >45.
- ³⁸ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.
- ³⁹ M11 – (Quantity) Sensitive equipment decontaminated per hour. 5: 21–25.

17.13.3 Functional Solution Analysis

17.13.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Inadequate thorough decontamination processing rate.
Non-Materiel Solutions: None.
- 2. Deficiency:** Decontaminants are corrosive and can damage electronics and optics.
Non-Materiel Solutions: None.
- 3. Deficiency:** Procedural doctrine for immediate and operational decontamination is limited, and there is no doctrine for thorough decontamination operations.
Non-Materiel Solutions: *Doctrine:* Revise current doctrine.
- 4. Deficiency:** Soap and water may not remove some biological spores.
Non-Materiel Solutions: None.
- 5. Deficiency:** Inability to decontaminate hazards on circuit boards and other porous materials.
Non-Materiel Solutions: None.
- 6. Deficiency:** Inability to decontaminate hard-to-reach areas using current applicators.
Non-Materiel Solutions: None.

17.13.3.2 IMA Assessment Summary

Table 17.13-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.13-2. TASUST 13: IMA Assessment

Identified Gaps	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Ionizing/Nonionizing Radiation	Recycling Decontaminant System	Electrostatic Decontamination System	Robotic or Semiautonomous System
Inadequate thorough decontamination processing rate.	X	X	X		X	X	X	X
Decontaminants are corrosive and can damage electronics and optics.	X	X	X	X	X			
Soap and water may not remove some biological spores.	X	X					X	
Inability to decontaminate hazards on circuit boards and other porous materials.	X	X	X		X			
Inability to decontaminate hard-to-access areas using current applicators.	X	X	X		X			

17.14 Task TASUST 14: Decontaminate ship exteriors**17.14.1 Functional Area Analysis****17.14.1.1 Definition**

To decontaminate the exterior of floating assets such as Navy vessels and prepositioned ships. Excludes decontamination of sensitive equipment such as radar domes, phalanx systems, and communication antennas. Includes minimizing effects of contaminants and decontaminants on operations. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Minimize casualties, save lives, and minimize spread of contamination.
- Operational: Reduce level of contamination to regenerate combat power.
- Thorough: Reduce CBRN contamination to negligible risk. Can be performed and certified only by shipyards and floating dry docks.

17.14.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.14.1.2.1 Supported Task: OPSUST 11**17.14.1.2.2 Lateral Task: TASHA 24****17.14.1.2.3 Supporting Task: N/A****17.14.1.3 Condition**

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)

2. Location-Afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Ambiguous threat existence. (C2.9.3)

Civil

1. Aggressively opposed foreign public opinion. (C3.1.2)
2. Limited or negative foreign government support. (C3.1.2.3)
3. High mission priority. (C3.1.3.2)

17.14.2 Functional Needs Analysis

17.14.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.14-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of five current capabilities used to accomplish this task and two projected capabilities to be added in the future. Capabilities exist at the immediate, operational, and thorough levels of decontamination.

Current Capabilities and Deficiencies

Capabilities exist at the immediate, operational, and thorough levels involving the use of countermeasure washdown systems, HTH, water, general detergents, steam, and appropriate applicators. There are some capabilities that work better than others, but effectiveness is always increased when more than one capability is utilized. The best overall capability is the use of HTH/STB for chemical and biological agents. For radiological agents, however, general detergents mixed with water are recommended. The downside of HTH/STB is that they are corrosive to surfaces and equipment and can be hazardous to personnel.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment II and JPDS Increments I and II.

Table 17.14-1. TASUST 14: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6		M7		M8			M9			M10	M11		
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	I	O	I	O	T	I	O	T	T	I	O	T
Current																													
Seawater/CMWD/Firemain Systems	3 ¹	3	N/A	3 ²	3	N/A	3 ³	3	N/A	4 ⁴	4	N/A	3 ⁵	3	N/A	9 ⁶	9 ⁷	8 ⁸	8	9 ⁹	9	N/A	7 ¹⁰	7	N/A	N/A	10 ¹¹	10	N/A
HTH	N/A	5 ¹²	5	N/A	3	3	N/A	5 ¹³	5	N/A	N/A	N/A	N/A	3	3	N/A	8 ¹⁴	N/A	1 ¹⁵	N/A	9	9	N/A	5 ¹⁶	5	3 ¹⁷	N/A	7 ¹⁸	7
General Detergent	N/A	3	3	N/A	0 ¹⁹	0	N/A	3	3	N/A	4	4	N/A	3	3	N/A	8	N/A	1	N/A	9	9	N/A	5	5	3	N/A	7	7
Steam	N/A	0 ²⁰	0	N/A	0	0	N/A	5	5	N/A	N/A	N/A	N/A	0 ²¹	0	N/A	8	N/A	1	N/A	9	9	N/A	5	5	3	N/A	7	7
Gross Physical Removal/Shipyard and Floating Drydock	N/A	N/A	5	N/A	N/A	5 ²²	N/A	N/A	10 ²³	N/A	N/A	10 ²⁴	N/A	N/A	5 ²⁵	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	3 ²⁶	0 ²⁷	N/A	N/A	5 ²⁸
Near/Mid-Term																													
JSTDS-SS Increment I	N/A	7 ²⁹	7	N/A	3	3	N/A	5	5	N/A	4	4	N/A	7 ³⁰	7	N/A	9	N/A	5 ³¹	N/A	9	9	N/A	5	5	5 ³²	N/A	7	7
Far-Term																													
JSTDS-SS Increment II	N/A	10 ³³	10	N/A	5	5	N/A	5	5	N/A	10	10	N/A	10 ³⁴	10	N/A	9	N/A	5	N/A	9	9	N/A	5	5	5	N/A	10	10
JPDS Increment I/II	7	7	7	5	5	5	5	5	5	N/A	N/A	N/A	7	7	7	9	9	5 ³⁵	5	9	9	9	7	5	5	5	7	7	7
Current Overall Capabilities	3	3	3	3	3	3	3	4 ³⁶	5	4	4	6 ³⁷	3	3	4	9	8	8	3 ³⁸	9	9	9	7	5	5	2 ³⁹	10	7	7
Near/Mid-Term Overall Capabilities	3	7	7	3	3	3	3	5	5	4	4	7	3	7	7	9	9	8	5	9	9	9	7	5	5	5	10	7	7
Far-Term Overall Capabilities	7	7	7	5	5	5	5	5	5	4	4	10	7	7	7	9	9	8	5	9	9	9	7	5	5	5	10	10	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent by-products from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.

M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	<p>10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits.</p> <p>7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure.</p> <p>5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure.</p> <p>3: Decontaminate most CWAs to a level that will allow unprotected exposure.</p> <p>0: No effective decontaminant or process.</p>
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against 20 or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² of insoluble radioactive contaminants, 37–200 µm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.	
M6	(Time) To initiate immediate and operational decontamination procedures.	Initiate immediate decontamination procedures within adequate amount of time. Initiate operational decontamination procedures within adequate amount of time.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: Immediately 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours
M7	(Time) To conduct immediate and operational decontamination procedures.	Time required for one warfighter to carry out immediate or operational decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	

M8	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M10	(Time) To conduct thorough decontamination.	Time required for one warfighter to carry out thorough decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <10 minutes 3: <15 minutes 2: <20 minutes 1: <30 minutes 0: >30 minutes
M11	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

-
- ¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.
- ³ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.
- ⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.
- ⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ⁶ M6 – (Time) To initiate immediate decontamination procedures. 9: <1 minute.
- ⁷ M6 – (Time) To initiate operational decontamination procedures. 9: 15 minutes.
- ⁸ M7 – (Time) To conduct immediate and operational decontamination procedures. 8: <2 minutes.
- ⁹ M8 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 9: <1%.
- ¹⁰ M9 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.
- ¹¹ M11 – (Yes/No) There is effective DOTLPP in place to conduct task? 10: DOTLPP is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹² M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ¹³ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more key threat agents.
- ¹⁴ M6 – (Time) To initiate operational decontamination procedures. 8: 30 minutes.
- ¹⁵ M7 – (Time) To conduct immediate and operational decontamination procedures. 1: <15 minutes
- ¹⁶ M9 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ¹⁷ M10 – (Time) To conduct thorough decontamination. 3: <15minutes.
- ¹⁸ M11 – (Yes/No) There is effective DOTLPP in place to conduct task? 7: DOTLPP is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ²⁰ M1 – (Yes/No) Contaminated by-products are controlled? 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
- ²¹ M5 – (Yes/No) Cross-contamination is controlled? 0: No, cross-contamination cannot be controlled and presents an unacceptable hazard.
- ²² M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ²³ M3 – (Level) Of biological contamination after decontamination procedures. 10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents.
- ²⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 10: Total removal to natural background level.
- ²⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ²⁶ M9 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ²⁷ M10 – (Time) To conduct thorough decontamination. 0: >30 minutes.
- ²⁸ M11 – (Yes/No) There is effective DOTLPP in place to conduct task? 5: Many critical aspects of DOTLPP for the task to be performed with this system are addressed.
- ²⁹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).
- ³⁰ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).
- ³¹ M7 – (Time) To conduct immediate and operational decontamination procedures. 5: <5 minutes.
- ³² M10 – (Time) To conduct thorough decontamination. 5: <5 minutes.
- ³³ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ³⁴ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ³⁵ M7 – (Time) To conduct immediate and operational decontamination procedures. 5: <5 minutes.
- ³⁶ M3 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents.
- ³⁷ M4 – (Level) Of radiological contamination after decontamination procedures. 6: ≤0.22 cGy/hour residual dose rate.
- ³⁸ M7 – (Time) To conduct immediate and operational decontamination procedures. 3: <9 minutes.
-

³⁹ M10 – (Time) To conduct thorough decontamination. 2: <20 minutes.

17.14.3 Functional Solution Analysis

17.14.3.1 DOTLFP Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** Washdown is corrosive.
Non-Materiel Solutions: *Doctrine:* Include freshwater rinse after the securing of the CMWD. Include CMWD and chemical and biological (CB) detectors precautionary measures in *NWP 3-20.31*.
2. **Deficiency:** Countermeasure washdown does not neutralize CBRN contamination.
Non-Materiel Solutions: None.
3. **Deficiency:** CMWD delivery system has insufficient nozzles to cover all surfaces.
Non-Materiel Solutions: *Doctrine:* Increase area coverage requirements. Conduct CMWD area coverage analysis and initiate ship alteration or repair requirements as necessary.
4. **Deficiency:** Not all deck drains discharge over the side of the ship.
Non-Materiel Solutions: Conduct ship exterior drainage analysis and initiate ship alteration or repair requirements as necessary.
5. **Deficiency:** Primary ship decontaminant (HTH) is hazardous and corrosive.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include water rinse after HTH application.
6. **Deficiency:** Limited capability to decontaminate remote and hard-to-reach surfaces using current applicators.
Non-Materiel Solutions: None.
7. **Deficiency:** Inability to decontaminate ventilation system exterior inlets.
Non-Materiel Solutions: *Doctrine (partial):* Develop decontamination methodology for ventilation interiors.
8. **Deficiency:** Limited capability to decontaminate painted or porous surfaces.
Non-Materiel Solutions: None.
9. **Deficiency:** No doctrine for physical removal of agent from painted or porous surfaces.
Non-Materiel Solutions: *Doctrine:* Need NSTM Chapter 470 Revision.

17.14.3.2 IMA Assessment Summary

Table 17.14-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.14-19. TASUST 14: IMA Assessment

Ideas for Materiel Approaches (IMA) Identified Gaps	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	Self-Decontaminating Coatings	(Nonaqueous) Solvent Wash	Ionizing/Nonionizing Radiation	Plasma	Containment System	Recycling Decontaminant System	Multiheaded Nozzle Accessories	Extended Range	CMWD (Ship) Modification	Large-Coverage Sprayer System	Robotic or Semiautonomous System	Electrostatic Decontamination System
	Countermeasure washdown does not neutralize CBRN contamination.	X	X	X	X	X	X				X	X	X		X	X	X	X	
Primary ship decontaminant (HTH) is hazardous and corrosive.	X	X	X	X	X	X	X	X	X			X	X	X	X				X
Limited ability to decontaminate remote and hard-to-reach surfaces using current applicators.	X	X	X	X				X	X					X	X		X	X	
Inability to decontaminate ventilation system exterior inlets.	X				X													X	
Limited capability to decontaminate painted or porous surfaces.					X			X						X					

17.15 Task TASUST 15: Decontaminate ship interiors

17.15.1 Functional Area Analysis

17.15.1.1 Definition

To decontaminate the interior of floating assets such as Navy vessels and prepositioned ships. Includes minimizing effects of contaminants and decontaminants on operations. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Minimize casualties, save lives, and minimize spread of contamination.
- Operational: Reduce level of contamination to regenerate combat power.
- Thorough: Reduce CBRN contamination to negligible risk.

17.15.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.15.1.2.1 Supported Task: OPSUST 11

17.15.1.2.2 Lateral Task: TASHA 24

17.15.1.2.3 Supporting Task: N/A

17.15.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Hot and very cold air temperature. (C1.3.1.3.1)
3. Negligible light. (C1.3.2.1)
4. Nuclear effects. (C1.3.3.1)
5. Chemical effects. (C1.3.3.2)
6. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)

8. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)

17.15.2 Functional Needs Analysis

17.15.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.15-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of five current capabilities used to accomplish this task and two projected capabilities to be added in the future. Capabilities exist at the immediate, operational, and thorough levels of decontamination associated with the decontamination of ship interiors.

Current Capabilities and Deficiencies

The current capabilities and deficiencies associated with the decontamination of ship interiors. Capabilities for ship interiors encompass HTH, STB, and soap and water applied with scrub brushes and mops. Deficiencies include the potential damage to systems with the use of corrosive decontaminants, as well as the limited ability to decontaminate porous, painted, and hard-to-reach surfaces. Other major deficiencies include the inability to decontaminate interior ventilation systems. Also with current decontaminants there is a limited capability to remove suspended agents from the atmosphere.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JPID Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JPDS Increments I and II and JPID Increment II.

Table 17.15-1. TASUST 15: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6		M7		M8			M9			M10			M11	M12		
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	I	O	I	O	T	I	O	T	I	O	T	T	I	O	T
Current																																
Topical Disinfectant Solutions	7 ¹	7	7	N/A	N/A	N/A	6 ²	6	6	N/A	N/A	N/A	7 ³	7	7	5 ⁴	5 ⁵	1 ⁶	1	9 ⁷	9	9	7 ⁸	7	7	5 ⁹	5	5	1 ¹⁰	3 ¹¹	3	3
HTH	N/A	5 ¹²	5	N/A	3 ¹³	3	N/A	5 ¹⁴	5	N/A	N/A	N/A	N/A	3 ¹⁵	5 ¹⁶	N/A	5	N/A	1	N/A	9	9	N/A	7	7	N/A	5	5	1	N/A	7 ¹⁷	7
General Detergent	N/A	3 ¹⁸	5	N/A	0 ¹⁹	0	N/A	3 ²⁰	3	N/A	4 ²¹	4	N/A	3	5	N/A	5	N/A	1	N/A	9	9	N/A	7	7	N/A	5	5	1	N/A	7	7
Steam	N/A	0 ²²	0	N/A	0	0	N/A	5	5	N/A	N/A	N/A	N/A	0 ²³	0	N/A	5	N/A	1	N/A	9	9	N/A	7	7	N/A	5	5	1	N/A	7	7
Gross Physical Removal/ Shipyard/ Floating Drydock	N/A	N/A	5	N/A	N/A	8	N/A	N/A	10 ²⁴	N/A	N/A	10 ²⁵	N/A	N/A	5	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	8 ²⁶	N/A	N/A	3	0 ²⁷	N/A	N/A	5 ²⁸
Near/Mid-Term																																
JPID Increment I	7	7	10 ²⁹	3	3	3	7 ³⁰	7	7	4	4	4	7	7	10 ³¹	5	5	5 ³²	5	9	9	9	8	8	8	7 ³³	5	5	1	7	7	7
Far-Term																																
JPID Increment II	7	7	10	5 ³⁴	5	5	8 ³⁵	8	8	8 ³⁶	8	8	7	7	10	5	5	5	5	9	9	9	8	8	8	7	5	5	1	10 ³⁷	10	10
JPDS Increment I/II	7	7	7	5	5	5	5	5	5	N/A	N/A	N/A	7	7	7	5	5	5	5	9	9	9	8	8	8	7	5	5	5 ³⁸	7	7	7
Current Overall Capabilities	7	3	5	N/A	3 ³⁹	3	6	4 ⁴⁰	5	N/A	4	4	7	5	5	5	5	1	1	9	9	9	7	7	7	5	5	5	1	3	7	7
Near/Mid-Term Overall Capabilities	7	7	10	3	3	3	7	7	7	4	4	4	7	7	10	5	5	5	5	9	9	9	8	8	8	7	5	5	1	7	7	7
Far-Term Overall Capabilities	7	7	10	5	5	5	8	8	8	8	8	8	7	7	10	5	5	5	5	9	9	9	8	8	8	7	5	5	5	10	10	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent by-products from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 1 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination is acceptable after decontamination procedures. Vegetative and nonvegetative bacteria are measured in CFU/m ² and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins against all 25 threat agents. 9: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 20 or more key threat agents. 8: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 15 or more key threat agents. 7: 0 CFU/PFU/m ² —total removal or neutralization of toxins against 10 or more key threat agents. 6: 0 CFU/PFU/m ² —total removal or neutralization of toxins against eight or more key threat agents. 5: Less than infective dose levels/casualty-producing toxin exposure levels against six or more key threat agents. 4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents. 3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents. 2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents. 1: Less than infective dose levels/casualty-producing toxin levels against one key threat agent. 0: More than infective dose levels/casualty-producing toxin exposure levels.

