



MCWP 4-11.9

Ammunition Logistics



US Marine Corps

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FOREWORD

Marine Corps Warfighting Publication (MCWP) 4-11.9, *Ammunition Logistics*, provides guidance for commanders, staffs, logisticians, ammunition and aviation ordnance officers, supply officers, and ammunition and aviation ordnance Marines. This publication discusses the Marine Corps ammunition and aviation ordnance communities' organization and support structure, the general responsibilities of ammunition and aviation ordnance personnel, the systems used in support of ammunition logistics, planning considerations, safety issues, training, and the regulatory environment in which Marine Corps ammunition logistic operations are planned and executed. Various elements of Navy supporting establishments with ammunition responsibilities that have not been addressed in other USMC Service doctrine are introduced in the MCWP 4-11.9.

This publication's purpose is to extend the concepts established by Marine Corps Doctrinal Publication 4, *Logistics*; MCWP 4-1, *Logistics Operations*; MCWP 4-11, *Tactical Level Logistics*; MCWP 4-11.7, *MAGTF Supply Operations*; MCWP 3-21.2, *Aviation Logistics*; and Field Manual 4-30.1, *Munitions Support in the Theater of Operations*, as they apply to ammunition operations for the operating forces. This publication describes Marine Corps ammunition and aviation ordnance logistic operations in both garrison and expeditionary environments. Applicable tactics, techniques and procedures from other Service manuals have been incorporated. The overall intent is to provide a single-source, informative reference for Marine Corps ammunition logistics.

In order to reach the widest possible audience, this publication will address ammunition as a general use commodity, only distinguishing between subclass V(W) ground ammunition and subclass V(A) aviation ordnance where it is absolutely necessary. In general, wherever the terms ammunition, munitions, or ordnance appears in this document it should be construed as both ground ammunition and aviation ordnance, unless one term or the other is specifically applicable to the subject.

Reviewed and approved this date.

BY DIRECTION OF THE COMMANDANT OF THE MARINE CORPS



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AMMUNITION LOGISTICS

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CHAPTER 1

OVERVIEW

Class V ammunition is a complex commodity in terms of research and development, acquisition, life cycle management, and, eventually, disposal. The Department of Defense (DOD) spends billions of dollars annually to develop and acquire new munitions and to replenish stocks expended in training and operational use. Therefore, the business of ammunition, supply Class V, is a complex and highly interrelated venture composed of planning, requirements determination, resourcing, acquisition, storage, maintenance, quality evaluation, multimodal transportation, movement and retrograde planning and execution, explosives safety, disposal, and, most importantly, sustainment of the operating forces whether in garrison or deployed.

Ground ammunition and aviation ordnance are two of the most complex commodities used by the operating forces to sustain combat, contingency, and training operations. Although fundamentally a supply commodity, Class V materiel has a number of management attributes that do not apply to general supplies and requires specialized storage, handling, transportation, and inventory control methods.

Like fuel or food, ammunition is a consumable item; however, ammunition is often characterized by variable rates of consumption. Thus, it must be replenished from time to time, to ensure sufficient stocks are available on short notice in the event of a contingency. In addition, unlike most consumables, Class V materiel cannot be procured on the open market. Like principal end items such as tanks or the expeditionary fighting vehicle, Class V materiel is characterized by long lead times for production; in most cases, upwards of several years. Also like a principal

end item, it is funded and procured through a complex cycle of processes managed at the Service headquarters level.

STRATEGIC, OPERATIONAL, AND TACTICAL LOGISTICS

Strategic, operational, and tactical logistics are the supporting triad that enables commanders to execute modern expeditionary warfare. Operational logistics is the bridge between organic capabilities that serve tactical requirements and strategic or national capabilities. Tactical logistics includes organic unit capabilities and the combat service support that is necessary to support military operations. Combat service support is executed in the form of general and direct support obligations.

Strategic Logistics

Strategic logistic capabilities are generated based on guidance from the President and/or Secretary of Defense, the Joint Chiefs of Staff, and logistic requirements that are identified by the operating forces. Upon receipt of an execution, the Service components will execute Class V sourcing to meet the combatant commanders (CCDRs)/joint force commanders (JFCs) requirements and move the materiel into theater and areas of operations.

Therefore, the Service component commander must rely on force-held stocks for initial accompanying supplies. The commander is then dependent on the respective Navy or Marine Corps inventory control point (ICP) to provide the balance of identified requirements. The Defense Logistics Agency is a significant agent in supplying deployed forces with many of the

commodities and parts that are required. However, Defense Logistics Agency has no Class V responsibilities or capabilities.

Operational Logistics

Operational logistics connects the logistic efforts of the strategic level with those of the tactical level. The reception, staging, onward movement, and integration (RSOI) process is the operational level activity that brings strategically delivered ammunition through the ports and to the tactical level combat logistic agencies. The RSOI process involves identification of containers, the major subordinate command, and the cargo's intended destination.

Class V material will often be delivered to multiple locations, which is determined by Service component and the type of activity being supported. Great care must be taken when storing ammunition before the local storage sites are prepared.

Tactical Logistics

Class V is delivered to tactical level combat support agencies during the integration phase of the RSOI process. Tactical logistics includes organic capabilities and the combat support activities that are necessary to support military operations.