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 0.4 g/m ² of insoluble radioactive contaminants, 37–200 µm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.	
M6	(Time) To initiate immediate and operational decontamination procedures.	Initiate immediate decontamination procedures in time to meet mission requirements. Initiate operational decontamination procedures in time to meet mission requirements.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: Immediately 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours
M7	(Time) To conduct immediate and operational decontamination procedures.	Time required for one warfighter to carry out immediate and operational decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	

M8	(Percent) Of interior areas/systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M10	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M11	(Time) To conduct thorough decontamination.	Time required for one warfighter to carry out thorough decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <10 minutes 3: <15 minutes 2: <20 minutes 1: <30 minutes 0: >30 minutes

M12	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	<p>10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.</p>
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- ¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).
- ² M3 – (Level) Of biological contamination after decontamination procedures. 6: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.
- ³ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).
- ⁴ M6 – (Time) To initiate immediate decontamination procedures. 5: <5 minutes.
- ⁵ M6 – (Time) To initiate operational decontamination procedures. 5: <2 hours.
- ⁶ M7 – (Time) To conduct immediate and operational decontamination procedures. 1: <15 minutes.
- ⁷ M8 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 9: <1%.
- ⁸ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 7: <3%.
- ⁹ M10 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ¹⁰ M11 – (Time) To conduct thorough decontamination. 1: <30 minutes.
- ¹¹ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ¹² M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ¹³ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.
- ¹⁴ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against six or more key threat agents.
- ¹⁵ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).
- ¹⁶ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ¹⁷ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹⁸ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ¹⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ²⁰ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.
- ²¹ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.
- ²² M1 – (Yes/No) Contaminated by-products are controlled? 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
- ²³ M5 – (Yes/No) Cross-contamination is controlled? 0: No, cross-contamination cannot be controlled and presents an unacceptable hazard.
- ²⁴ M3 – (Level) Of biological contamination after decontamination procedures. 10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all 25 threat agents.
- ²⁵ M4 – (Level) Of radiological contamination after decontamination procedures. 10: Total removal to natural background level.
- ²⁶ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 8: <2%.
- ²⁷ M11 – (Time) To conduct thorough decontamination. 0: >30 minutes.

- ²⁸ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ²⁹ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ³⁰ M3 – (Level) Of biological contamination after decontamination procedures. 7: 0 CFU/PFU/m²—total removal or neutralization of toxins against 10 or more key threat agents.
- ³¹ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ³² M7 – (Time) To conduct immediate and operational decontamination procedures. 5: <5 minutes.
- ³³ M10 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.
- ³⁴ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ³⁵ M3 – (Level) Of biological contamination after decontamination procedures. 8: 0 CFU/PFU/m²—total removal or neutralization of toxins against 15 or more key threat agents.
- ³⁶ M4 – (Level) Of radiological contamination after decontamination procedures. 8: ≤0.11 cGy/hour residual dose rate.
- ³⁷ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ³⁸ M11 – (Time) To conduct thorough decontamination. 5: <5 minutes.
- ³⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.
- ⁴⁰ M3 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents.

17.15.3 Functional Solution Analysis

17.15.3.1 DOTLFP Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** HTH/household bleach is corrosive.
Non-Materiel Solutions: None.
2. **Deficiency:** Limited ability to decontaminate remote and hard-to-reach surfaces
Non-Materiel Solutions: None.
3. **Deficiency:** Inability to decontaminate ventilation system.
Non-Materiel Solutions: *Doctrine (partial):* Need methodology/requirements to decontaminate ventilation systems without major disassembly.
4. **Deficiency:** Inability to decontaminate porous materials with absorbed contamination.
Non-Materiel Solutions: None.
5. **Deficiency:** Liquid decontaminants incompatible with electronics and sensitive equipment.
Non-Materiel Solutions: None.
6. **Deficiency:** Applicability of decontaminants in a ship interior environment is unknown.
Non-Materiel Solutions: None.
7. **Deficiency:** Lack of doctrine for performing operational and thorough/detailed decontamination including responsibilities (shipyard vs. ship's crew).
Non-Materiel Solutions: *Doctrine:* Need *NSTM 470/070* revisions.
8. **Deficiency:** Limited capability to remove suspended agents from atmosphere.
Non-Materiel Solutions: None.
9. **Deficiency:** Inability to decontaminate contaminated boilers.
Non-Materiel Solutions: *Doctrine (partial):* Need methodology/requirements to decontaminate boilers.

17.15.3.2 IMA Assessment Summary

Table 17.15-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.15-2. TASUST 15: IMA Assessment

<p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p> <p style="text-align: center;">Identified Gaps</p>	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	Self-Decontaminating Coatings	(Nonaqueous) Solvent Wash	Containment System	Recycling Decontaminant System	Multiheaded Nozzle Accessories	Extended Range	Large-Coverage Sprayer System	Robotic or Semiautonomous System	Electrostatic Decontamination System
HTH/household bleach is corrosive.	X	X	X	X	X	X	X	X	X	X							X
Liquid decontaminants incompatible with electronics and sensitive equipment.	X			X	X		X										
Applicability of decontaminants in a ship interior environment is unknown.	X	X	X	X	X	X											X
Limited ability to decontaminate remote and hard-to-reach surfaces.	X	X	X		X	X		X	X	X			X	X		X	
Inability to decontaminate ventilation system.					X				X		X	X	X	X	X	X	
Inability to decontaminate absorbent materials.						X			X	X							
Limited capability to remove suspended agents from atmosphere.					X		X				X		X				

17.16 Task TASUST 16: Decontaminate assault craft**17.16.1 Functional Area Analysis****17.16.1.1 Definition**

To decontaminate the exterior and interior of assault craft, ancillary and riverine boats, etc. Includes minimizing effects of contaminants and decontaminants on operations. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Minimize casualties, save lives, and minimize spread of contamination.
- Operational: Reduce level of contamination to regenerate combat power.
- Thorough: Reduce CBRN contamination to negligible.

17.16.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.16.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.16.1.2.2 Lateral Task: TASHA 24

17.16.1.2.3 Supporting Task: N/A

17.16.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)

4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. High mission priority. (C3.1.3.2)

17.16.2 Functional Needs Analysis

17.16.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.16-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are five current capabilities used to accomplish this task and two projected capabilities to be added in the future.

Current Capabilities and Deficiencies

The current capabilities exist at the immediate, operational, and thorough levels involving the use of countermeasure washdown systems, HTH, water, general detergents, soapy water and the equipment to apply the decontaminants. In thorough decontamination capabilities involve gross removal of contamination using tools such as grinders, sanders, and needleguns in a shipyard or drydock environment. There are some capabilities that work better than others, but effectiveness is always increased when more than one capability is utilized. The best overall capability is the use of HTH for chemical and biological agents. For radiological agents, however, general detergents mixed with water are recommended. The negative aspects of HTH are that it has corrosive and possible toxic characteristics. These decontaminants have the ability to corrode surfaces and damage equipment on the exterior of assault craft.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment II and JPDS Increments I and II.

Table 17.16-1. TASUST 16: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6		M7		M8			M9			M10	M11			
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	I	O	I	O	T	I	O	T	T	I	O	T	
Current																														
Seawater/CMWD/Firemain Systems	3 ¹	3	N/A	3 ²	3	N/A	3 ³	3	N/A	4 ⁴	4	N/A	3 ⁵	3	N/A	9 ⁶	9 ⁷	8 ⁸	8	9 ⁹	9	N/A	7 ¹⁰	7	N/A	N/A	10 ¹¹	10	N/A	
HTH	N/A	5 ¹²	5	N/A	3	3	N/A	5 ¹³	5	N/A	N/A	N/A	N/A	3	3	N/A	8 ¹⁴	N/A	1 ¹⁵	N/A	9	9	N/A	5 ¹⁶	5	3 ¹⁷	N/A	7 ¹⁸	7	
General Detergent	N/A	3	3	N/A	0 ¹⁹	0	N/A	3	3	N/A	4	4	N/A	3	3	N/A	8	N/A	1	N/A	9	9	N/A	5	5	3	N/A	7	7	
Steam	N/A	0 ²⁰	0	N/A	0	0	N/A	5	5	N/A	N/A	N/A	N/A	0 ²¹	0	N/A	8	N/A	1	N/A	9	9	N/A	5	5	3	N/A	7	7	
Gross Physical Removal/Shipyard and Floating Drydock	N/A	N/A	5	N/A	N/A	5 ²²	N/A	N/A	10 ²³	N/A	N/A	10 ²⁴	N/A	N/A	5 ²⁵	N/A	N/A	N/A	N/A	N/A	N/A	9	N/A	N/A	3 ₂₆	0 ²⁷	N/A	N/A	5 ²⁸	
Near/Mid-Term																														
JSTDS-SS Increment I	N/A	7 ²⁹	7	N/A	3	3	N/A	5	5	N/A	4	4	N/A	7 ³⁰	7	N/A	9	N/A	5 ³¹	N/A	9	9	N/A	5	5	5 ³²	N/A	7	7	
Far-Term																														
JSTDS-SS Increment II	N/A	10 ³³	10	N/A	5	5	N/A	5	5	N/A	10	10	N/A	10 ³⁴	10	N/A	9	N/A	5	N/A	9	9	N/A	5	5	5	N/A	10	10	
JPDS Increment I/II	7	7	7	5	5	5	5	5	5	N/A	N/A	N/A	7	7	7	9	9	5	5	9	9	9	7	5	5	5	7	7	7	
Current Overall Capabilities	3	3	3	3	3	3	3	3	4 ³⁵	5	4	4	4	3	3	3	9	8	8	3 ³⁶	9	9	9	7	5	5	3	10	7	7
Near/Mid-Term Overall Capabilities	3	7	7	3	3	3	3	5	5	4	4	4	3	7	7	9	9	8	5	9	9	9	7	5	5	5	10	7	7	
Far-Term Overall Capabilities	7	10	10	5	5	5	5	5	5	4	4	10	7	10	10	9	9	8	5	9	9	9	7	5	5	5	10	10	10	

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0×10^8 CFU/PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins against all threat agents. 9: 0 CFU/PFU/m ² —total removal or neutralization of toxins against nine or more key threat agents. 8: 0 CFU/PFU/m ² —total removal or neutralization of toxins against eight or more key threat agents. 7: 0 CFU/PFU/m ² —total removal or neutralization of toxins against seven or more key threat agents. 6: 0 CFU/PFU/m ² —total removal or neutralization of toxins against six or more key threat agents. 5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents. 4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents. 3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents. 2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents. 1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent. 0: More than infective dose levels/casualty-producing toxin exposure levels.

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.	
M6	(Time) To initiate immediate and operational decontamination procedures.	Initiate immediate decontamination procedures in time to meet mission requirements. Initiate operational decontamination procedures in time to meet mission requirements.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: Immediately 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours
M7	(Time) To conduct immediate and operational decontamination procedures.	Time required for one warfighter to carry out immediate and operational decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	

M8	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M10	(Time) To conduct thorough decontamination.	Time required for one warfighter to carry out thorough decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <10 minutes 3: <15 minutes 2: <20 minutes 1: <30 minutes 0: >30 minutes
M11	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

- ¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).
- ² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.
- ³ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.
- ⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.
- ⁵ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).
- ⁶ M6 – (Time) To initiate immediate decontamination procedures. 9: <1 minute.
- ⁷ M6 – (Time) To initiate operational decontamination procedures. 9: 15 minutes.
- ⁸ M7 – (Time) To conduct immediate and operational decontamination procedures. 8: <2 minutes
- ⁹ M8 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 9: <1%.
- ¹⁰ M9 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.
- ¹¹ M11 – (Yes/No) There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹² M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ¹³ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents.
- ¹⁴ M6 – (Time) To initiate operational decontamination procedures. 8: 30 minutes.
- ¹⁵ M7 – (Time) To conduct immediate and operational decontamination procedures. 1: <15 minutes.
- ¹⁶ M9 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ¹⁷ M10 – (Time) To conduct thorough decontamination. 3: <15 minutes.
- ¹⁸ M11 – (Yes/No) There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.
- ¹⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.
- ²⁰ M1 – (Yes/No) Contaminated by-products are controlled? 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
- ²¹ M5 – (Yes/No) Cross-contamination is controlled? 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.
- ²² M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ²³ M3 – (Level) Of biological contamination after decontamination procedures. 10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all threat agents.
- ²⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 10: Total removal to natural background level.
- ²⁵ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ²⁶ M9 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ²⁷ M10 – (Time) To conduct thorough decontamination. 0: >30 minutes.
- ²⁸ M11 – (Yes/No) There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ²⁹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).
- ³⁰ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).
- ³¹ M7 – (Time) To conduct immediate and operational decontamination procedures. 5: <5 minutes.
- ³² M10 – (Time) To conduct thorough decontamination. 5: <5 minutes.
- ³³ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ³⁴ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%)
- ³⁵ M3 – (Level) Of biological contamination after decontamination procedures. 4: Less than infective dose levels/casualty-producing toxin-exposure levels against four key threat agents.
- ³⁶ M7 – (Time) To conduct immediate and operational decontamination procedures. 3: <9 minutes.

17.16.3 Functional Solution Analysis

17.16.3.1 DOTLFP Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** CMWD is corrosive.
Non-Materiel Solutions: *Doctrine:* Include freshwater rinse after CMWD has been secured in operational doctrine.
2. **Deficiency:** CMWD delivery systems have insufficient nozzles to cover all surfaces.
Non-Materiel Solutions: *Doctrine:* Increase area coverage requirements. *Facilities:* Conduct CMWD area coverage analysis and initiate repair requirement as necessary.
3. **Deficiency:** Effectiveness of CMWD is degraded if not activated prior to attack.
Non-Materiel Solutions: *Doctrine:* Include CMWD procedures and requirements into newly developed doctrine.
4. **Deficiency:** Insufficient training in procedures for assault craft decontamination.
Non-Materiel Solutions: *Training:* Develop a chemical, biological, and radiological defense (CBRD) Amphibious Operations Training Plan to include requirements and incorporate them into the appropriate sections of the Surface Force Training Manual, which provides guidance of the overall Surface Force Training Program.
5. **Deficiency:** HTH is corrosive to various surfaces and materials.
Non-Materiel Solutions: None.
6. **Deficiency:** No current doctrine on assault craft decontamination.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for CBRD amphibious operations that include such topics as specific assault craft decontamination methodologies.
7. **Deficiency:** Inability to decontaminate ventilation system interiors.
Non-Materiel Solutions: None.
8. **Deficiency:** Inability to decontaminate large flexible skirt system on Landing Craft Air Cushion.
Non-Materiel Solutions: None.

17.16.3.2 IMA Assessment Summary

Table 17.16-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.16-2. TASUST 16: IMA Assessment

<p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p> <p style="text-align: center;">Identified Gaps</p>	<p style="text-align: center;">Enzymes</p>	<p style="text-align: center;">Aqueous Oxidants/ Nucleophiles</p>	<p style="text-align: center;">Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles</p>	<p style="text-align: center;">Reactive Nonaqueous Liquids</p>	<p style="text-align: center;">Reactive Gases and Vapors</p>	<p style="text-align: center;">Low-Temperature Thermal (Accelerated Weathering)</p>	<p style="text-align: center;">Sorption</p>	<p style="text-align: center;">Water/Steam Wash</p>	<p style="text-align: center;">Self-Decontaminating Coatings</p>	<p style="text-align: center;">(Nonaqueous) Solvent Wash</p>	<p style="text-align: center;">Multihheaded Nozzle Accessories</p>	<p style="text-align: center;">Extended Range</p>	<p style="text-align: center;">Large-Coverage Sprayer System</p>	<p style="text-align: center;">Robotic or Semiautonomous System</p>	<p style="text-align: center;">Electrostatic Decontamination System</p>
<p>Primary decontaminant (HTH) is corrosive to various surfaces and materials.</p>	X	X	X	X	X	X	X	X	X	X					X
<p>Inability to decontaminate ventilation system interiors.</p>					X						X	X	X	X	
<p>Inability to decontaminate large flexible skirt system on Landing Craft Air Cushion.</p>						X			X		X	X	X	X	

17.17 Task TASUST 17: Decontaminate aircraft**17.17.1 Functional Area Analysis****17.17.1.1 Definition**

To decontaminate the exteriors and interiors of fixed-wing, rotary-wing, and tilt-rotor aircraft. Includes minimizing effects of contaminants and decontaminants on operations in a manner that is within the confines of the aircraft manufacturers' specifications. Levels of decontamination include immediate, operational, and thorough. Objectives of each of these levels are identified as follows:

- Immediate: Minimize casualties, save lives, and help limit contamination exposure and spread.
- Operational: Limit contamination exposure and spread and help to sustain operations by providing temporary and, in some cases, long-term relief from wearing IPE by crewmembers, maintainers, and passengers.
- Thorough: Reduce or eliminate the need for wearing IPE by crewmembers, maintainers, and passengers.

17.17.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.17.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.17.1.2.2 Lateral Task: TASHA 24

17.17.1.2.3 Supporting Task: N/A

17.17.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—airborne/ashore/afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Negligible personnel experience. (C2.2.4.5)
7. Severe personnel fatigue. (C2.2.4.6)
8. Limited, little, or no lift assets. (C2.5.2)
9. Some or no interoperability. (C2.2.6)
10. Limited or no host-nation support. (C2.8.5)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Moderate mission priority. (C3.1.3.2)

17.17.2 Functional Needs Analysis**17.17.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.17-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are a total of four current capabilities used to accomplish this task and four projected capabilities to be added in the future. Capabilities for aircraft decontamination exist at the immediate, operational, and thorough levels of decontamination.

Current Capabilities and Deficiencies

The current capabilities for decontaminating aircraft exteriors and aircraft interiors are limited. Standard decontaminants that can neutralize chemical or biological agents are typically not compatible with either exterior or interior aircraft materials. Using warm soapy water on large exterior surfaces is often counterproductive, as many aircraft panels are not watertight and the contamination is simply moved from the skin to areas under the aircraft's panels or even into the interior of the aircraft. Therefore, weathering, including flying, is the primary decontamination method for large exterior aircraft surfaces. For radiological contamination, however, washing with soap and water to remove contaminants may also be required, as weathering does not degrade radioactive materials as it does with chemical and biological agents. Operational decontamination on those exterior and interior surfaces that will be continually touched is performed using M295 decontamination kits or soapy (detergent) water. For interior decontamination, the use of forced hot air is also a viable option for some agents, but is ineffective against V-series nerve agents. Spot-cleaning with M295 decontamination kits or soapy (detergent) water, along with removal (when possible) of contaminated items, is

performed when possible. There is currently no proven method to decontaminate the cockpit areas of aircraft, primarily due to the presence of sensitive electronics. Additionally, many sensitive aircraft equipment items, such as wiring harnesses, are nonremovable by operational units. To ensure flight safety, nerve agent efficacy requirements for aircraft decontamination must achieve levels well below those at which the onset of meiosis could occur.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment I and JPID Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment II, JSTDS-LS Increments I and II, JPID, Increment II and JPDS Increments I and II.

Table 17.17-1. TASUST 17: Capabilities and Deficiencies Assessment

Capabilities	M1			M2			M3			M4			M5			M6		M7		M8			M9			M10			M11	M12		
	I	O	T	I	O	T	I	O	T	I	O	T	I	O	T	I	O	I	O	I	O	T	I	O	T	I	O	T	T	I	O	T
Current																																
M291/M295 Kits	7 ¹	N/A	N/A	3 ²	N/A	N/A	1 ³	N/A	N/A	N/A	N/A	N/A	7 ⁴	N/A	N/A	8 ⁵	N/A	N/A	N/A	1 ⁶	N/A	N/A	1 ⁷	N/A	N/A	7 ⁸	N/A	N/A	N/A	7 ⁹	N/A	N/A
M100SDS Kit	7	N/A	N/A	3	N/A	N/A	1	N/A	N/A	N/A	N/A	7	N/A	N/A	8	N/A	N/A	N/A	1	N/A	N/A	1	N/A	N/A	7	N/A	N/A	N/A	3 ¹⁰	N/A	N/A	
Aircraft Cleaning Compounds	N/A	3 ¹¹	3	N/A	0 ¹²	0	N/A	3 ¹³	3	N/A	4 ¹⁴	4	N/A	3 ¹⁵	3	N/A	1 ¹⁶	N/A	1 ¹⁷	N/A	9 ¹⁸	9	N/A	9 ¹⁹	9	N/A	5 ²⁰	5	1 ²¹	N/A	7	7
Forced Hot Air	N/A	N/A	5 ²²	N/A	N/A	3	N/A	N/A	2 ²³	N/A	N/A	N/A	N/A	5 ²⁴	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	N/A	N/A	1	N/A	N/A	3 ²⁵	0 ²⁶	N/A	N/A	3
Near/Mid-Term																																
JSTDS-SS Increment I	N/A	3	3	N/A	0	0	N/A	3	3	N/A	4	4	N/A	3	3	N/A	1	N/A	1	N/A	2 ²⁷	2	N/A	2 ²⁸	2	N/A	5	5	1	N/A	7	7
JPID Increment I	7 ²⁹	7	10 ³⁰	3	3	3	5	5	7 ³¹	4	4	4	7	7	10 ³²	8	8	1	1	9	9	9	9	9	9	7	3	3	1	7	7	7
Far-Term																																
JPID Increment II	7	7	10	5 ³³	5	5	8 ³⁴	8	8	4	4	4	7	7	10	8	8	1	1	9	9	9	9	9	9	7	7	7	1	10 ³⁵	10	10
JSTDS-SS Increment II	N/A	10	10	N/A	5	5	N/A	5	5	4	4	4	N/A	10	10	N/A	1	N/A	1	N/A	9	9	N/A	9	9	N/A	5	5	1	N/A	10	10
JSTDS-LS Increment I/II	N/A	10	10	N/A	5	5	N/A	5	5	4	4	4	N/A	10	10	N/A	1	N/A	1	N/A	9	9	N/A	9	9	N/A	5	5	1	N/A	7	7
JPDS Increments I/II	7	7	NA	N/A	5	N/A	5	5	N/A	N/A	N/A	N/A	7	7	NA	8	8	1	1	9	9	N/A	9	9	N/A	7	5	5	N/A	7	7	N/A
Current Overall Capabilities*	7	3	3	3	3	3	1	3	3	N/A	4	4	7	3	3	8	1	N/A	1	1	9	5 ³⁶	1	9	5 ³⁷	7	5	5	1	5 ³⁸	7	5
Near/Mid-Term Overall Capabilities	7	5	7	3	3	3	7	5	5	4	4	4	7	5	7	8	5 ³⁹	1	1	9	9	9	9	9	9	7	5	5	1	7	7	7
Far-Term Overall Capabilities	7	10	10	5	5	5	7	5	5	4	4	4	7	10	10	8	5	1	1	9	9	9	9	9	9	7	5	5	1	10	10	10

*While the table suggests a low “yellow” rating for current overall capabilities, there is currently a lack of approved aircraft decontaminants that possess adequate efficacy to allow unprotected exposure of aircrews and maintenance personnel to decontaminated aircraft. This capability is currently materiel compatibility and technology constrained.

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² for external surfaces and 1 g/m ² for internal surfaces. Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.
M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0 × 10 ⁸ CFU/PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	10: 0 CFU/PFU/m ² —total removal or neutralization of toxins against all threat agents. 9: 0 CFU/PFU/m ² —total removal or neutralization of toxins against nine or more key threat agents. 8: 0 CFU/PFU/m ² —total removal or neutralization of toxins against eight or more key threat agents. 7: 0 CFU/PFU/m ² —total removal or neutralization of toxins against seven or more key threat agents. 6: 0 CFU/PFU/m ² —total removal or neutralization of toxins against six or more key threat agents. 5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents. 4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents. 3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents. 2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents. 1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent. 0: More than infective dose levels/casualty-producing toxin exposure levels.

M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² for external surfaces and 0.4 g/m ² for internal surfaces, of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	10: Total removal to natural background level. 8: ≤0.11 cGy/hour residual dose rate. 6: ≤0.22 cGy/hour residual dose rate. 4: <0.33 cGy/hour residual dose rate. 2: 0.33 cGy/hour residual dose rate. 0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy.	
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.	
M6	(Time) To initiate immediate and operational decontamination procedures.	Initiate immediate decontamination procedures in time to meet mission requirements. Initiate operational decontamination procedures in time to meet mission requirements.	<u>Immediate</u> 10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes	<u>Operational</u> 10: Immediately 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours

M7	(Time) To conduct immediate and operational decontamination procedures.	Time required for one warfighter to carry out immediate and operational decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes
M8	(Percent) Of interior areas/systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized. Decontamination systems/processes require approval by aircraft system program offices (A/C SPOs).	10: 0%; system and/or process approved by all A/C SPOs. 9: <1%; system and/or process approved by all A/C SPOs. 8: <2%; system and/or process approved by all A/C SPOs. 7: <3%; system and/or process approved by all A/C SPOs. 6: <4%; system and/or process approved by all A/C SPOs. 5: <5%, system and /or process is approved by most A/C SPOs. 4: <6%; system and/or process is approved by the majority of A/C SPOs. 3: <7%; system and/or process is approved by the majority of A/C SPOs. 2: <8%; system and/or process is approved by some A/C SPOs. 1: <9%; system and/or process is approved by some A/C SPOs. 0: ≥10%; system and/or process not approved by any A/C SPO.
M9	(Percent) Of systems that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized. Decontamination systems/processes require approval by A/C SPOs.	10: 0%; system and/or process approved by all A/C SPOs. 9: <1%; system and/or process approved by all A/C SPOs. 8: <2%; system and/or process approved by all A/C SPOs. 7: <3%; system and/or process approved by all A/C SPOs. 6: <4%; system and/or process approved by all A/C SPOs. 5: <5%, system and /or process is approved by most A/C SPOs. 4: <6%; system and/or process is approved by the majority of A/C SPOs. 3: <7%; system and/or process is approved by the majority of A/C SPOs. 2: <8%; system and/or process is approved by some A/C SPOs. 1: <9%; system and/or process is approved by some A/C SPOs. 0: ≥10%; system and/or process not approved by any A/C SPO.
M10	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.

M11	(Time) To conduct thorough decontamination.	Time required for one warfighter to carry out thorough decontamination procedures on 300 m ² of surface area.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <10 minutes 3: <15 minutes 2: <20 minutes 1: <30 minutes 0: >30 minutes
M12	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

³ M3 – (Level) Of biological contamination after decontamination procedures. 1: Less than infective dose levels/casualty-producing toxin-exposure levels against one key threat agent.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

⁵ M6 – (Time) To initiate immediate decontamination procedures. 8: <2 minutes.

⁶ M8 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 0: ≥10%, System and/or process not approved by any aircraft system program office (A/C SPO).

⁷ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 1: <9%; system and/or process is approved by some A/C SPOs.

⁸ M10 – (Yes/No) Decontamination procedures are logistically supportable? 7: Limited negative impact on operational capability.

⁹ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

¹⁰ M12 – (Yes/No) There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.

¹¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

¹² M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

¹³ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

¹⁴ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

¹⁵ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

¹⁶ M6 – (Time) To initiate operational decontamination procedures. 1: <6 hours.

-
- ¹⁷ M7 – (Time) To conduct immediate and operational decontamination procedures. 1: <15 minutes.
- ¹⁸ M8 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 9: <1%; system and/or process approved by all A/C SPOs.
- ¹⁹ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 9: <1%; system and/or process approved by all A/C SPOs.
- ²⁰ M10 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.
- ²¹ M11 – (Time) To conduct thorough decontamination. 1: <30 minutes.
- ²² M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).
- ²³ M3 – (Level) Of biological contamination after decontamination procedures. 2: Less than infective dose levels/casualty-producing toxin-exposure levels against two or more key threat agents.
- ²⁴ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).
- ²⁵ M10 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.
- ²⁶ M11 – (Time) To conduct thorough decontamination. 0: >30 minutes.
- ²⁷ M8 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 2: <8%; system and/or process is approved by some A/C SPOs.
- ²⁸ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 2: <8%; system and/or process is approved by some A/C SPOs.
- ²⁹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).
- ³⁰ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ³¹ M3 – (Level) Of biological contamination after decontamination procedures. 7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.
- ³² M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ³³ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ³⁴ M3 – (Level) Of biological contamination after decontamination procedures. 8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.
- ³⁵ M12 – (Yes/No) There is effective DOTLPP in place to conduct task? 10: DOTLPP is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.
- ³⁶ M8 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 5: <5%, system and /or process is approved by most A/C SPOs.
- ³⁷ M9 – (Percent) Of systems that require repair or replacement due to the effects of decontamination. 5: <5%, system and /or process is approved by most A/C SPOs.
- ³⁸ M12 – (Yes/No) There is effective DOTLPP in place to conduct task? 5: Many critical aspects of DOTLPP for the task to be performed with this system are addressed.
- ³⁹ M6 – (Time) To initiate immediate and operational decontamination procedures. 5: <2 hours.

17.17.3 Functional Solution Analysis

17.17.3.1 DOTLFP Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Primary means to decontaminate (hot soapy water) is ineffective in decontaminating most chemical and biological hazards.
Non-Materiel Solutions: *Doctrine-Partial.* The contamination of aircraft should be avoided by all means possible. Exposure of aircraft to potentially contamination-producing events should be minimized if not avoidable. Critical aircraft assets should be protected from being contaminated at all times to the maximum extent possible. Aircrews must be prepared to operate in protective clothing and equipment for extended time frames if the continued use of contaminated aircraft is required.
- 2. Deficiency:** Persistent chemical hazards do not evaporate in a timely manner under normal conditions.
Non-Materiel Solutions: None.
- 3. Deficiency:** Inability to remove chemical agents deposited on porous/absorbent material.
Non-Materiel Solutions: None.
- 4. Deficiency:** Lack of doctrine for operational and thorough decontamination on board ship.
Non-Materiel Solutions: *Doctrine:* Develop doctrine for procedures and requirements to decontaminate all aircraft and surfaces during flight operations in a CBRD environment to include immediate, operational, and thorough decontamination.
- 5. Deficiency:** Inability to decontaminate hard-to-reach places (cracks and crevices).
Non-Materiel Solutions: None.
- 6. Deficiency:** Decontaminants are corrosive and can damage aircraft.
Non-Materiel Solutions: None.

17.17.3.2 IMA Assessment Summary

Table 17.17-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.17-2. TASUST 17: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Materiel Approaches (IMA)</p>	<p>Enzymes</p>	<p>Aqueous Oxidants/Nucleophiles</p>	<p>Mixed (Water/Nonaqueous Solvent) Oxidants/ Nucleophiles</p>	<p>Reactive Nonaqueous Liquids</p>	<p>Reactive Gases and Vapors</p>	<p>Low-Temp Thermal (Accelerated Weathering)</p>	<p>Sorption</p>	<p>Water/Steam Wash</p>	<p>Self-Decontaminating Coatings</p>	<p>(Nonaqueous) Solvent Wash</p>	<p>Ionizing/Nonionizing Radiation</p>	<p>Multiheaded Nozzle Accessories</p>	<p>Large-Coverage Sprayer System</p>	<p>Robotic or Semiautonomous System</p>	<p>Electrostatic Decontamination System</p>
<p>Primary means to decontaminate (hot soapy water) is ineffective in decontaminating most chemical and biological hazards.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>			<p>X</p>			<p>X</p>					
<p>Persistent chemical hazards do not evaporate in a timely manner under normal conditions.</p>	<p>X</p>					<p>X</p>									<p>X</p>
<p>Inability to remove agent deposited on porous/absorbent material.</p>						<p>X</p>		<p>X</p>		<p>X</p>		<p>X</p>	<p>X</p>	<p>X</p>	
<p>Inability to decontaminate hard-to-reach places (cracks and crevices).</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>					<p>X</p>	<p>X</p>					
<p>Decontaminants are corrosive and can damage aircraft.</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>	<p>X</p>					<p>X</p>

17.18 Task TASUST 18: Decontaminate fixed-facility exteriors**17.18.1 Functional Area Analysis****17.18.1.1 Definition**

To decontaminate the exterior of fixed facilities such as buildings, warehouses, shelters, hangers, etc.

17.18.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.18.1.2.1 Supported Task: OPSUST 11

17.18.1.2.2 Lateral Task: TASHA 24

17.18.1.2.3 Supporting Task: N/A

17.18.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, arctic, and arid climate. (C1.3.1)
2. All seasons. (C1.3.1.1)
3. Precipitating and stormy weather. (C1.3.1.3)
4. Hot and very cold air temperature. (C1.3.1.3.1)
5. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
6. Negligible light. (C1.3.2.1)
7. Nuclear effects. (C1.3.3.1)
8. Chemical effects. (C1.3.3.2)
9. Biological effects. (C1.3.3.3)
10. Varied surface materials.

Military

1. Stressful mission. (C2.1)
2. Marginal forces allocated. (C2.2.3)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Severe personnel fatigue. (C2.2.4.6)
6. Limited, little, or no lift assets. (C2.5.2)
7. Limited or no host-nation support. (C2.8.5)
8. Ambiguous threat existence. (C2.9.3)

Civil

1. Disputed legality. (C3.1.1.4)
2. Adversarial media relations. (C3.1.1.5)
3. Limited or negative foreign government support. (C3.1.2.3)
4. Aggressively opposed foreign public opinion. (C3.1.2.4)
5. Moderate mission priority. (C3.1.3.2)
6. Presence of internationally significant cultural sites. (C3.2.4)

17.18.2 Functional Needs Analysis**17.18.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.18-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are two current capabilities used to accomplish this task and three projected capabilities to be added in the future.