DOD MUNITIONS REQUIREMENTS PROCESS

Each Military Service is required to identify a total munitions requirement (TMR) to arm their weapon systems and forces to perform their assigned military mission. The steps and procedures for doing so are depicted in figure 1-1 and are described in DOD Instruction (DODI) 3000.4, *DOD Munitions Requirements Process (DOD MRP)*.

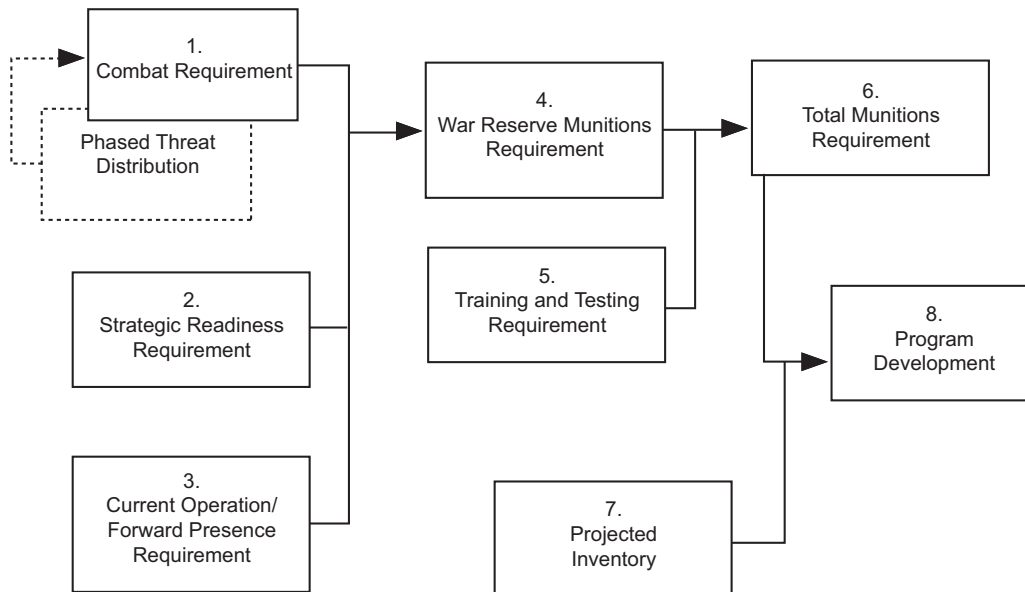


Figure 1-1. Munitions Requirements Process.

IMPLEMENTATION OF THE MUNITIONS REQUIREMENTS PROCESS

Marine Corps Order (MCO) 8000.7, *Marine Corps Capabilities-Based Munitions Requirements (MCCBMR) Process for Ground Ammunition (Class V[W])*, provides a full explanation of the munitions requirements process (MRP) and the Marine Corps' implementation of this process for Class V(W). The Navy implements MRP through the nonnuclear ordnance requirement (NNOR) process described in the current editions of Office of the Chief of Naval Operations Instruction (OPNAVINST) 8011.9A, *Non-Nuclear Ordnance Requirements (NNOR) Process*, and OPNAVINST 8010.12F, *Naval Conventional Ordnance Operational Logistics Policy*.

ROLES AND RESPONSIBILITIES

Responsibilities and capabilities for munitions management overlap because no organization or level of support can function effectively without extensive coordination between supported and supporting organizations. Responsibility for Class V(W) ammunition within the Marine Corps rests with multiple departments within Headquarters, Marine Corps (HQMC), Marine Corps Combat Development Command (MCCDC), Training and Education Command (TECOM), Marine Corps Systems Command (MARCORSYSCOM), and the Marine Corps forces (MARFOR).

Class V(A) aviation ordnance material used by the Marine Corps is procured and managed by the Navy, Chief of Naval Operations (CNO) and Commandant of the Marine Corps (CMC) headquarters staffs. Each staff has specific responsibilities that collectively manage naval ordnance.

Operational requirements are principally the domain of the operating forces and are discussed in detail in chapter 4. Details on Class V support under unified action can be found in appendix A.

Chief of Naval Operations Responsibilities

The CNO provides Service headquarters-level munitions management support to the operating forces. In concert with the Marine Corps' Deputy Commandant (DC) for Aviation, they collectively:

- Coordinate with MARFOR, CINCs [Navy Commander in Chiefs], and other major claimants to obtain accurate input to the NNOR and to ensure training and testing requirements (TTRs) are submitted.
- Provide ordnance logistic guidance and policy during the deliberate planning process.
- Pass TTR inputs to the Naval Operational Logistics Support Center (NOLSC) and resource sponsors for development of the CNO- and CMC-approved noncombat expenditure allocation.
- Approve and promulgate annual noncombat expenditure allocation to the numbered fleet commanders, MARFOR, and other major claimants for further distribution to the naval forces.
- Resolve Class V(A) materiel shortfalls identified during the deliberate planning process.

Navy Organizational Responsibilities

Since Class V(A) aviation ordnance material used by the Marine Corps is procured and managed by the Navy, the CNO and CMC headquarters staffs jointly have specific responsibilities for overall naval ordnance management.

Deputy Commandant for Installations and Logistics

The DC for Installations and Logistics establishes logistic and materiel management policies for all Marine Corps-owned equipment and supplies. With few exceptions, these policies are applicable to all classes of supply managed by the Marine Corps, including Class V(W) ground ammunition.

Deputy Commandant for Aviation

The DC for Aviation assists the Deputy CNO for Fleet Readiness and Logistics (N4) in establishing acquisition and fielding policies for aviation ordnance materiel used by Marine aviation organizations.

Commanding General, Marine Corps Combat Development Command

The Commanding General (CG), MCCDC is responsible for establishing the Class V(W) TMR and publishing planning factors for combat and contingencies. The CG, MCCDC is also the DC for Combat Development and Integration.

Commanding General, Training and Education Command

The CG, TECOM determines training requirements and provides Class V(W) materiel allowances for all Marine Corps training requirements.

Commander, Marine Corps Systems Command

The Commander, MARCORSYSCOM is responsible for research, development, and acquisition of Marine Corps systems, equipment, and materiel. The Program Manager for Ammunition (PM Ammo) performs these functions for the commander with respect to Class V(W). The PM Ammo is a unique organization within the Marine Corps and within DOD. The organization performs or manages all life cycle tasks associated with Marine Corps ground ammunition. Among these responsibilities is providing worldwide ICP services for the Marine Corps. This includes ammunition stocks held as war reserve, stocks procured or held for training and

testing, and ammunition assets undergoing maintenance or renovation.

Deputy Chief of Naval Operations for Fleet Readiness and Logistics

Class V(A) logistic and materiel management policies for munitions used by Marine aviation are separately prescribed by the Deputy Chief of Naval Operations for Fleet Readiness and Logistics (N4) and implemented through the Commander, Naval Supply Systems Command (NAVSUPSYSCOM).

The Naval Operational Logistics Support Center

The NOLSC will provide ICP-level management for naval ammunition, serving as the NAVSUPSYSCOM operational and joint force to the Navy component commanders and to the unified commanders.

SERVICE REQUIREMENTS DETERMINATION

Determination of Service-wide ammunition requirements is a complex task, and it is the responsibility of a multitude of agencies identified in figure 1-2.

In the 1990s, following Operations Desert Shield/Desert Storm, it became apparent that a more sophisticated process was required for determining the Services' ammunition requirements. This complex analysis provides a greater role for the CCDRs/JFCs and the Service components of the operating forces, and one that begins much earlier in the process. This process is the MRP. The product of the MRP is a TMR.