Current Capabilities and Deficiencies

The current capabilities exist at the immediate, operational, and thorough levels involving the use of STB, HTH, DF-200 Decontamination foam, and soap and water, applied with applicators such as M12A1, M17 Lightweight Decontamination System. Deficiencies include the inability to decontaminate hard-to-reach areas and porous materials such as building materials, along with the lack of a neutralizing, noncorrosive decontaminant.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-LS Increments I AND II and JPDS Increments I and II.

Table 17.18-1. TASUST 18: Capabilities and Deficiencies Assessment

Capabilities	M1	M2	M3	M4	M5	M6	M7	M8
Current								
HTH/STB	5 ¹	3 ²	5 ³	N/A	5 ⁴	5 ⁵	4 ⁶	3 ⁷
Flushing/ Hot soapy water	3 ⁸	0 ⁹	3 ¹⁰	4 ¹¹	3 ¹²	5	4	3
Near/Mid-Term								
JSTDS-SS Increment I	7 ¹³	3	5	4	7 ¹⁴	5	4	5 ¹⁵
Far-Term								
JSTDS-LS Increment I/II	10 ¹⁶	5 ¹⁷	5	4	10 ¹⁸	5	6 ¹⁹	5
JPDS Increment I/II	10	5	5	4	10	5	6	5
Current Overall Capabilities	3	3	3	4	3	5	4	3
Near/Mid-Term Overall Capabilities	7	3	5	4	7	5	4	5
Far-Term Overall Capabilities	10	5	5	4	10	5	6	5

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² for external surfaces and 1 g/m ² for internal surfaces. Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0×10^8 CFU/PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against nine or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level.</p> <p>8: ≤0.11 cGy/hour residual dose rate.</p> <p>6: ≤0.22 cGy residual dose rate.</p> <p>4: <0.33 cGy/hour residual dose rate.</p> <p>2: 0.33 cGy residual dose rate.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy/hour.</p>
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	<p>10: Yes, Complete (100%).</p> <p>7: Yes, Substantial (~75%).</p> <p>5: Yes, Partial (~50%).</p> <p>3: Yes, Minimal (~25%).</p> <p>0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.</p>

M6	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M7	(Time) To complete the decontamination mission for fixed sites.	Time required to conduct thorough decontamination on 3000 m ² of surface area.	10: Immediately 9: <15 minutes 8: <30 minutes 7: <45 minutes 6: <1 hour 5: <1.5 hours 4: <2 hours 3: <2.5 hours 2: <3 hours 1: <4 hours 0: >4 hours
M8	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

³ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).

⁵ M6 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

⁶ M7 – (Time) To complete the decontamination mission for fixed sites. 4: <2 hours.

⁷ M8 – (Yes/No) There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.

⁸ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

¹⁰ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

¹¹ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

¹² M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

- ¹³ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).
- ¹⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).
- ¹⁵ M8 – (Yes/No) There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.
- ¹⁶ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).
- ¹⁷ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.
- ¹⁸ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).
- ¹⁹ M7 – (Time) To complete the decontamination mission for fixed sites. 6: <1 hour.

17.18.3 Functional Solution Analysis

17.18.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** Immediate response capability is limited.
Partial Non-Materiel Solutions: *Doctrine (partial):* Promulgate doctrine, policy, procedures, and TTPs for immediate response capability to assess and characterize contamination and mitigate resolve contamination. *Organization (partial):* Develop organization structures, capacities, and considerations to support decontamination. *Training (partial):* Develop institutional and unit-level training, exercises, and evaluations, including participation by surrounding civil authorities as appropriate, to perform decontamination of contaminated facilities. *Leadership (partial):* Provide awareness for contaminated facilities through operations, training, and guidance for prioritization of decontamination efforts to maintain operational capabilities, willingness, and ability to adapt and change tasking as necessary to consider presence of contamination and maintain operational effectiveness. *Personnel (partial):* Develop requirements necessary for eligible civilians to support missions and to meet minimum standards for safe use of CBRND resources. *Facilities (partial):* Supporting infrastructure (e.g., power production, water management, logistics, etc.) to support planned decontamination efforts.
2. **Deficiency:** Time required for weathering may be extensive.
Non-Materiel Solutions: *Doctrine:* Modify doctrine to include more specific procedures for weathering of contaminated facilities. *Training:* Train individuals on weathering risks, processes, and procedures.
3. **Deficiency:** Runoff may be contaminated.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff.
4. **Deficiency:** Decontaminants may be incompatible with each other.
Non-Materiel Solutions: *Doctrine (partial):* Change doctrine to provide procedures so that decontaminants can be used in series in some way that will reduce the ill effects of the incompatibility. *Training (partial):* Modify soldier training to ensure understanding of the incompatibilities and the solutions.
5. **Deficiency:** Persistent spores difficult to decontaminate.
Non-Materiel Solutions: None.
6. **Deficiency:** Operational and thorough decontamination procedures are time/labor-intensive.

Non-Materiel Solutions: *Doctrine (partial):* Modify existing doctrine, policy, and procedures to address reduced manpower and equipment requirements for decontamination.
Training (partial): Modify institutional and unit-level training to include reduced manpower and equipment requirements for decontamination.

7. Deficiency: Inability to decontaminate hard-to-reach areas using current applicators.

Non-Materiel Solutions: None.

8. Deficiency: Inability to decontaminate absorbent materials.

Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include procedures for removing or replacing porous materials.

17.18.3.2 IMA Assessment Summary

Table 17.18-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.18-2. TASUST 18: IMA Assessment

Identified Gaps	Ideas for Materiel Approaches (IMA)																			
	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	Self-Decontaminating Coatings	(Nonaqueous) Solvent Wash	Ionizing/Nonionizing Radiation	Plasma	Containment System	Recycling Decontaminant System	Multihedded nozzle	Extended Range	Large-Coverage Sprayer System	Robotic or Semiautonomous System	Electrostatic Decontamination System	
Runoff may be contaminated.	X			X	X			X	X			X	X	X						X
Decontaminants may be incompatible with each other.	X			X	X			X	X										X	X
Persistent spores difficult to decontaminate.											X				X	X	X	X	X	X
Operational and thorough decontamination procedures are time/labor-intensive.	X	X	X	X	X	X	X	X	X	X					X	X	X	X	X	
Inability to decontaminate hard-to-reach areas using current applicators.	X	X	X	X		X	X	X	X	X					X	X	X	X		
Inability to decontaminate absorbent materials.										X										

17.19 Task TASUST 19: Decontaminate fixed-facility interiors**17.19.1 Functional Area Analysis****17.19.1.1 Definition**

To decontaminate the interior of fixed facilities such as buildings, warehouses, shelters, hangers, etc. Includes minimizing effects of contaminants and decontaminants on operations.

17.19.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.19.1.2.1 Supported Task: OPSUST 11

17.19.1.2.2 Lateral Task: TASHA 24

17.19.1.2.3 Supporting Task: N/A

17.19.1.3 Condition

Perform this task under conditions of:

Physical

1. Hot and very cold air temperature. (C1.3.1.3.1)
2. Negligible light. (C1.3.2.1)
3. Nuclear effects. (C1.3.3.1)
4. Chemical effects. (C1.3.3.2)
5. Biological effects. (C1.3.3.3)
6. Varied surface materials.

Military

1. Stressful mission. (C2.1)
2. Marginal forces allocated. (C2.2.3)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Severe personnel fatigue. (C2.2.4.6)
6. Limited, little, or no lift assets. (C2.5.2)
7. Limited or no host-nation support. (C2.8.5)
8. Ambiguous threat existence. (C2.9.3)

Civil

1. Disputed legality. (C3.1.1.4)
2. Adversarial media relations. (C3.1.1.5)

3. Limited or negative foreign government support. (C3.1.2.3)
4. Aggressively opposed foreign public opinion. (C3.1.2.4)
5. High mission priority. (C3.1.3.2)
6. Presence of internationally significant cultural sites. (C3.2.4)

17.19.2 Functional Needs Analysis

17.19.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.19-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are three current capabilities used to accomplish this task and two projected capabilities to be added in the future.

Current Capabilities and Deficiencies

The principal capabilities associated with the decontamination of fixed facility interiors include STB, HTH, and soap and water. These decontaminants are applied using applicators such as scrub brushes, mops, rags as well as gas generators. Current deficiencies include the lack of doctrine and TTPs for interior decontamination, inability to decontaminate porous materials and hard-to-reach areas such as ventilation systems, and the lack of noncorrosive decontaminants.

Projected Near/Mid-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JPID Increment I.

Projected Far-Term Capabilities and Deficiencies

The projected near/mid-term capabilities and deficiencies evaluated were associated with JPID Increment II and JPDS Increments I and II.

Table 17.19-1. TASUST 19: Capabilities and Deficiencies Assessment

Capabilities	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
Current										
Topical Disinfectant Solutions	5 ¹	N/A	5 ²	N/A	5 ³	1 ⁴	5 ⁵	0 ⁶	3 ⁷	3 ⁸
HTH/STB	5	3 ⁹	5	N/A	5	1	5	0	3	3
General Detergent	3 ¹⁰	0 ¹¹	3 ¹²	4 ¹³	3 ¹⁴	1	5	5 ¹⁵	3	3
Near/Mid-Term										
JPID Increment I	10 ¹⁶	3	7 ¹⁷	4	10 ¹⁸	3 ¹⁹	9 ²⁰	8 ²¹	3	7 ²²
Far-Term										
JPID Increment II	10	5 ²³	8 ²⁴	8 ²⁵	10	3	9	8	3	10 ²⁶
JPDS Increment I/II	7 ²⁷	5	5	4	7 ²⁸	3	9	8	5 ²⁹	7
Current Overall Capabilities	5	3	5	4	5	1	5	2 ³⁰	3	3
Near/Mid-Term Overall Capabilities	10	3	7	5	10	3	9	8	3	7
Far-Term Overall Capabilities	10	5	8	8	10	3	9	8	5	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 1 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0×10^8 CFU/PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against nine or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 0.4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level.</p> <p>8: ≤0.11 cGy/hour residual dose rate.</p> <p>6: ≤0.22 cGy/hour residual dose rate.</p> <p>4: <0.33 cGy/hour residual dose rate.</p> <p>2: 0.33 cGy residual dose rate.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy.</p>
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	<p>10: Yes, Complete (100%).</p> <p>7: Yes, Substantial (~75%).</p> <p>5: Yes, Partial (~50%).</p> <p>3: Yes, Minimal (~25%).</p> <p>0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.</p>

M6	(Time) To conduct decontamination.	Time required to conduct thorough decontamination on 3000 m ² of surface area.	10: Immediately 9: <15 minutes 8: <30 minutes 7: <45 minutes 6: <1 hour 5: <2 hours 4: <4 hours 3: <6 hours 2: <8 hours 1: <12 hours 0: >12 hours
M7	(Percent) Of interior areas/systems unusable due to the effects of decontamination.	The quantity of systems that may be rendered unserviceable by decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M8	(Percent) Of interior area/systems and contents/materials that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M9	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.

M10	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	<p>10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.</p> <p>5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.</p> <p>0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.</p>
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¹ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

² M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents.

³ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).

⁴ M6 – (Time) To conduct decontamination. 1: <12 hours.

⁵ M7 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 5: <5%.

⁶ M8 – (Percent) Of interior area/systems and contents/materials that require repair or replacement due to the effects of decontamination. 0: ≥10%.

⁷ M9 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.

⁸ M10 – (Yes/No) There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.

⁹ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

¹⁰ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

¹¹ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

¹² M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

¹³ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

¹⁴ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

¹⁵ M8 – (Percent) Of interior area/systems and contents/materials that require repair or replacement due to the effects of decontamination. 5: <5%.

¹⁶ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%)

¹⁷ M3 – (Level) Of biological contamination after decontamination procedures. 7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.

¹⁸ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).

¹⁹ M6 – (Time) To conduct decontamination. 3: <6 hours.

²⁰ M7 – (Percent) Of interior areas/systems unusable due to the effects of decontamination. 9: <1%.

²¹ M8 – (Percent) Of interior area/systems and contents/materials that require repair or replacement due to the effects of decontamination. 8: <2%.

²² M10 – (Yes/No) There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

²³ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.

²⁴ M3 – (Level) Of biological contamination after decontamination procedures. 8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.

²⁵ M4 – (Level) Of radiological contamination after decontamination procedures. 8: ≤0.11 cGy/hour residual dose rate.

²⁶ M10 – (Yes/No) There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

²⁷ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

²⁸ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

²⁹ M9 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

³⁰ M8 – (Percent) Of interior area/systems and contents/materials that require repair or replacement due to the effects of decontamination. 1: <9%.

17.19.3 Functional Solution Analysis

17.19.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

- 1. Deficiency:** Insufficient doctrine to provide specific procedure for interior fixed-facility immediate decontamination.
Non-Materiel Solutions: *Doctrine:* Revise current doctrine *FM 3-11.34* to include interior facility immediate, operational, and thorough decontamination. *Organization:* Organizational structures (e.g., manning, tasking, etc.) and capabilities to complete immediate decontamination of facility interiors to including addressing organizational issues (e.g., who provides CBRND equipment, support forces to train and equip, etc.) related to provision of CBRND resources to eligible civilians (e.g., civilian contractors, government employees, etc.). *Training:* Institutional and unit-level training and evaluations, including participation by surrounding civil authorities as appropriate, for facility interior immediate decontamination. *Personnel:* Requirements eligible civilians supporting the mission meet minimum standards for use of CBRND equipment. *Facilities:* Designate supporting infrastructure for conducting decontamination and residual management.
- 2. Deficiency:** Runoff may be contaminated.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to consider contaminated runoff as an operational consideration. Doctrine should address how to dispose of or neutralize runoff. *Training (partial):* Modify training to consider contaminated runoff as an operational consideration. Training should address how to dispose of or neutralize runoff.
- 3. Deficiency:** Decontaminants incompatible with each other.
Non-Materiel Solutions: *Doctrine (partial):* Change doctrine to provide procedures so that decontaminants can be used in series in some way that will reduce the ill effects of the incompatibility. *Training (partial):* Modify soldier training to ensure understanding of the incompatibilities and the solutions.
- 4. Deficiency:** Many decontaminants are toxic and corrosive (HTH/STB/paraformaldehyde, etc.).
Non-Materiel Solutions: None.
- 5. Deficiency:** Peroxyacetic acid is caustic and corrosive at concentrations of 10% or greater.
Non-Materiel Solutions: None.
- 6. Deficiency:** Peroxyacetic acid can be used on only hard surfaces.
Non-Materiel Solutions: None.
- 7. Deficiency:** Flushing does not neutralize agents.
Non-Materiel Solutions: None.

- 8. Deficiency:** Some use of decontaminants requires additional operator protection.
Non-Materiel Solutions: *Training (partial):* Institutional and unit-level training in CBRND protective equipment for decontamination operations *Personnel (partial):* Requirements eligible civilians supporting the mission meet minimum standards for use of CBRND equipment.
- 9. Deficiency:** Areas difficult to reach for decontamination.
Non-Materiel Solutions: None.
- 10. Deficiency:** Toxic agent sodium bisulfate is used to break down the chlorine dioxide gas.
Non-Materiel Solutions: None.
- 11. Deficiency:** Chlorine dioxide can produce architectural damage, damage to electrical equipment, and/or produce strain resistance to antimicrobials.
Non-Materiel Solutions: None.
- 12. Deficiency:** Radiological contamination removal is time-intensive.
Non-Materiel Solutions: None.
- 13. Deficiency:** Ventilation decontamination will require more time and extensive labor and costs.
Non-Materiel Solutions: *Doctrine (partial):* Develop doctrine for fixed facility interior decontamination to ensure efficient, cost-effective operations *Training (partial):* Train individuals on fixed-facility interior decontamination procedures.
- 14. Deficiency:** Time/labor/high cost–intensive.
Non-Materiel Solutions: None.
- 15. Deficiency:** Inability to decontaminate porous materials.
Non-Materiel Solutions: None.

17.19.3.2 IMA Assessment Summary

Table 17.19-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.19-31. TASUST 19: IMA Assessment

Identified Gaps	Ideas for Materiel Approaches (IMA)																
	Enzymes	Aqueous Oxidants/Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	Self-Decontaminating Coatings	(Nonaqueous) Solvent Wash	Containment System	Recycling Decontaminant System	Multiheaded Nozzle Accessories	Extended Range	Large-Coverage Sprayer System	Robotic or Semiautonomous System	Electrostatic Decontamination Systems (EDS)
Runoff may be contaminated.					X		X				X	X				X	X
Many decontaminants are toxic and corrosive (HTH/STB/paraformaldehyde, etc.)	X	X	X	X	X	X	X	X	X	X							X
Areas difficult to reach for decontamination.													X	X	X	X	
Radiological contamination removal is time-intensive.													X	X	X	X	
Ventilation decontamination will require more time and extensive labor and costs.													X	X	X	X	
Time/labor/high cost-intensive.	X	X	X	X	X	X	X	X	X	X			X	X	X	X	
Inability to decontaminate porous materials.						X				X							

17.20 Task TASUST 20: Decontaminate open areas**17.20.1 Functional Area Analysis****17.20.1.1 Definition**

To decontaminate terrain that must be occupied or cannot otherwise be avoided.