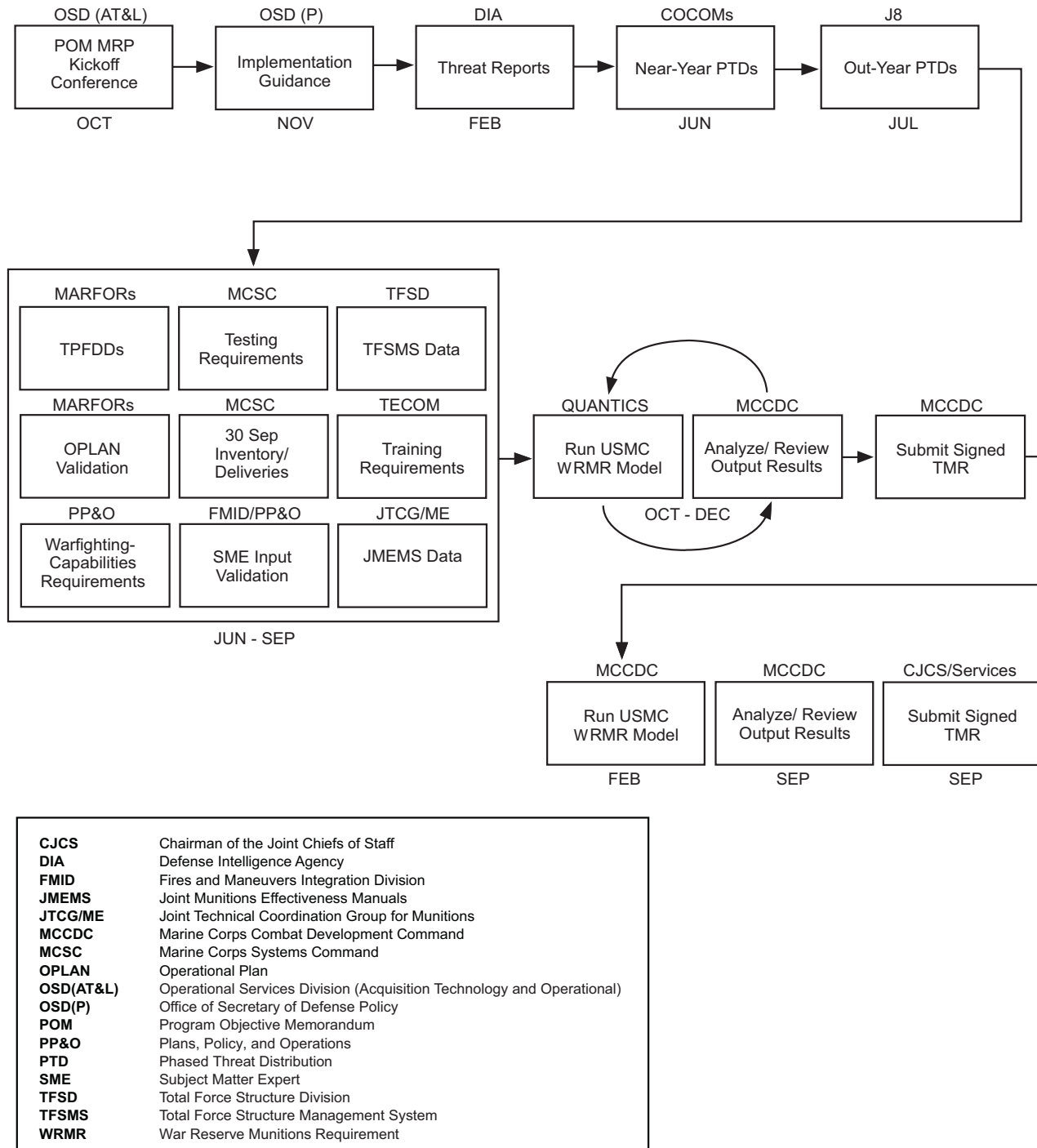


Figure 1-2. Munitions Requirements for Program Objective Memorandum Cycle.

The TMR for each Service is the sum of the war reserve materiel requirement (WRMR) and the TTR. The following paragraphs discuss the further subdivision of these two main requirements.

War Reserve Munitions Requirement

The three components of the WRMR are the combat requirement, the strategic readiness requirement, and the current operations/forward presence requirement.

Combat Requirement

The combat requirement represents the quantity of munitions that are required in order to equip a specified force structure to perform its assigned military mission and to meet CCDR/JFC objectives, including munitions needed for overlapped threat allocations.

Strategic Readiness Requirement

The strategic readiness consists of the quantity of munitions needed to arm forces that are not committed to support combat operations in the assigned major operations and campaigns, as well as those in the strategic reserve. This also includes any additional munitions requirements generated from treaties or statutory obligations to allies.

Current Operations/Forward Presence Requirement

The current operations/forward presence requirement represents the sum of munitions that are required to arm forces, conduct current operations, and meet forward presence obligations in accordance with DODI 3000.4.

Training and Testing Requirement

The TTR is the munitions required in order to train the Marine Corps and support its Service programs ensuring that weapons and platforms deliver the intended effectiveness. This can be stated as an annual requirement, a Future Years

Defense Program requirement, and/or projected life cycle of each munition. Surveillance, acceptance testing, and production losses of munitions items are accounted for in this category.

Universal Need Statement

During operational execution, requirements are updated as needed or conditions change through the UNP [universal need process] .

The component commander may initiate the universal need statement (UNS) process at any time. Through the chain of command, the UNS is ultimately presented to the CG MCCDC. If the CG MCCDC validates the requirement, it is forwarded to the Marine Requirements Oversight Council (MROC). The MROC is a panel of senior officers headed by the Assistant Commandant of the Marine Corps; its members consist of the DCs of all departments.

If approved by the MROC, the DC for Program and Resources provides fiscal resources, or may direct the realignment of existing funds originally allocated for another program. The development or procurement of the requested item is the responsibility of MARCORSYSCOM, along with the total life cycle management of the material solution to the operational requirement.

For example, during Operations Iraqi Freedom and Enduring Freedom there were a number of instances where validated requirements (via the appropriate chain of command) were provided to PM Ammo, MARCORSYSCOM for immediate sourcing, procurement, and delivery. These UNS included shoulder-launched multipurpose assault weapon rocket (with novel explosive [thermobaric]), 5.56mm nonmolybdenum coated 77 grain projectile, the surface demining flare, and the light assault weapon (rocket).

Class V(A) Requirements Determination

The Navy and Marine Corps aviation component of the MRP is the NNOR process. The NNOR identifies ordnance ship fill, combat expenditures,

maintenance pipeline and training, testing, current operations, and forward presence requirements to accomplish Navy and Marine Corps' missions and to execute the scenarios outlined in DODI 3000.4. The output of the NNOR provides the Department of the Navy's (DON's) baseline input into the DOD Planning, Programming, and Budgeting System.

RESOURCING

The DC for Programs and Resources develops and manages the Marine Corps' budget process, makes high-level investment decisions, and allocates the funds appropriated by the Congress to meet the Marine Corps' mission needs. The DC for Programs and Resources also works closely with the Navy counterpart to ensure that the Navy and Marine Corps programs and priorities are aligned to serve a common naval logistic integration strategy for the operating forces and the supporting establishment.

CLASS V ACQUISITION

Acquisition (or procurement) of munitions is a complex process, and it is collaboratively executed by acquisition professionals, graduates of the Defense Acquisition University, and commodity subject matter experts. These acquisition professionals and subject matter experts are located with the various Navy/Marine Corps program executive offices (PEOs) and program managers, such as Naval Sea Systems Command, Naval Air Systems Command, MARCORSYSCOM, and the Army's Program Executive Office, Ammunition (PEO Ammo).