17.20.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.20.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.20.1.2.2 Lateral Task: TASHA 24

17.20.1.2.3 Supporting Task: N/A

17.20.1.3 Condition

Perform this task under conditions of:

Physical

1. Tropical, arctic, and arid climate. (C1.3.1)
2. All seasons. (C1.3.1.1)
3. Precipitating and stormy weather. (C1.3.1.3)
4. Hot and very cold air temperature. (C1.3.1.3.1)
5. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
6. Negligible light. (C1.3.2.1)
7. Nuclear effects (C1.3.3.1)
8. Chemical effects. (C1.3.3.2)
9. Biological effects. (C1.3.3.3)
10. Variety of surfaces to be decontaminated (i.e., soil, concrete).

Military

1. Stressful mission. (C2.1)
2. Marginal forces allocated. (C2.2.3)
3. Low personnel capability. (C2.2.4)
4. Negligible personnel experience. (C2.2.4.5)
5. Severe personnel fatigue. (C2.2.4.6)
6. Limited, little, or no lift assets. (C2.5.2)
7. Little or no reception facilities. (C2.5.4.1)
8. Little pier space. (C2.5.4.1.1)
9. Little or no bed-down facilities. (C2.5.4.2.1)
10. Limited or no host-nation support. (C2.8.5)

11. Ambiguous threat existence. (C2.9.3)

Civil

1. Disputed legality. (C3.1.1.4)
2. Adversarial media relations. (C3.1.1.5)
3. Limited or negative foreign government support. (C3.1.2.3)
4. Aggressively opposed foreign public opinion. (C3.1.2.4)
5. Moderate mission priority. (C3.1.3.2)
6. Presence of internationally significant cultural sites. (C3.2.4)

17.20.2 Functional Needs Analysis

17.20.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.20-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are five current capabilities used to accomplish this task and two projected capabilities to be added in the future.

Current, Near/Mid-Term Capabilities and Deficiencies

The current capabilities and deficiencies associated with the decontamination of terrain include weathering, flushing with water, soil removal, covering and neutralizing with appropriate decontaminants. Deficiencies include the requirement for large amounts of personnel, equipment and time, as well as the ineffectiveness of the process.

Projected Far-Term Capabilities and Deficiencies

The projected far-term capabilities and deficiencies evaluated were associated with JSTDS-SS Increment II and JSTDS-LS Increments I and II.

Table 17.20-1. TASUST 20: Capabilities and Deficiencies Assessment

Capabilities	M1	M2	M3	M4	M5	M6	M7	M8
Current								
Covering	3 ¹	0 ²	N/A	4 ³	3 ⁴	3 ⁵	0 ⁶	3 ⁷
Hot Soapy Water	3	0	0 ⁸	4	3	3	3 ⁹	3
STB/HTH	5 ¹⁰	3 ¹¹	5 ¹²	N/A	5 ¹³	3	3	3
Burning	3	5 ¹⁴	5	N/A	3	3	3	3
Removal	3	0	N/A	4	3	0 ¹⁵	0	3
Far-Term								
JSTDS-SS Increment II	7	5	5	4	7	3	3	5
JSTDS-LS Increment I/II	7	5	5	4	7	5 ¹⁶	5 ¹⁷	7 ¹⁸
Current /Near/Mid-Term Overall Capabilities	3	3	5	4	3	3	3	3
Far-Term Overall Capabilities	7	5	5	4	7	5	5	7

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0×10^8 CFU/ PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against nine or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 0.4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level.</p> <p>8: ≤0.11 cGy/hour residual dose rate.</p> <p>6: ≤0.22 cGy/hour residual dose rate.</p> <p>4: <0.33 cGy residual dose rate.</p> <p>2: 0.33 cGy/hour residual dose rate.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy.</p>
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	<p>10: Yes, Complete (100%).</p> <p>7: Yes, Substantial (~75%).</p> <p>5: Yes, Partial (~50%).</p> <p>3: Yes, Minimal (~25%).</p> <p>0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.</p>

M6	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M7	(Time) To conduct decontamination.	Time required to decontaminate 10,000 m ² of surface area.	10: Immediately 9: <15 minutes 8: <30 minutes 7: <45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <8 hours 1: <12 hours 0: >12 hours
M8	(Yes/No) There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

³ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy residual dose rate.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

⁵ M6 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.

⁶ M7 – (Time) To conduct decontamination. 0: >12 hours.

⁷ M8 – (Yes/No) There is effective DOTLPF in place to conduct task? 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed.

⁸ M3 – (Level) Of biological contamination after decontamination procedures. 0: More than infective dose levels/casualty-producing toxin-exposure levels.

⁹ M7 – (Time) To conduct decontamination. 3: <4 hours.

¹⁰ M1 – (Yes/No) Contaminated by-products are controlled? 5: Yes, Partial (~50%).

¹¹ M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

¹² M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents.

¹³ M5 – (Yes/No) Cross-contamination is controlled? 5: Yes, Partial (~50%).

¹⁴ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.

¹⁵ M6 – (Yes/No) Decontamination procedures are logistically supportable? 0: Not logistically supportable.

¹⁶ M6 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

¹⁷ M7 – (Time) To conduct decontamination. 5: <2 hours.

¹⁸ M8 – (Yes/No) There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

17.20.3 Functional Solution Analysis

17.20.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** No capability to respond and deliver decontaminant in a timely manner.
Partial Non-Materiel Solutions: *Doctrine/Training (partial):* Develop doctrine and training to ensure efficient response.
2. **Deficiency:** Time required for weathering may be extensive.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include more specific procedures for weathering of terrain. *Training (partial):* Train individuals on weathering risks, processes, and procedures.
3. **Deficiency:** Removing significant amounts of contaminated soil are time, labor and materiel intensive.
Non-Materiel Solutions: None.
4. **Deficiency:** Use of STB slurry is time- and material-sensitive.
Non-Materiel Solutions: None.
5. **Deficiency:** Lack of efficient applicators for large areas.
Non-Materiel Solutions: None.
6. **Deficiency:** Flushing is less effective against thickened agents.
Non-Materiel Solutions: None.
7. **Deficiency:** Covering is only applicable to alpha and some beta emitters, ineffective for gamma emitters.
Non-Materiel Solutions: *Doctrine:* Develop procedures to quickly and effectively remove gamma hazards.

17.20.3.2 IMA Assessment Summary

There are four physical processes and five chemical processes as well as containment and a recycle system that are applicable for the decontamination of personnel. Table 17.20-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.20-2. TASUST 20: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p>	Enzymes	Aqueous Oxidants/ Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/ Nucleophiles	Reactive Nonaqueous Liquids	Low-Temperature Thermal (Accelerated Weathering)	Nonaqueous Solvents	Extended Range	Aerial Delivery Platform	Large-Coverage Sprayer System	Robotic or Semiautonomous System
Covering is applicable only to alpha and some beta emitters, ineffective for gamma emitters.										X
Agent may eventually penetrate covering.										X
Removing significant amounts of contaminated soil is time-, labor-, and materiel-intensive.	X	X	X	X	X		X		X	X
Use of STB slurry is time- and material-sensitive.	X	X	X	X	X		X			
Flushing is less effective against thickened agents.	X	X	X	X						X
Lack of efficient applicators for large areas.	X	X	X	X	X			X	X	X

17.21 Task TASUST 21: Decontaminate cargo and supplies, including POL, ammunition, and packaged food**17.21.1 Functional Area Analysis****17.21.1.1 Definition**

To decontaminate pallets, containers, and their packaging materials, along with supplies such as petroleum, oil, and lubricants (POL); ammunition; and packaged food. Includes minimizing effects of contaminants and decontaminants on operations.

17.21.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.21.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.21.1.2.2 Lateral Task: TASHA 24

17.21.1.2.3 Supporting Task: N/A

17.21.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Nuclear effects. (C1.3.3.1)
9. Chemical effects. (C1.3.3.2)
10. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Some to no interoperability. (C2.2.6)
6. Low personnel capability. (C2.2.4)
7. Negligible personnel experience. (C2.2.4.5)

8. Severe personnel fatigue. (C2.2.4.6)
9. Limited, little, or no lift assets. (C2.5.2)
10. Negligible CONUS resupply. (C2.8.3)
11. Limited or no host-nation support. (C2.8.5)
12. Limited or negligible commercial procurement. (C2.8.6)
13. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)
3. Moderate mission priority. (C3.1.3.2)

17.21.2 Functional Needs Analysis

17.21.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.21-1 presents individual and overall current, near-/mid-term, and far-term capabilities to perform the task to the designated standard. There are 10 current capabilities used to accomplish this task and one projected capability to be added in the future.

Current Capabilities and Deficiencies

The current capabilities and deficiencies associated with the decontamination of cargo and supplies (including POL, ammunition, and packaged food). According to subject matter experts, the decontamination of fuel is not required. For the others, weathering is the principal capability if time allows; however, alternatives include the use of STB, HTH, and soap and water applied with appropriate applicators or scrub brushes and wipes. Many of these decontaminants are corrosive and may have damaging effects. Weathering is time-consuming.

Projected Near/Mid-Term Capabilities and Deficiencies

In the near/mid-term future, the introduction of the JSTDS decontamination system will provide specified decontaminants, if required, capable of rapidly decontaminating CBRN/TIM hazards from the surfaces of cargo and supplies (including POL, ammunition, and packaged food).

Projected Far-Term Capabilities and Deficiencies

In the far-term future, the JSTDS decontamination system will provide specified decontaminants, if required, capable of rapidly decontaminating CBRN/TIM hazards on cargo and supplies (including POL, ammunition, and packaged food).

Table 17.21-1. TASUST 21: Capabilities and Deficiencies Assessment

Capabilities	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11
Current											
STB/HTH	7 ¹	3 ²	5 ³	N/A	7 ⁴	8 ⁵	1 ⁶	0 ⁷	0 ⁸	3 ⁹	5 ¹⁰
M100 SDS	7	3	N/A	N/A	7	9 ¹¹	1	0	0	3	5
Hot soapy water	3 ¹²	0 ¹³	3 ¹⁴	4 ¹⁵	3 ¹⁶	8	1	0	0	3	5
Near/Mid-Term											
JSTDS-SS Increment I	7	3	5	4	7	8	5 ¹⁷	0	0	3	7 ¹⁸
Far-Term											
JSTDS-SS Increment II	10 ¹⁹	5 ²⁰	5	4	10 ²¹	8	5	0	0	3	10 ²²
JPDS Increments I/II	7	5	5	N/A	7	9	5	0	0	5 ²³	7
Current Overall Capabilities	7	3	3	4	7	8	1	0	0	3	5
Near/Mid-Term Overall Capabilities	7	3	5	4	7	8	5	0	0	3	7
Far-Term Overall Capabilities	10	5	5	4	10	8	5	0	0	5	10

	FAA Measure	Elaboration	Scale
M1	(Yes/No) Contaminated by-products are controlled?	Contaminated by-products are controlled. Where by-products are less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	10: Yes, Complete (100%). 7: Yes, Substantial (~75%). 5: Yes, Partial (~50%). 3: Yes, Minimal (~25%). 0: No, Contaminated by-products cannot be controlled and present an unacceptable hazard.
M2	(Level) Of chemical contamination after decontamination procedures.	The level of chemical contamination is acceptable after decontamination operations from a starting liquid challenge of 10 g/m ² . Agents defined as current-generation CWAs, NTAs, TIMs, and TICs.	10: Decontaminate all CWAs, NTAs, TIMs to general population exposure limits. 7: Decontaminate all CWAs, all NTAs, and some TIMs to a level that will allow unprotected exposure. 5: Decontaminate all CWAs and some NTAs to a level that will allow unprotected exposure. 3: Decontaminate most CWAs to a level that will allow unprotected exposure. 0: No effective decontaminant or process.

M3	(Level) Of biological contamination after decontamination procedures.	The level of biological contamination (to include toxins) is acceptable after decontamination operations from starting challenges of greater than 1.0×10^8 CFU/PFU/m ² . Vegetative and nonvegetative bacteria are measured in CFU/m ² , and viruses are measured in PFU/m ² .	<p>10: 0 CFU/PFU/m²—total removal or neutralization of toxins against all threat agents.</p> <p>9: 0 CFU/PFU/m²—total removal or neutralization of toxins against nine or more key threat agents.</p> <p>8: 0 CFU/PFU/m²—total removal or neutralization of toxins against eight or more key threat agents.</p> <p>7: 0 CFU/PFU/m²—total removal or neutralization of toxins against seven or more key threat agents.</p> <p>6: 0 CFU/PFU/m²—total removal or neutralization of toxins against six or more key threat agents.</p> <p>5: Less than infective dose levels/casualty-producing toxin exposure levels against five or more key threat agents.</p> <p>4: Less than infective dose levels/casualty-producing toxin exposure levels against four key threat agents.</p> <p>3: Less than infective dose levels/casualty-producing toxin exposure levels against three key threat agents.</p> <p>2: Less than infective dose levels/casualty-producing toxin exposure levels against two or more key threat agents.</p> <p>1: Less than infective dose levels/casualty-producing toxin exposure levels against one key threat agent.</p> <p>0: More than infective dose levels/casualty-producing toxin exposure levels.</p>
M4	(Level) Of radiological contamination after decontamination procedures.	The level of radiological contamination is acceptable after decontamination operations from a starting challenge of 0.4 g/m ² of insoluble radioactive contaminants, 37–200 μm in size and 185 GBq/m ² gamma activity. 0.33 cGy/hour equates to an exposure that can cause mild incapacitation in 2.5% or less of unprotected, not previously exposed personnel.	<p>10: Total removal to natural background level.</p> <p>8: ≤0.11 cGy/hour residual dose rate.</p> <p>6: ≤0.22 cGy/hour residual dose rate.</p> <p>4: <0.33 cGy/hour residual dose rate.</p> <p>2: 0.33 cGy/hour residual dose rate.</p> <p>0: Removal capabilities limited or ineffective, allowing excessive residual dose rates >0.33 cGy.</p>
M5	(Yes/No) Cross-contamination is controlled?	Cross-contamination is controlled. Where cross-contamination is less than 100% controlled, measures must be in place to prevent cross-contamination from becoming an unacceptable hazard.	<p>10: Yes, Complete (100%).</p> <p>7: Yes, Substantial (~75%).</p> <p>5: Yes, Partial (~50%).</p> <p>3: Yes, Minimal (~25%).</p> <p>0: No, Cross-contamination cannot be controlled and presents an unacceptable hazard.</p>

M6	(Time) To initiate decontamination procedures.	Initiate thorough decontamination procedures within adequate amount of time.	10: Immediately 9: 15 minutes 8: 30 minutes 7: 45 minutes 6: <1 hour 5: <2 hours 4: <3 hours 3: <4 hours 2: <5 hours 1: <6 hours 0: >6 hours
M7	(Time) To conduct decontamination procedures.	Time required per item for thorough decontamination.	10: Immediately 9: <1 minute 8: <2 minutes 7: <3 minutes 6: <4 minutes 5: <5 minutes 4: <7 minutes 3: <9 minutes 2: <12 minutes 1: <15 minutes 0: >15 minutes
M8	(Percent) Of cargo/supplies unusable due to the effects of decontamination.	The quantity of cargo/supplies that may be rendered unserviceable by decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%

M9	(Percent) Of cargo/supplies that require repair or replacement due to the effects of decontamination.	The quantity of repairs or parts replacements required due to decontamination process must be minimized.	10: 0% 9: <1% 8: <2% 7: <3% 6: <4% 5: <5% 4: <6% 3: <7% 2: <8% 1: <9% 0: ≥10%
M10	(Yes/No) Decontamination procedures are logistically supportable?	Decontamination procedures must be logistically supportable.	10: No negative impacts on operations. 7: Limited negative impact on operational capability. 5: Moderate negative impact on operational capability. 3: Major negative impact on operational capability. 0: Not logistically supportable.
M11	There is effective DOTLPF in place to conduct task?	Refers to non-materiel elements associated with the execution of a task with the system.	10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations. 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations. 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed. 3: Some critical aspects of DOTLPF for the task to be performed with this system are addressed. 0: DOTLPF is completely inadequate or does not exist for the tasks to be performed with this system.

¹ M1 – (Yes/No) Contaminated by-products are controlled? 7: Yes, Substantial (~75%).

² M2 – (Level) Of chemical contamination after decontamination procedures. 3: Decontaminate most CWAs to a level that will allow unprotected exposure.

³ M3 – (Level) Of biological contamination after decontamination procedures. 5: Less than infective dose levels/casualty-producing toxin-exposure levels against five or more key threat agents.

⁴ M5 – (Yes/No) Cross-contamination is controlled? 7: Yes, Substantial (~75%).

⁵ M6 – (Time) To initiate decontamination procedures. 8: 30 minutes.

⁶ M7 – (Time) To conduct decontamination procedures. 1: <15 minutes.

⁷ M8 – (Percent) Of cargo/supplies unusable due to the effects of decontamination. 0: ≥10%.

⁸ M9 – (Percent) Of cargo/supplies that require repair or replacement due to the effects of decontamination. 0: ≥10%.

⁹ M10 – (Yes/No) Decontamination procedures are logistically supportable? 3: Major negative impact on operational capability.

¹⁰ M11 – There is effective DOTLPF in place to conduct task? 5: Many critical aspects of DOTLPF for the task to be performed with this system are addressed.

¹¹ M6 – (Time) To initiate decontamination procedures. 9: 15 minutes.

¹² M1 – (Yes/No) Contaminated by-products are controlled? 3: Yes, Minimal (~25%).

¹³ M2 – (Level) Of chemical contamination after decontamination procedures. 0: No effective decontaminant or process.

¹⁴ M3 – (Level) Of biological contamination after decontamination procedures. 3: Less than infective dose levels/casualty-producing toxin-exposure levels against three key threat agents.

¹⁵ M4 – (Level) Of radiological contamination after decontamination procedures. 4: <0.33 cGy/hour residual dose rate.

¹⁶ M5 – (Yes/No) Cross-contamination is controlled? 3: Yes, Minimal (~25%).

¹⁷ M7 – (Time) To conduct decontamination procedures. 5: <5 minutes.

¹⁸ M11 – There is effective DOTLPF in place to conduct task? 7: DOTLPF is adequate for most of the tasks to be performed with this system without limitations that cause significant impact upon operations.

¹⁹ M1 – (Yes/No) Contaminated by-products are controlled? 10: Yes, Complete (100%).

²⁰ M2 – (Level) Of chemical contamination after decontamination procedures. 5: Decontaminate all CWAs, some NTAs to a level that will allow unprotected exposure.

²¹ M5 – (Yes/No) Cross-contamination is controlled? 10: Yes, Complete (100%).

²² M11 – There is effective DOTLPF in place to conduct task? 10: DOTLPF is adequate for all tasks to be performed with this system without limitations that cause significant impact upon operations.

²³ M10 – (Yes/No) Decontamination procedures are logistically supportable? 5: Moderate negative impact on operational capability.

17.21.3 Functional Solution Analysis

17.21.3.1 DOTLPF Assessment Summary

This section states the deficiencies and suggests potential non-materiel solutions. If there are no solutions or there are only partial solutions for a particular deficiency, the deficiency is then reassessed in the IMA section.

1. **Deficiency:** Some decontaminants may damage sensitive parts on ammunition.
Non-Materiel Solutions: None.
2. **2 Deficiency:** Decontaminants, such as STB/HTH, may remove critical markings or corrode ammunition.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include more detailed ammunition-specific decontamination protocol.
3. **Deficiency:** Weathering is time-consuming.
Non-Materiel Solutions: *Doctrine (partial):* Modify doctrine to include specific weathering procedures.
4. **Deficiency:** Cargo support items such as netting and wood pallets may absorb chemical agents.
Non-Materiel Solutions: None.

17.21.3.2 IMA Assessment Summary

Table 17.21-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.21-2 TASUST 21: IMA Assessment

<p>Identified Gaps</p> <p>Ideas for Materiel Approaches (IMA)</p>	Enzymatic	Aqueous Oxidants/Nucleophiles	Mixed (Water/Nonaqueous Solvent) Oxidants/Nucleophiles	Reactive Nonaqueous Liquids	Reactive Gases and Vapors	Low-Temperature Thermal (Accelerated Weathering)	Sorption	Water/Steam Wash	Self-Decontaminating Coatings	(Nonaqueous) Solvent Wash	Ionizing/Nonionizing Radiation	Plasma	Robotic or Semiautonomous System	Electrostatic Decontamination System
Some decontaminants may damage sensitive parts on ammunition.	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Decontaminants, such as STB/HTH, may remove critical markings or corrode ammunition.	X	X	X	X	X	X	X	X	X	X	X			X
Weathering is time-consuming.	X	X	X	X	X	X	X	X	X	X	X		X	X
Cargo support items such as netting and wood pallets may absorb chemical agents.					X				X		X		X	

17.22 Task TASUST 22: Conduct transload operations**17.22.1 Functional Area Analysis****17.22.1.1 Definition**

To support force deployment and sustainment operations by conducting the transload of cargo and passengers. This task includes the movement of cargo/passengers from uncontaminated to contaminated lift platforms for subsequent movement into contaminated air/sea ports of debarkation. Retrograde cargo and redeploying passengers departing contaminated areas must be thoroughly decontaminated to meet internationally accepted decontamination standards (when available).

17.22.1.2 Derivation

UJTL (ST 1.1.2, ST4, ST4.2.2.2, ST8.4.3, ST9.4), Air Mobility Operations In a Chemical and Biological Environment.

17.22.1.2.1 Supported Task: OPSUST 11

17.22.1.2.2 Lateral Task: N/A

17.22.1.2.3 Supporting Task: N/A

17.22.1.3 Condition

Perform this task under conditions of:

Physical

1. Extremely rough sea state. (C1.2.1.3)
2. Tropical, arctic, and arid climate. (C1.3.1)
3. All seasons. (C1.3.1.1)
4. Precipitating and stormy weather. (C1.3.1.3)
5. Hot and very cold air temperature. (C1.3.1.3.1)
6. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6.1)
7. Negligible light. (C1.3.2.1)
8. Persistent CBRN effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. Marginal forces allocated. (C2.2.3)
3. Some or no interoperability. (C2.2.6)
4. Low personnel capability. (C2.2.4)
5. Negligible personnel experience. (C2.2.4.5)
6. Severe personnel fatigue. (C2.2.4.6)

7. Limited, little, or no lift assets (C2.5.2)
8. Limited or no host-nation support. (C2.8.5)
9. Ambiguous treat existence. (C2.9.3)

Civil

- Limited or negative foreign government support. (C3.1.2.3)
- Aggressively opposed foreign public opinion. (C3.1.2.4)
- High mission priority. (C3.1.2.4)

17.22.2 Functional Needs Analysis

17.22.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.22-1 shows the capabilities and deficiencies associated with conducting isolation operations. Capabilities encompass the component or unit commander establishing specific plans and executing transload operations following directives passed down from the joint task force (JTF) commander. Deficiencies include limited resources to conduct transload operations.

Current Capabilities and Deficiencies

The component or unit commander must plan and execute a transload operation, which comprises the transfer of cargo and personnel from a strategic aircraft into a tactical aircraft. Table 17.22-1 shows overall capabilities and deficiencies associated with conducting transload operations. Deficiencies include the lack of developed plans to conduct transload operations. Other deficiencies involve the lack of preexisting agreements that allow forces to cross borders and utilize host-nation or foreign nation's assets. In addition, personnel lack training in the conduct of transload operations. The overall current capability is "yellow."

Projected Near/Mid-Term Capabilities and Deficiencies

No foreseeable change in capability in the near/mid term. The overall capability in the near/mid term remains "yellow."

Projected Far-Term Capabilities and Deficiencies

Improvements in decontamination capability and the incorporation of the results of exercises and experiments will improve DOTLPF in the far term. Overall capability will improve to "green."

Table 17.22-1. TASUST 22: Capabilities and Deficiencies Assessment

Capability: Transload Operations	M1	M2	M3	M4	M5
Current Overall Capabilities	8	8	6	8	6
Near/Mid-Term Overall Capabilities	8	8	6	8	6
Far-Term Overall Capabilities	8	8	10	8	10

	FAA Measure	Elaboration	Scale
M1	Clean and contaminated zones are established at the transload site to separate clean and dirty lift assets, cargo, and passengers.	The establishment of clean and contaminated zones at the transload site used to separate clean and dirty lift assets, cargo, and passengers.	8-10: Full capability to establish clean and contaminated zones. 4-7: Partial capability to establish clean and contaminated zones. 1-3: Limited capability to establish clean and contaminated zones. 0: No capability to establish clean and contaminated zones.
M2	An exchange zone is established to prevent the spread of contaminants.	The establishment of exchange zones at the transload site is used to prevent the spread of contamination.	8-10: Full capability to establish an exchange zone. 4-7: Partial capability to establish an exchange zone. 1-3: Limited capability to establish an exchange zone. 0: No capability to establish an exchange zone.
M3	Retrograde cargo and redeploying personnel at the transload site are decontaminated to internationally accepted standards (when available) by the unit of assignment.	The cargo and personnel (OCONUS) are decontaminated to internationally accepted standards (when available) by the assigned decontamination unit.	8-10: Full capability to decontaminate cargo and personnel. 4-7: Partial capability to decontaminate cargo and personnel. 1-3: Limited capability to decontaminate cargo and personnel. 0: No capability to decontaminate cargo and personnel.
M4	Cargo/passenger transload site is identified for transload of deploying forces and sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated ports of debarkation.	The cargo and/or passenger transload site is identified for transload of deploying forces and sustainment cargo from uncontaminated to contaminated lift assets for movement into contaminated ports of debarkation or final destination.	8-10: Full capability to identify transload site. 4-7: Partial capability to identify transload site. 1-3: Limited capability to identify transload site. 0: No capability to identify transload site.
M5	There is effective DOTLPP in place to conduct task.	Assessment of the extent of DOTLPP to enable task performance.	8-10: Complete DOTLPP in place to execute task. 4-7: Partial DOTLPP in place to execute task. 1-3: Limited DOTLPP in place to execute task. 0: No DOTLPP in place to execute task.

17.22.3 Functional Solution Analysis

17.22.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or there are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Lack of training to support transload operations.
Non-Materiel Solutions: *Training:* Develop new training programs that will provide knowledge, skills, and abilities for units conducting transload operations. Programs include training areas and facilities for units to stay proficient and rehearse various transload mission scenarios.
- 2. Deficiency:** Lack of defined treaties and agreements to allow transload operations.
Non-Materiel Solutions: *Doctrine:* Develop treaties and agreements with coalition nations and host-nations to support transload operations. *Facilities:* The agreements must include crossing borders and the execution of missions to conduct transload operations such as airfield utilization.

17.22.3.2 IMA Assessment Summary

The analysis of this task has determined the need for non-materiel solutions only, and therefore no IMAs are required.

17.23 Task TASUST 23: Produce potable water in a contaminated environment**17.23.1 Functional Area Analysis****17.23.1.1 Definition**

To produce potable water from a contaminated source. The spectrum includes individual means of production as well as large-scale efforts.

17.23.1.2 Derivation

UJTL (TA 7, TA 7.1), Protection Joint Functional Concept.

17.23.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11

17.23.1.2.2 Lateral Task: N/A

17.23.1.2.3 Supporting Task: N/A

17.23.1.3 Condition

Perform this task under conditions of:

Physical

1. Somewhat accessible subsurface water. (C1.1.2.3)
2. High saline content. (C1.2.1.5)
3. Great ocean ice thickness. (C1.2.1.11)
4. Arctic and arid climate. (C1.3.1)
5. Very cold air temperature. (C1.3.1.3.1)
6. Nuclear effects. (C1.3.3.1)
7. Chemical effects. (C1.3.3.2)
8. Biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. Location—ashore/afloat. (C2.1.4.1)
3. Minimal to short time available. (C2.1.5)
4. Marginal forces allocated. (C2.2.3)
5. Low personnel capability. (C2.2.4)
6. Severe personnel fatigue. (C2.2.4.6)
7. Some or no interoperability. (C2.2.6)
8. Limited, little, or no lift assets. (C2.5.2)
9. Limited or no host-nation support. (C2.8.5)
10. Limited or negligible commercial procurement. (C2.8.6)
11. Ambiguous threat existence. (C2.9.3)

Civil

1. Limited or negative foreign government support. (C3.1.2.3)
2. High mission priority. (C3.1.3.2)

17.23.2 Functional Needs Analysis**17.23.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.23-1 shows the current capabilities and deficiencies for the production of potable water. Capabilities include reverse osmosis, batch chlorination, and filtering. Deficiencies include the inability to purify chemically and radiologically contaminated water on an individual basis as well as a limited number of reverse osmosis water purification units (ROWPUs) with centralized production and distribution.

Current Capabilities and Deficiencies

Reverse osmosis is a purification process in which filtered water is pumped against a semipermeable membrane under great pressure. The membrane allows product water to pass through while rejecting the impurities, both suspended and dissolved. Extremely high pressures must be used to get a useful volume of water passing through a unit area of membrane. Chlorine is the disinfectant agent usually specified for military use. Presently, this is the only widely accepted agent that destroys organisms in water and leaves an easily detectable residual that serves as a tracer element. Sudden disappearance of chlorine residual signals potential contamination in the system. No other available disinfectant is as acceptable or adaptable for potable water treatment operations as chlorine. A major disadvantage is that chlorine reacts with certain organic compounds to form trihalomethanes, a known carcinogen. Table 17.23-1 lists the overall capabilities and deficiencies associated with the bulk water production (reverse osmosis and chemical means) and whether the means are adequate for current operations. Individual and small unit water production is nonexistent for chemically and radiological contaminated water. There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Near/Mid-Term Capabilities and Deficiencies

No foreseeable change in capability in the near/mid term.

Projected Far-Term Capabilities and Deficiencies

No foreseeable change in capability in the far term.

Table 17.23-1. TASUST 23: Capabilities and Deficiencies Assessment

System/Measure	M1	M2	M3	M4	M5
Current					
Reverse Osmosis Water Purification Unit (Chemical, Biological, Radiological)	8	10	6	6	8
Chemical Disinfectants (Biological) Chlorination	8	3	8	6	6
Current Overall Capabilities	8	7	7	6	7
Near/Mid-Term Overall Capabilities	8	7	7	6	7
Far-Term Overall Capabilities	8	7	7	6	7

	FAA Measure	Elaboration	Scale
M1	Volume/time to complete decontamination process.	Assessment of the acceptability of water throughput rates to meet operational requirement.	8–10: Acceptable throughput to meet operational requirement. 4–7: Marginal throughput to meet operational requirement. 1–3: Limited throughput to meet operational requirement. 0: Throughput does not meet operational requirement.
M2	Water is potable.	Extent to which capability yields potable water under varying circumstances and in the presence of range of contaminants.	8–10: Capability yields potable water in all circumstances and under full range of contaminants. 4–7: Capability yields potable water under most circumstances and with most contaminants. 1–3: Capability yields potable water only under select circumstances or for select contaminants. 0: Capability is ineffective in producing potable water.
M3	Decontamination procedures are logistically supportable.	Extent to which decontamination procedures are logistically supportable.	8–10: Capability and procedures are fully supportable. 4–7: Capability and procedures are somewhat supportable. 1–3: Capability and procedures can only be supported with great effort. 0: Capability and procedures are not logistically supportable.
M4	Coordination exists with water purification assets.	Extent to which coordination is performed with all purification assets, including unit leadership, medical, logistics, and purification unit.	8–10: Complete coordination with all assets (leadership, medical, logistics, etc.). 4–7: Partial coordination. 1–3: Limited coordination. 0: No coordination of assets.
M5	There is effective DOTLPP in place to conduct task.	Extent to which DOTLPP exists to support execution of the task.	8–10: Complete DOTLPP in place to execute task. 4–7: Partial DOTLPP in place to execute task. 1–3: Limited DOTLPP in place to execute task. 0: No DOTLPP in place to execute task.

17.23.3 Functional Solution Analysis

17.23.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or there are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** No individual capability to purify water that has been contaminated by chemical or radioactive materials.
Non-Materiel Solutions: None.
- 2. Deficiency:** The number of ROWPUs and centralized distribution and production are limited.
Non-Materiel Solutions: *Doctrine:* Increased use of bottled and brick water sources in lieu of additional water purification teams and equipment could provide additional water supplies at the expense of heavy logistical burdens in transportation and distributions. *Personnel:* Additions of personnel and equipment could reduce loads placed on existing teams.
- 3. Deficiency:** Current chemical disinfectants do not neutralize some spores. (Biological)
Non-Materiel Solutions: None.

17.23.3.2 IMA Assessment Summary

Table 17.23-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.23-2. TASUST 23: IMA Assessment

<p style="text-align: center;">Identified Gaps</p> <p style="text-align: center;">Ideas for Materiel Approaches (IMA)</p>	<p style="text-align: center;">Coagulation Sediment Filtration</p>	<p style="text-align: center;">Granular Activated Carbon</p>	<p style="text-align: center;">Microfiltration</p>	<p style="text-align: center;">Lime Softening</p>	<p style="text-align: center;">Ion Exchange</p>	<p style="text-align: center;">Reverse Osmosis</p>	<p style="text-align: center;">Ultrafiltration</p>	<p style="text-align: center;">Disinfection, Chlorine</p>	<p style="text-align: center;">Disinfection, Ozone</p>	<p style="text-align: center;">Disinfection, UV Irradiation</p>
<p>No individual capability to purify water that has been contaminated by chemical or radioactive materials.</p>		X			X		X			X
<p>Limited number of ROWPUs and centralized distribution and production. (More efficient field-expedient replacement with a lighter, logistical tail possibly portable).</p>	X	X	X	X	X	X	X	X	X	X
<p>Does not neutralize some spores. (Biological)</p>			X		X	X	X	X	X	X

17.24 Task TASUST 24: Conduct tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing**17.24.1 Functional Area Analysis****17.24.1.1 Definition**

To assess units, equipment, facilities, activities, or terrain that are contaminated to determine restoration prioritization and whether or not the timing of such operations must be modified to fit the tactical situation. The component commander makes this assessment in the context of his tactical priorities. Decisions are designed to preserve operational tempo.