Acquisition of Marine Corps Ground Ammunition

Acquisition of Marine Corps ground ammunition is managed and executed by the PM Ammo, MARCORSYSCOM. Most Class V(W) ground

ammunition items that are used by the Marine Corps are common to the Army and/or other Services. For common items, Marine Corps funds are transferred to PEO Ammo located at Picatinny Arsenal, NJ, because one Service is responsible for providing the acquisition support infrastructure for two or more user Services. All Service-unique munitions are procured through Navy Program Managers or directly by PM Ammo.

Acquisition of Navy Munitions

The Navy has a complex munitions acquisition infrastructure that is built around the PEOs for various weapons platforms and combatants that are currently in the operating forces. For the purposes of this publication, the primary interest is on the Class V(A) aviation ordnance procured by the Naval Air Systems Command affiliated PEOs for use by naval aviation.

Quality Evaluation

Quality evaluation (QE) is a broad, general term applied to a set of inspections, functional testing, and laboratory analysis of representative munition lot samples taken from the inventory for the sole purpose of assessing the proper state of the inventory. Quantity, exposure to environmental elements during storage, age, malfunction history, and manufacturing variables are considered when selecting samples. Random sampling of available lots provides a statistically sound method and repeatable results in determining reliability and probabilities of future performance at a given confidence level. From these determinations, inventory management decisions such as global positioning, reclassification, and maintenance options can be implemented.

In addition, quality audits of vendors/suppliers are conducted that include the following:

- Reviewing vendor/supplier's quality system procedures.
- Conducting on-site auditing of vendors and/or suppliers.
- Auditing and reviewing of maintenance lines.

- Participating in pre- and post-contract award and facility reviews.
- Reviewing contracts and solicitations.
- Monitoring first article acceptance tests and lot acceptance tests.

The Navy and Marine Corps both conduct extensive stockpile QE and in-Service engineering support activities on their respectively-owned stocks. The Marine Corps and the Navy conduct functional testing and laboratory analysis of representative lot samples from the inventory.

The Services conduct an extensive quality assurance and stockpile monitoring effort for most Class V assets. Quality is ensured through assessments and audits of manufacturers, as well as surveillance and maintenance programs. The Marine Corps generally contracts for the requisite engineering and technical support from a variety of Army and Navy technical and engineering support agencies to accomplish this task. For the Navy, much of this support is organic.

Oversight for QE and in-Service engineering activities on Navy ammunition is the responsibility of the Deputy CNO (Fleet Readiness and Logistics) (N4). The CNO is responsible for assessing the maintenance and QE programs to ensure optimization of resources and compliance with OPNAVINST 4850.1, *Conventional Ordnance Assessment and Maintenance Requirements Policy*.

CARE OF SUPPLIES IN STORAGE

The care of supplies in a storage program, as part of the DOD Stock Readiness Program, is intended to maintain stored Navy and Marine Corps material in ready-for-issue condition and to prevent deterioration and additional damage of unserviceable material.

As is the case with all Service-owned stocks held within Service-owned facilities, responsibility for

the care and maintenance of those stocks rests with the owning Service. There is a large quantity of ammunition that is held by the Services in order to meet wartime requirements, and the special storage requirements associated with ammunition for safety and security belongs to the owning Service. A significant portion of Marine Corps-owned ammunition is stored in other-Service facilities, primarily Army, and to a lesser extent, Navy tidewater activities, amphibious shipping, and maritime prepositioning ships (MPS). A small percentage of Marine Corps-owned ammunition is also held in host nation (HN) facilities as geoprepositioned stocks, with the HN providing care of supplies in storage.

The Navy is responsible for the care and maintenance of those stocks held in Navy storage facilities, including Class V(A) aviation ordnance. Like the Marine Corps, a portion of the Navy's large inventory is stored in other-Service facilities, primarily the Army. However, unlike the Marine Corps, a substantial portion of the Navy's preferred weapons inventory is embarked in the Navy's combatant vessels as ship's allowance; on combat logistics force (CLF) shipping as replenishment stocks; or is stored at tidewater weapons stations, on amphibious shipping, and on MPS. A small percentage of Navy-owned ammunition is also held in HN facilities as geoprepositioned stocks (principally, Class V(A) aviation ordnance), with the HN providing care of supplies in storage.

Class V(W) Maintenance

The assistant program managers at PM Ammo, with in-Service engineering and technical support personnel, determine if a maintenance effort is more cost effective than new procurement. Once a maintenance project is planned and scheduled, a complex process is begun to obtain replacement components, select a maintenance site, position assets, and conduct a quality audit

of the maintenance line. The maintenance program gives PM Ammo an option to meet stockpile inventory objectives at a lower cost than new procurement.

Disposal

From time to time, munitions must also be removed from the inventory for a variety of reasons. In some cases, it has become obsolete or the weapon system that it served is no longer in the active inventory. In other cases, the ammunition item may have become unserviceable due to age or other environmental factors and may not be economically repairable. Most frequently, the ammunition has been rendered unusable due to rough handling in the field, loss of lot identity, or damage that occurred in transit to or from training exercises or operational events.

Class V(W) Disposal Authority

The PM Ammo manages the disposal of munitions that are no longer useful and has established a designated disposition authority (DDA) for making determinations on such munitions. The functions of the DDA and the rules under which PM Ammo operates are discussed in appendix B.