17.24.1.2 Derivation

OPSUST 3.

17.24.1.2.1 Supported Tasks: OPSUST 1, OPSUST 6, OPSUST 8, OPSUST 9, OPSUST 10, OPSUST 11

17.24.1.2.2 Lateral Task: TASHA 6

17.24.1.2.3 Supporting Task: N/A

17.24.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBR effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support. (C3.1.2.3)

17.24.2 Functional Needs Analysis**17.24.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.24-1 discusses the capability that currently exists to perform the task to the designated standard. Any tactical unit staff has a team of operational planners and command and control specialists and most have CBRN subject matter experts. This team of experts has the skill to conduct tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing, but there are some deficiencies that impact on the speed they will be able to operate.

Current Capabilities and Deficiencies

Any tactical unit staff has the ability to assist the unit commander to direct, control, and coordinate operations of assigned and attached forces, to assess units, equipment, facilities, activities, or terrain that are contaminated to determine restoration prioritization and to coordinate plan for changes required by the status of subordinate component commands. Table 17.24-1 lists the overall capabilities and deficiencies associated with the staff's ability to assess contamination reports for operational degradation implications and restoration operation requirements. While the staff has the ability to manually assess the situation and determine priorities, it is unlikely they will be able to meet the time requirements without automated assistance and the development of specific doctrine and TTPs. There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Near/Mid-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Far-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Table 17.24-1. TASUST 24: Capabilities and Deficiencies Assessment

Capability: Tactical Unit Staff	M1	M2	M3	M4	M5	M6	M7	M8	M9
Current Overall Capabilities	6	6	6	6	6	6	6	6	3
Near/Mid-Term Overall Capabilities	6	6	6	6	6	6	6	6	3
Far-Term Overall Capabilities	6	6	6	6	6	6	6	6	3

	FAA Measure	Elaboration	Scale
M1	Time after contamination until reports are received.	Capability enables rapid reporting of contamination.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M2	Time after contamination reports are received until unit operational risk assessment is completed.	Capability enables rapid assessment of contamination reports.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M3	Time after unit operational risk assessment is completed that operation priorities are determined.	Capability enables rapid formulation of operational priorities.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M4	Percent accuracy of data transmitted/disseminated.	None required.	8–10: Accuracy of transmitted/disseminated data is very good. 4–7: Accuracy of transmitted/disseminated data is good. 1–3: Accuracy of transmitted/disseminated data is poor. 0: Accuracy of transmitted/disseminated data is very poor.
M5	Percent of information passed within established time criteria.	Capability enables rapid transmission/dissemination of information.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M6	Percent accuracy of unit operational risk assessment.	None required.	8–10: Accuracy of assessment is very good. 4–7: Accuracy of assessment is good. 1–3: Accuracy of assessment is poor. 0: Accuracy of assessment is very poor.
M7	Percent accuracy of restoration operation priority determination.	None required.	8–10: Accuracy of priority determination is very good. 4–7: Accuracy of priority determination is good. 1–3: Accuracy of priority determination is poor. 0: Accuracy of priority determination is very poor.

M8	Time required to modify restoration operation priority determination after substantive operational changes are assessed.	Capability enables rapid modification of restoration operation priorities.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M9	There is effective DOTLPF in place to conduct task.	Assessment of the extent of DOTLPF to enable task performance.	8–10: Complete DOTLPF in place to execute task. 4–7: Partial DOTLPF in place to execute task. 1–3: Limited DOTLPF in place to execute task. 0: No DOTLPF in place to execute task.

17.24.3 Functional Solution Analysis

17.24.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The current capability is not automated, slowing down the process.
Non-Materiel Solutions: None.
- 2. Deficiency:** More detailed specific information and checklists useful for time-sensitive situations are not available.
Non-Materiel Solutions: *Doctrine:* Develop TTPs to include time-saving procedures and checklists.
- 3. Deficiency:** A restoration exercise focused on risk assessment of units, equipment, facilities, activities or terrain that is contaminated for restoration prioritization and timing has not been conducted.
Non-Materiel Solutions: *Training:* Conduct an exercise (or experimentation) that will produce lessons learned and actionable recommendations.
- 4. Deficiency:** After unit operational risk assessment is completed, there are no TTPs to help determine restoration operation priorities.
Non-Materiel Solutions: *Doctrine:* Develop TTPs that provide guidance on restoration prioritization and timing.
- 5. Deficiency:** No doctrine has been developed.
Non-Materiel Solutions: *Doctrine:* Promulgate doctrine that provides information on tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.
- 6. Deficiency:** The linkage of restoration operations and operational risk assessment is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Leader education should provide a command and staff focus on tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.

17.24.3.2 IMA Assessment Summary

Table 17.24-2 is a possible idea for a materiel approach and a corresponding description of that idea. There is the possibility of an automated information distribution software and system that are applicable for conducting tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.

Table 17.24-2. TASUST 24: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
The current capability is not automated, slowing down the process.	Automated information distribution software and system	Based on the inability to conduct a tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated and to disseminate information necessary for restoration prioritization in a rapid and accurate method. There is a requirement for automated systems that will collect, organize, and disseminate information rapidly and accurately to prioritize restoration efforts.

17.25 Task TASUST 25: Assess the impact of restoration activities on tactical objectives**17.25.1 Functional Area Analysis****17.25.1.1 Definition**

To make an assessment that determines how the required restoration activities of key units, facilities, or equipment will impact current or projected tactical objectives. Some contaminated units or facilities must undergo restoration operations within a short time period or risk becoming completely combat ineffective.

17.25.1.2 Derivation

OPSUST 4.

17.25.1.2.1 Supported Tasks: OPSUST 2, OPSUST 3, OPSUST 4, OPSUST 7, OPSUST 8, OPSUST 9, OPSUST 10, OPSUST 11

17.25.1.2.2 Lateral Task: TASHA 7

17.25.1.2.3 Supporting Task: N/A

17.25.1.3 Condition

Perform this task under conditions of:

Physical

1. Persistent CBR effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil

1. Limited foreign government support (C3.1.2.3)

17.25.2 Functional Needs Analysis**17.25.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.25-1 discusses a capability that currently exists to perform the task to the designated standard. Any tactical unit staff has a team of operational planners and command and control specialists and most have CBRN subject matter experts. This team of experts has the skill to assess the impact of restoration activities on tactical objectives, but there are some deficiencies that impact on the speed they will be able to operate.

Current Capabilities and Deficiencies

Any tactical unit staff has the ability to assist the unit commander to direct, control, and coordinate operations of assigned and attached forces and to provide tactical guidance to forces with contaminated units. Table 17.25-1 lists the overall capabilities and deficiencies associated with the staff's ability to assess the impact of restoration activities on tactical objectives. While the staff has the ability to assess the situation and determine priorities, it is unlikely they will be able to meet the time requirements without automated assistance and the development of specific doctrine and TTPs. The overall current assessment is "red."

Projected Near/Mid-Term Capabilities and Deficiencies

Capability will improve in the near/mid-term as results of the Restoration Operations Advanced Capability Technology Demonstration are incorporated into DOTLPF and TTPs. The overall assessment will improve to "yellow."

Projected Far-Term Capabilities and Deficiencies

The capability will continue to improve in the far-term as additional exercises and experiments focus on restoration operations. Improvements will be evident in TTPs and DOTLPF. Further, the fielding of automated systems will improve the time and accuracy of restoration operation assessments. The overall assessment will improve to "green" in the far term.

Table 17.25-1. TASUST 25: Capabilities and Deficiencies Assessment

Capability: Tactical Unit Staff.	M1	M2	M3	M4	M5
Current Overall Capabilities	5	5	0	5	0
Near/Mid-Term Overall Capabilities	5	5	5	10	5
Far-Term Overall Capabilities	10	10	10	10	10

	FAA Measure	Elaboration	Scale
M1	Time to make determination of restoration operation impact on tactical objectives.	Capability enables determination of restoration operation impact in a timely manner.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M2	Instances of incorrect assessments of impact of restoration operations.	Capability enables the accurate assessment of the impact of restoration operations.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M3	Procedures and checklists are developed to facilitate the ability to assess the impact of required restoration activities on tactical objectives.	Extent to which capability has procedures and checklists.	8–10: Complete procedures and checklists exist. 4–7: Partial procedures and checklists exist. 1–3: Very limited procedures and checklists exist. 0: No procedures or checklists exist.
M4	Joint exercises/experimentation provide lessons learned on procedures for determining restoration operation impact on tactical objectives.	Extent to which exercises and experiments address restoration operations.	8–10: Full range of exercises and experiments in restoration operations. 4–7: Exercises and experiments sometimes address restoration operations. 1–3: Exercises and experiments rarely address restoration operations. 0: Exercises and experiments never address restoration operations.
M5	Effective DOTLPF is in place to conduct this task.	Assessment of the extent of DOTLPF to enable task performance.	8–10: Complete DOTLPF in place to execute task. 4–7: Partial DOTLPF in place to execute task. 1–3: Limited DOTLPF in place to execute task. 0: No DOTLPF in place to execute task.

17.25.3 Functional Solution Analysis

17.25.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** The current capability is not automated, slowing down the process. Accuracy is limited to human actions.
Non-Materiel Solutions: None.
- 2. Deficiency:** No doctrine or TTPs have been developed.
Non-Materiel Solutions: *Doctrine:* Promulgate Doctrine and TTPs that provide information on assessing the impact of restoration activities on tactical objectives should be developed.
- 3. Deficiency:** This assessment process is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Leader education should provide a command and staff focus on tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated for restoration prioritization and timing.

17.25.3.2 IMA Assessment Summary

Table 17.25-2 identifies which of the materiel approaches might address specific materiel gaps identified in the DOTMLPF assessment.

Table 17.25-2. TASUST 25: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
<p>The current capability is not automated, slowing down the process. Accuracy is limited to human actions.</p>	<p>Automated information distribution software and system</p>	<p>Based on the inability to conduct a tactical risk assessment of units, equipment, facilities, activities, or terrain that are contaminated and to disseminate information necessary for restoration prioritization in a rapid and accurate method.</p> <p>There is a requirement for automated systems that will collect, organize, and disseminate information rapidly and accurately to prioritize restoration efforts.</p>

17.26 Task TASUST 26: Provide tactical guidance to forces with contaminated units

17.26.1 Functional Area Analysis

17.26.1.1 Definition

To provide specific, tailored tactical guidance to forces that have some or all of their units contaminated. The component commander may determine that some critical units or facilities must continue essential operations for a specified period of time despite contamination, prior to conducting restoration operations. To provide adequate guidance, a complete picture of the projected degradation of the unit/facility over time must be available to the component commander.

17.26.1.2 Derivation

OPSUST 5.

17.26.1.2.1 Supported Tasks: OPSUST 5, OPSUST 8, OPSUST 11

17.26.1.2.2 Lateral Task: TASHA 10

17.26.1.2.3 Supporting Task: N/A

17.26.1.3 Condition

Perform this task under conditions of.

Physical

1. Persistent CBR effects. (C1.3.3.1-3)

Military

1. Stressful mission. (C2.1)
2. No mission preparation. (C2.1.3)
3. Negligible personnel experience. (C2.2.4.5)
4. Moderate rear-area security. (C2.7.1)
5. Fully developed state of conflict. (C2.10.1)

Civil. N/A

17.26.2 Functional Needs Analysis

17.26.2.1 Capabilities and Deficiencies Assessment Summary

Table 17.26-1 discusses the capability that currently exists to perform the task to the designated standard. Any tactical unit staff has a team of operational planners and command and control

specialists and most have CBRN subject matter experts. This team of experts has the skill to provide tactical guidance to forces with contaminated units, but there are some deficiencies that impact on the speed with which they will be able to develop the guidance.

Overall Current Capabilities and Deficiencies Summary

Any tactical unit staff has the ability to assist the unit commander to direct, control, and coordinate operations of assigned and attached forces and to provide tactical guidance to forces with contaminated units. Table 17.26-1 lists the overall capabilities and deficiencies associated with the tactical staff's ability to provide tactical guidance to forces with contaminated units. While the staff has the ability to develop and provide this guidance, it is unlikely they will be able to meet time requirements without automated assistance and the development of specific doctrine and TTPs. There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Near/Mid-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Far-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Table 17.26-1. TASUST 26: Capabilities and Deficiencies Assessment

Capability: Tactical Unit Staff.	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capabilities	6	6	6	6	6	6	8	8	6	6	6	5 ¹
Near/Mid-Term Overall Capabilities	6	6	6	6	6	6	8	8	6	6	6	5
Far-Term Overall Capabilities	6	6	6	6	6	6	8	8	6	6	6	5

	FAA Measure	Elaboration	Scale
M1	Time since update of the joint force situation.	Capability enables rapid updates of joint force situation based on individual unit updates.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M2	Time for commander to forward and disseminate contaminated unit assessment.	Capability enables rapid formulation of and dissemination of contaminated unit assessment	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M3	Time to assess current situation and formulate revised plan of action.	Capability to rapidly assess current unit situation and formulate revised plan of action.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M4	Percent of time contamination of forces occurs without options available.	Capability to develop options in the event of force contamination.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M5	Time for component commander to formulate crisis assessment.	Capability to rapidly assess current joint force situation.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M6	Time to adjust original plan for alternate operations (after recognizing planning assumptions invalid).	Capability to rapidly formulate alternate operations in response to joint force contamination.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M7	Time to compile appropriate reports.	Capability to rapidly compile appropriate reports concerning unit contamination.	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.

M8	Time to generate and forward component commander's situation report (SITREP).	Capability to rapidly generate and forward component commander's SITREP to higher headquarters.	8-10: Full capability. 4-7: Partial capability. 1-3: Limited capability. 0: No capability.
M9	Courses of action (COAs) are evaluated to find which are suitable, feasible, acceptable, and complete after assessing capabilities of contaminated units.	Capability to rapidly evaluate COAs for employment of units affected by contamination.	8-10: Full capability. 4-7: Partial capability. 1-3: Limited capability. 0: No capability.
M10	Milestone criteria for plan development are met.	Capability to meet plan development milestone criteria after a COA has been chosen.	8-10: Full capability. 4-7: Partial capability. 1-3: Limited capability. 0: No capability.
M11	Time to complete new executable operational plans and orders (after receipt of commander's estimate).	Capability to rapidly complete executable operational plans and orders after receipt of commander's estimate.	8-10: Full capability. 4-7: Partial capability. 1-3: Limited capability. 0: No capability.
M12	Effective DOTLPF exists to conduct this task.	Assessment of the extent of DOTLPF to enable task performance.	8-10: Complete DOTLPF in place to execute task. 4-7: Partial DOTLPF in place to execute task. 1-3: Limited DOTLPF in place to execute task. 0: No DOTLPF in place to execute task.

¹ No doctrine has been developed. This task is not a standard part of training. This formulation of guidance process is not integrated into leader education.

17.26.3 Functional Solution Analysis

17.26.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

- 1. Deficiency:** Contamination information is not automatically updated for the joint force.
Non-Materiel Solutions: None.
- 2. Deficiency:** There are no standardized assessment procedures.
Non-Materiel Solutions: *Doctrine:* Develop standardized assessment procedures.
- 3. Deficiency:** TTPs on how to specifically adjust original plan for alternate operations and for assessing COAs to find which are suitable, feasible, acceptable, and complete after assessing capabilities of contaminated units do not exist.
Non-Materiel Solutions: *Doctrine:* Develop TTPs on how to specifically adjust original plan for alternate operations and for assessing COAs to find which are suitable, feasible, acceptable, and complete after assessing capabilities of contaminated units.
- 4. Deficiency:** Doctrine has not been developed.
Non-Materiel Solutions: *Doctrine:* Develop doctrine on providing tactical guidance to forces with contaminated units.
- 5. Deficiency:** This task is not integrated as a standard part of training.
Non-Materiel Solutions: *Training:* Integrate this task into unit training and develop guidelines for how to do so.
- 6. Deficiency:** This assessment process is not integrated into leader education.
Non-Materiel Solutions: *Leadership:* Leader education should provide a command and staff focus on providing tactical guidance to forces with contaminated units.

17.26.3.2 IMA Assessment Summary

Table 17.26-2 is a possible idea for a materiel approach and a corresponding description of that idea. There is the possibility of an automated information distribution software and system that would assist in collecting, organizing, and disseminating contamination information to support the development of assessments and tactical guidance when forces are contaminated.

Table 17.26-2. TASUST 26: IMA Assessment

Capability Gap	Idea for Materiel Approach	Description
Contamination information is not automatically updated for the joint force.	Automated information distribution software and system	Based on the inability to conduct a tactical risk assessment of units, equipment, facilities, or activities that are contaminated and to disseminate timely tactical guidance. There is a requirement for automated systems that will collect, organize, and disseminate information rapidly and accurately in order to support development of assessments and tactical guidance.

17.27 Task TASUST 27: Conduct salvage operations to recover critical materiel**17.27.1 Functional Area Analysis****17.27.1.1 Definition**

To plan, conduct, and control the recovery of critical materiel that is determined salvageable but also may require decontamination prior to retrograde to CONUS or movement to another theater. Includes the recovery, evacuation, and reclamation of damaged, discarded, condemned, or abandoned allied or enemy materiel, ships, craft, and floating equipment for reuse, repair, refabrication, or scrapping. Also includes naval salvage operations such as harbor and channel clearance, diving, hazardous towing and rescue tug services and the recovery of materiel, ships, craft, and floating equipment sunk offshore or elsewhere stranded.

17.27.1.2 Derivation

OPSUST 3, OPSUST 9, and OPSUST 12.

17.27.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11, OPSUST 13

17.27.1.2.2 Lateral Task: N/A

17.27.1.2.3 Supporting Task: N/A

17.27.1.3 Condition

Perform this task under conditions of:

Physical

Mountainous, jungle, desert, and arctic terrain. (C1.1.1)

Steep terrain slope. (C1.1.1.3)

Extensive obstacles to movement. (C1.1.3.4)

Low route availability. (C1.1.3.5)

Deep ocean depth. (C1.2.1.1)

Rough sea state. (C1.2.1.3)

Extremely cold ocean temperature. (C1.2.1.4)

All ocean features. (C1.2.1.6)

Poor divers/swimmers underwater visibility. (C1.2.1.14)

Strong divers/swimmers ocean currents. (C1.2.1.16)

Irregular ocean bottom. (C1.2.2)

Harsh littoral characteristics. (C1.2.4)

High shipping presence. (C1.2.6)

Artic, tropical, and arid climate. (C1.3.1)

Summer and winter season. (C1.3.1.1)

Stormy weather. (C1.3.1.3)

Hot and very cold air temperature. (C1.3.1.3.1)

High surface-wind velocity. (C1.3.1.3.3)
Liquid, freezing, and frozen precipitation. (C1.3.1.3.6)
Heavy precipitation intensity. (C1.3.1.3.6.2)
Extreme turbulence and wind shear. (C1.3.1.3.8)
Moderately high altitude. (C1.3.1.3.9)
Very low visibility. (C1.3.2)
Negligible light. (C1.3.2.1)
Moderate obscurants. (C1.3.2.2)
Moderate nuclear effects. (C1.3.3.1)
Moderate nuclear blast/thermal effects. (C1.3.3.1.1)
Moderate nuclear radiation effects. (C1.3.3.1.2)
Persistent blood, blister, choking, incapacitating nerve chemical effects. (C1.3.3.2)
All pathogens and toxins, biological effects. (C1.3.3.3)

Military

1. Stressful mission. (C2.1)
2. No preexisting arrangements. (C2.1.1.2)
3. Major military commitments to other nations. (C2.1.1.6)
4. Negligible military commitments from other nations. (C2.1.1.7)
5. Partially completed mission preparation. (C2.1.3)
6. Ashore, afloat location. (C2.1.4.1)
7. Two theaters. (C2.1.4.2)
8. Very long intertheater distance. (C2.1.4.4)
9. Short time available. (C2.1.5)
10. Very short mission duration. (C2.1.5.2)
11. Weak forces assigned. (C2.2.1)
12. Marginal forces allocated. (C2.2.3)
13. Low personnel capability. (C2.2.4)
14. Negligible personnel experience. (C2.2.4.5)
15. No interoperability. (C2.2.6)
16. Little or no lift assets. (C2.5.2)
17. Little or no sealift assets. (C2.5.2.1)
18. Limited rear-area security. (C2.7.1)
19. Slow pipeline responsiveness. (C2.8.3.1)
20. No host-nation support. (C2.8.5)
21. Nuclear, chemical and biological threat form. (C2.9.2)
22. Fully developed state of conflict. (C2.10.1)

Civil

1. Negative foreign government support. (C3.1.2.3)
2. Aggressively opposed foreign public opinion. (C3.1.2.4)

17.27.2 Functional Needs Analysis**17.27.2.1 Capabilities and Deficiencies Assessment Summary**

Table 17.27-1 discusses the capability that currently exists to perform the task to the designated standard. Any tactical unit and staff that have a salvage capability can perform this task, but there are some deficiencies that affect the efficiency with which a salvage unit can perform under contamination conditions.

Current Capabilities and Deficiencies

Any tactical unit and staff with the ability to conduct salvage operations have the ability to conduct salvage operations to recover critical materiel in a contaminated environment/situation. Table 17.27-1 lists the overall capabilities and deficiencies associated with the tactical unit/staff's ability to conduct salvage operations to recover critical materiel in a contaminated environment/situation. In particular, specific doctrine and TTPs that address salvage operations in a chemical, biological, and radiological or nuclear contaminated environment do not exist. Issues such as planning, personal protective equipment, and decontamination are several aspects of salvage operations that must be addressed by procedures and doctrine.

Projected Near/Mid-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Projected Far-Term Capabilities and Deficiencies

There are currently no projected capabilities being assessed that would increase effectiveness in conducting and completing this task.

Table 17.27-1. TASUST 27: Capabilities and Deficiencies Assessment

Capability: Tactical Unit Staff.	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12
Current Overall Capabilities	N/A	N/A	5	5	N/A	5	N/A	6	N/A	N/A	N/A	3
Near/Mid-Term Overall Capabilities	N/A	N/A	5	5	N/A	5	N/A	6	N/A	N/A	N/A	3
Far-Term Overall Capabilities	N/A	N/A	5	5	N/A	5	N/A	6	N/A	N/A	N/A	3

	FAA Measure	Elaboration	Scale
M1	Percent of total losses.	Fraction of recovered items and materiel that cannot be repaired or reused. N/A—This is situation-specific and will vary.	8–10: Most recovered items and materiel can be repaired or reused. 4–7: Some recovered items and materiel can be repaired or reused. 1–3: Little recovered items and materiel can be repaired or reused. 0: No recovered items and materiel can be repaired or reused.
M2	Percent of items recovered.	Fraction of proposed items to be salvaged that are actually recovered. N/A—This is situation-specific and will vary.	8–10: Most items to be salvaged can be recovered. 4–7: Some items to be salvaged can be recovered. 1–3: Few items to be salvaged can be recovered. 0: No items to be salvaged can be recovered.
M3	Percent of contaminated items that cannot be processed in accordance with appropriate regulations.	Capability to decontaminate and repair or reuse salvaged items.	8–10: Most contaminated items can be processed. 4–7: Some contaminated items can be processed. 1–3: Few contaminated items can be processed. 0: No contaminated items can be processed.
M4	Time to appropriately dispose of hazardous material.	Capability to dispose of hazardous material from salvage operations, in a timely manner	8–10: Full capability. 4–7: Partial capability. 1–3: Limited capability. 0: No capability.
M5	Percent of items recovered and salvaged for further use.	Fraction of items recovered that can be used. N/A—This is situation-specific and will vary.	8–10: Most recovered items can be repaired or reused. 4–7: Some recovered items can be repaired or reused. 1–3: Little recovered items can be repaired or reused. 0: No recovered items can be repaired or reused.
M6	Percent of items returned to rear areas for additional decontamination.	Fraction of salvaged items that require additional decontamination in rear areas.	8–10: No items are returned to rear areas for additional decontamination. 4–7: Few items are returned to rear areas for additional decontamination. 1–3: Some items are returned to rear areas for additional decontamination. 0: Most items are returned to rear areas for decontamination.
M7	Percent increase in combat capability.	Increase in combat capability from recovery and repair of salvaged equipment. N/A—This is situation-specific and will vary.	8–10: Substantial increase in combat capability. 4–7: Some increase in combat capability. 1–3: Little increase in combat capability. 0: No increase in combat capability.

M8	Time to conduct salvage.	Capability to conduct salvage operations in a timely manner.	8–10: Most salvage operations can be conducted in a timely manner. 4–7: Some salvage operations can be conducted in a timely manner. 1–3: Few salvage operations can be conducted in a timely manner. 0: No salvage operations can be conducted in a timely manner.
M9	Percent of total materiel disposed of that is contaminated.	Fraction of materiel that is disposed of in a contaminated state. N/A—This is situation-specific and will vary.	8–10: No disposed-of materiel is contaminated. 4–7: Little disposed-of materiel is contaminated. 1–3: Some disposed-of materiel is contaminated. 0: Most disposed-of materiel is contaminated.
M10	Percent of items requiring decontamination.	Fraction of items to be salvaged that are contaminated. NA—This is situation-specific and will vary.	8–10: No items to be salvaged are contaminated. 4–7: Few items to be salvaged are contaminated. 1–3: Some items to be salvaged are contaminated. 0: Most items to be salvaged are contaminated.
M11	Percent of items designated as critical that are recovered and decontaminated within designated time frame.	Fraction of critical items that are recovered and decontaminated in a timely manner. NA—This is situation-specific and will vary.	8–10: Most critical items are recovered and decontaminated in a timely manner. 4–7: Some critical items are recovered and decontaminated in a timely manner. 1–3: Few critical items are recovered and decontaminated in a timely manner. 0: No critical items are recovered and decontaminated in a timely manner.
M12	There is effective DOTLPF in place to conduct this task.	Assessment of the extent of DOTLPF to enable task performance.	8–10: Complete DOTLPF in place to execute task. 4–7: Partial DOTLPF in place to execute task. 1–3: Limited DOTLPF in place to execute task. 0: No DOTLPF in place to execute task.

17.27.3 Functional Solution Analysis

17.27.3.1 DOTLPF Assessment Summary

This section addresses the deficiencies and suggests potential non-materiel solutions. If there are no non-materiel solutions, or they are only partial solutions, the remaining non-materiel need is then stated. Materiel needs are assessed in the IMA section.

1. **Deficiency:** Procedures to guide recovery of salvageable contaminated critical materiel do not exist.
Non-Materiel Solutions: Doctrine: Develop standardized procedures to guide recovery of salvageable contaminated critical materiel.
2. **Deficiency:** There is no specific listing of what can or cannot be decontaminated during salvage operations.
Non-Materiel Solutions: Doctrine: Develop a listing of what can or cannot be decontaminated during salvage operations.
3. **Deficiency:** There are no TTPs for disposal in conjunction with salvage operations.
Non-Materiel Solutions: Doctrine: Develop TTPs on how to specifically conduct hazardous disposal in conjunction with salvage operations.
4. **Deficiency:** No specific doctrine exists that has been developed through actionable results of experimentation or lessons learned from exercises.
Non-Materiel Solutions: Doctrine: Develop doctrine on recovery of salvageable contaminated critical materiel.
5. **Deficiency:** This task is not integrated into salvage operation training or exercises.
Non-Materiel Solutions: Training: Integrate this task into unit training/exercises and develop guidelines for how to do so.

17.27.3.2 IMA Assessment Summary

The analysis of this task has determined the need for non-materiel solutions only, and therefore no IMAs are required.

17.28 Task TASUST 28: Conduct exploitation operations**17.28.1 Functional Area Analysis****17.28.1.1 Definition**

To conduct exploitation operations. A component commander may be directed by the JTF commander to conduct exploitation operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, these include U.S. military operations across the range of military operations (ROMO). The assigned task of exploitation includes locating, characterizing, and securing CBRN materiel, weapons, equipment, personnel, and infrastructure, and developing appropriate forensic evidence. Also, it includes field decontamination as required.

17.28.1.2 Derivation

OPSUST 14, *Combatant Commander's Planning Guide for WMD Elimination Operations (Draft)*, UJTL (TA 7, TA 7.1).

17.28.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11, OPSUST 14

17.28.1.2.2 Lateral Task: N/A

17.28.1.2.3 Supporting Task: N/A

17.28.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Rough sea state. (C1.2.1.3)
4. Tropical, arid, arctic climate. (C1.3.1)
5. Summer, winter season. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot and very cold air temperature. (C1.3.1.3.1)
8. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6)
9. Heavy precipitation intensity. (C1.3.1.3.6.2)
10. Low visibility. (C1.3.2)
11. Negligible light. (C1.3.2.1)
12. Moderate obscurants. (C1.3.2.2)
13. Moderate nuclear effects. (C1.3.3.1)
14. Persistent blood, blister, choking, incapacitating nerve chemical effects. (C1.3.3.2)
15. All pathogens and toxins, biological effects. (C1.3.3.3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations.(C2.1.1.7)
 - c. Limited host-nation support. (C2.8.5)
2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host-nation support. (C2.8.5)
3. Common military conditions
 - a. Limited personnel expertise. (C2.2.4.5)
 - b. Chemical, biological, radiological or nuclear threat form. (C2.9.2)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3)
3. Common civil conditions
 - a. Moderate restraints on action. (C3.1.3.4)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

17.29 Task TASUST 29: Conduct disposition or destruction operations**17.29.1 Functional Area Analysis****17.29.1.1 Definition**

To conduct disposition or destruction operations. A component or unit commander may be directed by the JTF commander to conduct disposition or destruction operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, these may include U.S. military operations across the ROMO. The assigned task of disposition or destruction includes destroying, dismantling, rendering safe, removing, transferring, or otherwise verifiably disposing of CBRN materiel, weapons, equipment, and infrastructure. It also includes operations to prevent/reduce the chance for misuse of sensitive materiel.

17.29.1.2 Derivation

OPSUST 14, *Combatant Commander's Planning Guide for WMD Elimination Operations (Draft)*, UJTL (TA 7, TA 7.1).

17.29.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11, OPSUST 14

17.29.1.2.2 Lateral Task: N/A

17.29.1.2.3 Supporting Task: N/A

17.29.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Rough sea state. (C1.2.1.3)
4. Tropical, arid, arctic climate. (C1.3.1)
5. Summer, winter season. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot and very cold air temperature. (C1.3.1.3.1)
8. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6)
9. Heavy precipitation intensity. (C1.3.1.3.6.2)
10. Low visibility. (C1.3.2)
11. Negligible light. (C1.3.2.1)
12. Moderate obscurants. (C1.3.2.2)
13. Moderate nuclear effects. (C1.3.3.1)
14. Persistent blood, blister, choking, incapacitating nerve chemical effects. (C1.3.3.2)
15. All pathogens and toxins, biological effects. (C1.3.3.3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
2. Limited military commitments from other nations. (C2.1.1.7)
 - a. Limited host-nation support. (C2.8.5)
3. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host-nation support. (C2.8.5)
4. Common military conditions
 - a. Limited personnel expertise. (C2.2.4.5)
 - b. Chemical, biological, radiological or nuclear threat form. (C2.9.2)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3)
3. Common civil conditions
 - a. Moderate restraints on action. (C3.1.3.4)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.

17.30 Task TASUST 30: Conduct monitoring and redirection operations**17.30.1 Functional Area Analysis****17.30.1.1 Definition**

To conduct monitoring and redirection operations. A component or unit commander may be directed by the JTF commander to conduct monitoring and redirection operations for the explicit purpose of eliminating the CBRN weapons or capabilities held by an adversary. Specifically, these include U.S. military operations across the ROMO. The assigned task of monitoring and redirection includes monitoring, inspecting, and redirecting/converting former CBRN programs, facilities, and personnel.

17.30.1.2 Derivation

OPSUST 14, *Combatant Commander's Planning Guide for WMD Elimination Operations (Draft)*, UJTL (TA 7, TA 7.1).

17.30.1.2.1 Supported Tasks: OPSUST 8, OPSUST 11, OPSUST 14

17.30.1.2.2 Lateral Task: TASHA 1

17.30.1.2.3 Supporting Task: N/A

17.30.1.3 Condition

Perform this task under conditions of:

Physical

1. Mountainous, desert, jungle, arctic terrain. (C1.1.1)
2. Significant urbanization. (C1.1.3.1)
3. Rough sea state. (C1.2.1.3)
4. Tropical, arid, arctic climate. (C1.3.1)
5. Summer, winter season. (C1.3.1.1)
6. Stormy weather. (C1.3.1.3)
7. Hot and very cold air temperature. (C1.3.1.3.1)
8. Liquid, freezing, and frozen precipitation. (C1.3.1.3.6)
9. Heavy precipitation intensity. (C1.3.1.3.6.2)
10. Low visibility. (C1.3.2)
11. Negligible light. (C1.3.2.1)
12. Moderate obscurants. (C1.3.2.2)
13. Moderate nuclear effects. (C1.3.3.1)
14. Persistent blood, blister, choking, incapacitating nerve chemical effects. (C1.3.3.2)
15. All pathogens and toxins, biological effects. (C1.3.3.3)

Military

1. Cooperative nation
 - a. Partial preexisting arrangements. (C2.1.1.2)
 - b. Limited military commitments from other nations.(C2.1.1.7)
 - c. Limited host-nation support. (C2.8.5)
2. Uncooperative nation
 - a. No preexisting arrangements. (C2.1.1.2)
 - b. Negligible military commitments from other nations. (C2.1.1.7)
 - c. No host-nation support. (C2.8.5)
3. Common Military Conditions
 - a. Limited personnel expertise. (C2.2.4.5)
 - b. Chemical, biological, radiological or nuclear threat form. (C2.9.2)

Civil

1. Cooperative nation
 - a. Limited foreign government support. (C3.1.2.3)
2. Uncooperative nation
 - a. Negative foreign government support. (C3.1.2.3)
3. Common civil conditions
 - a. Moderate restraints on action. (C3.1.3.1)

This task is analyzed in the WMD Interdiction and Elimination JCIDS Analysis.