Class V(A) Disposal Authority

Commander, NAVSUPSYSCOM is assigned authority for the worldwide management of demilitarization, recycling, declassification, and disposal of excess, obsolete, unserviceable, and waste military and foreign Class V(A) generated at Navy and Marine Corps activities. The only exception is with large strategic rocket motors.

Commander, NAVSUPSYSCOM designated the NOLSC to perform these functions for Navy-owned Class V materiel. Accordingly, the DDA for Navy-owned assets (including Class V(A) assets of interest to the Marine Corps) is located within the NOLSC. Further detailed information

regarding the disposition of Class V(A), to include item specific DDAs for naval ammunition can be found in OPNAVINST 8026.2, *Navy Munitions Disposition Policy*.

THE MARINE CORPS COMBAT LOGISTICS ORGANIZATION

Operational experience, coupled with lessons learned and technological advancements prompted the reorganization and realignment of the combat support infrastructure to more efficiently and effectively support the operating forces and supporting establishment.

Combat service support centers around the Marine logistics group (MLG). The MLG is the MARFOR, Marine expeditionary force (MEF), and Marine air-ground task force (MAGTF) combat support/logistic support agent.

Marine Logistics Group

The MLG, shown in figure 1-3, on page 1-11, is a combat and logistic support organization that includes units, oriented to both the garrison and deployed environments, executing specified general and direct support missions.

The MLG provides logistic support for the MEF. The MLG performs those functions that exceed the organic capabilities of the supported units. The MLG commander, normally a brigadier general, serves as the principal logistic advisor to the MEF commander.

The MLG consists of the MLG headquarters, a general support combat logistics regiment, a direct support combat logistics regiment, and several separate reporting battalions. In general, these battalions include a headquarters and service battalion, three general support combat logistics battalions, a deployable MLG Forward

with a headquarters element and limited core support capabilities to facilitate the arrival of the main body of the MLG, and a separate combat logistics company.

Based on the mission, the commander task organizes the MLG's general support regiment into combat service support organizations of varying sizes. The general support regiment also provides core maintenance, transportation support, deliberate engineering, and health services support.

The direct support regiment is organized into separate combat logistics battalions in direct support of assigned infantry or artillery battalions.

The ammunition company of the MLG provides Class V supply support to the MEF-sized MAGTF. The company possesses organic capabilities to transport its administrative and command and control functions. The company is organized to plan, coordinate, and supervise

Class V support and structured to facilitate task organization in support of the entire MEF or any combination of smaller MAGTFs.

Marine Aviation Logistics Squadron

The Marine aviation logistics squadron (MALS) is the Marine Corps' tactical aviation logistic organization. The MALS provides direct Class V(A) support to aircraft squadrons and is responsible for providing intermediate ordnance/armament support and is organized under the Marine aircraft group of the Marine aircraft wing. In a deployed environment, MALS ordnance is typically referred to as aviation combat element (ACE) ordnance and it may deploy as a unit or a small detachment as a part of the MAGTF. This MALS ordnance detachment maintains and operates the ammunition supply point (ASP), or theater storage area (TSA), normally a function of the supporting station.

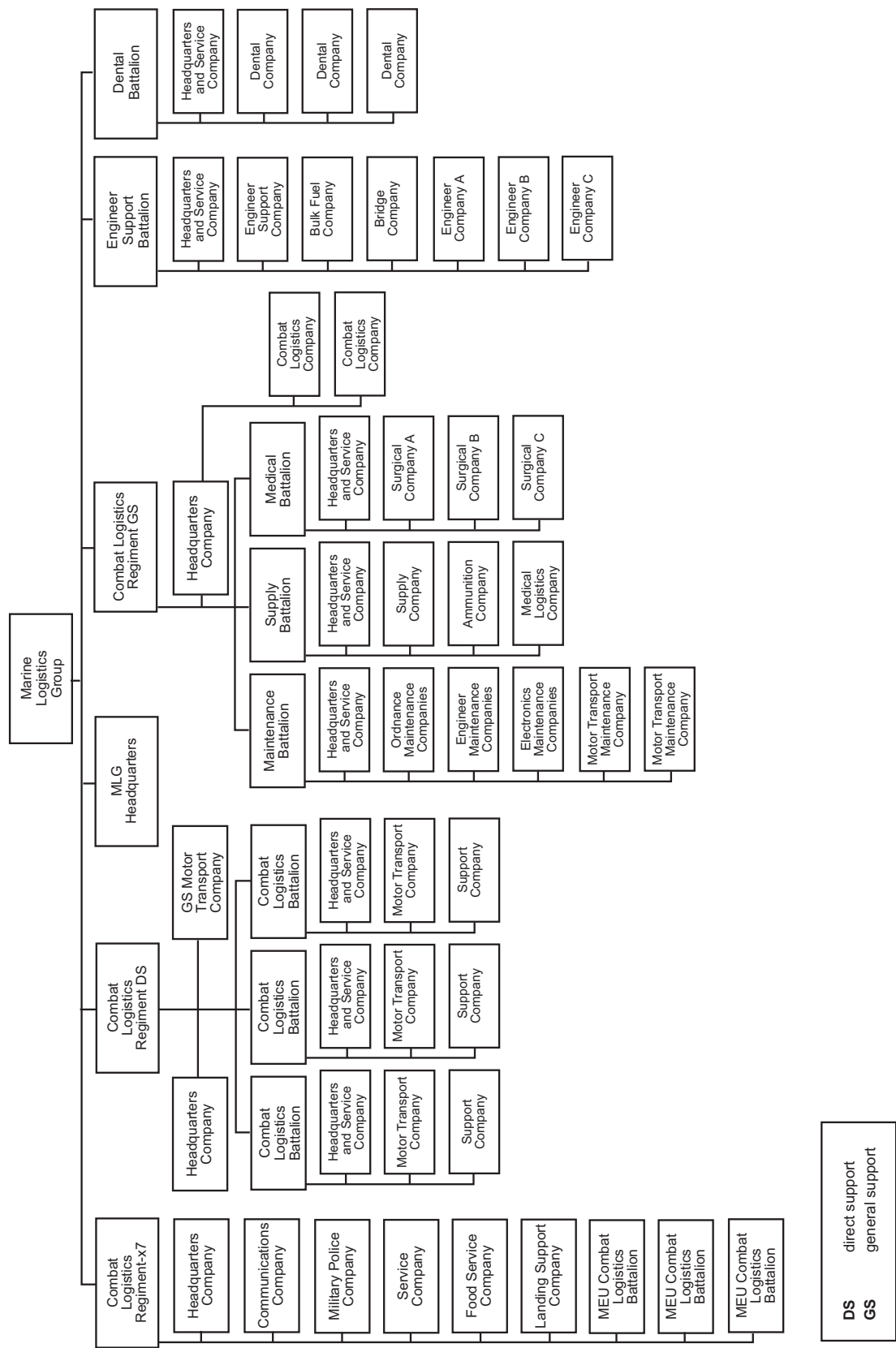


Figure 1-3. Notional Marine Logistics Group Organization.

CHAPTER 2

GENERAL CLASS V MANAGEMENT

The term wholesale is usually applied to an activity that controls and manages both material assets and storage facilities, and is usually not a direct supplier to the end user. In the ammunition context, wholesale is applied to management activities undertaken by the Navy or Marine Corps Class V ICPs.

Ammunition storage facilities are managed and operated by local commanders. The Service ICP does not own or control the storage facilities where a majority of the conventional ammunition that they manage is stored. The ICP must rely on other Services, organizations, and activities to execute the retail inventory management actions, including processing issues, receipt documents, and preparation for shipment.

Retail level ammunition management functions include responsibilities for both the supported and the supporting units. These responsibilities include maintaining asset visibility and accountability, providing physical security, and reporting of expenditures and other transactional activity. These functions are performed in the context of the logistic operational architecture.

LOGISTIC OPERATIONAL ARCHITECTURE

The logistic operational architecture is a transformational approach to organizational change for meeting the logistic support demands of the operating forces and supporting establishment. The logistic operational architecture breaks the functional actions down into five broad categories that are directly applicable to all Class V management activities:

- Request management.
- Order management.

- Capacity management.
- Production management.
- Execution.

Request Management

Request management is the process performed by the supported unit, and includes the planning and preparation for future training or contingency events. When the supported unit's ammunition requirements have been determined, it leads to the creation of a demand that initiates a requisition that the logistic and supply systems must satisfy.

Order Management

Order management is generally the same for Class V(W) and V(A). The ASP, which is the supporting unit, will receive the demand and begin the process of obligating assets, planning human and equipment resources, and performing all the administrative work that is required in order to issue the ammunition assets to the supported unit.

Capacity Management

Capacity management for Class V is the responsibility of the supporting establishment such as the ASP, the field ammunition supply point (FASP), or the forward arming and refueling point (FARP). Capacity management involves ensuring that the quantities of Class V that are on hand at any given storage area not exceed the physical capacity or violate the explosives safety regulations for the materiel being stored.

Production Management

Production management is an event-driven activity of the supporting unit and ensures that all required personnel, equipment, tools, and

materials are available to satisfy the supported unit's demand on their required delivery date in a timely manner.

Execution

Execution is a joint responsibility of the supporting storage activity and the supported unit, it involves both the administrative actions and the physical transfer of Class V assets. Execution also includes observance of the requirements for physical security of arms, ammunition, and explosives and the assignment of qualified personnel to perform those duties.

Supporting unit responsibilities for execution include the processing of issues; transaction reporting; processing and implementation of notices of ammunition reclassification to retail stocks; ammunition information notices; and other activities that facilitate ammunition support and administration, operations, and accounting at the retail level.

ORDNANCE INFORMATION SYSTEM

Near real time data entry and update is provided by the Web-enabled Ordnance Information System (OIS). The OIS provides the capabilities to exercise wholesale—and retail—level ammunition inventory management functions. At appropriate management levels, several OIS-based applications are available to authorized and accredited users on secured networks:

- Ordnance visibility.
- Naval forces operational readiness assessment
- Ordnance assessment portfolio.
- Global Naval Ordnance Positioning Plan.

The OIS provides ordnance information support to naval leadership and the user community

throughout the DON. Users are able to perform a wide variety of local management functions using only the local Web browser on a desktop computer and a set of specialized ordnance information management applications. Transactional and stock status information is uploaded as batch processes.

The Marine Corps and Ordnance Information System

The Marine Corps uses an unclassified version of the Navy's OIS; a commodity-based system supporting naval logistic integration. This transition merges the wholesale ammunition management functions of the Navy and Marine Corps, as well as the Coast Guard, into a single, coherent, integrated system and set of processes.

Marine Corps Class V Inventory Management Systems

The Marine Corps version of OIS supports both wholesale management functions executed by the PM Ammo and the retail-level ammunition management functions executed by supporting ASPs, both in garrison and when deployed.

Navy Class V Inventory Management Systems

The Navy version of OIS supports both wholesale management functions executed by the NOLSC and the retail-level ammunition management functions executed by supporting shore activities, air stations, and ships afloat.

Future Capabilities

Future releases of the OIS should enable the ground ammunition and aviation ordnance communities to become full participants in the Global Combat Support System-Joint (GCSS-J) family of systems and the future integrated digital environment.

MUNITION INVENTORY AND TRANSACTION REPORTING

The OIS will be utilized to account for and manage Class V stocks. Standard accounting practices/forms will apply. In addition to the in-theater munitions reporting procedures, Class V transactions will be reported to the appropriate ICP as follows:

- Class V(A) transactions are reported to NOLSC via an ammunition transaction report generated from the Retail Ordnance Logistics Management System. When the OIS is fully deployed, the requirement for ammunition transaction report will be eliminated.
- Class V(W) transactions are reported to PM Ammo via a transaction item report generated from the Retail Ordnance Logistics Management System. When the OIS is fully deployed, the requirement for an internal transaction item report will be eliminated, but it will still be required for transactions external to the Marine Corps.

Asset Visibility and Accountability

Once ammunition is issued to supported units, a process must be in place to establish and maintain asset visibility and accountability. Reporting requirements exist to account for assets held by supported units; expenditures of serialized ammunition; and to report missing, lost, stolen, or recovered ammunition items. Personnel assigned ammunition duties are responsible for following procedures established in local standing operating procedures (SOPs). These principles also apply when conducting munitions reports (MUREPs) for the CCDR/JFC, as discussed in chapter 6.

Malfunction Reporting

Knowledge of Class V performance is critical in maintaining a robust, flexible, and safe stockpile. It is imperative that units experiencing problems

with Class V notify the appropriate agencies in order to implement “cause and effect” analysis.

Class V(W) malfunction/deficiency reports are required when supported units experience a malfunction. These reports are submitted in accordance with the current edition of MCO 8025.1D, *Class V(W) Malfunction and Defect Reporting*.

Class V(A) malfunction/deficiency reports are required when supported units experience a malfunction. These reports are submitted as conventional ordnance deficiency reports or explosives event reports in accordance with the current edition of OPNAVINST 5102.1D, *Navy & Marine Corps Mishap and Safety Investigation, Reporting, and Record Keeping Manual*.

Supply Discrepancy Report

Supply discrepancies result when the quantity identified on shipping and transportation documents, or on ammunition packaging, differs from what is actually received. When this occurs, a supply discrepancy report is required per the current edition of Naval Supply Systems Command (NAVSUP) *Publication P-724, Conventional Ordnance Stockpile Management Policies and Procedures*.

Missing, Lost, Stolen, or Recovered

The loss of ammunition items due to inadequate accountability, negligence, or theft may result in significant monetary loss, safety, and security problems. Such losses may potentially impact unit readiness and adversely affect homeland security efforts. The missing, lost, stolen, or recovered reporting system was designed to enable the Marine Corps to centrally track material losses and to identify trends and areas where security enhancements may be required. The current MCO 4340.1A, *Reporting of Missing, Lost, Stolen, or Recovered (MLSR) Government Property*, contains details for reporting missing, lost, stolen, or recovered ammunition.

Automatic Identification Technologies

Automatic identification technologies are combinations of reader equipment, software, tools, and procedures that are inserted into logistic management processes. These technologies may be applied in a variety of end uses, including receipt and inventory, point-of-issue transaction tracking, transportation tracking, and asset management.

The two most common methods in use for Class V management functions are barcoded labels and radio frequency identification (RFID) tags.

Barcoding

Barcoding is a mature technology used extensively by DOD and commercial industry for tracking material in transit and in storage. Barcodes used by DOD are either linear or data matrix.

The linear barcode is considered to be a legacy barcode. This barcode format is known as 3-of-9, and it is sometimes shortened to Code 39. The linear, one-dimensional barcode is a series of vertical lines of varying thickness with spaces of variable duration that can be read by a scanning device. The barcode may also display a human-readable string beneath the coding to make ready identification possible without a scanner. Used for two decades, the one-dimensional label has significant limitations in that it contains only limited information and may be unreadable if damaged or faded.

The data matrix barcode is a modern barcode format, also known as data matrix, two-dimensional barcode symbology. There are

multiple formats in use in commercial applications, but the format used for military shipments is PDF-417. The two-dimensional format label contains a significantly larger amount of information than linear barcode labels. Additionally, since the data is stored redundantly, the label can sustain a substantial amount of damage and still be read by a barcode reader.

Radio Frequency Identification

The use of RFID as a technology to automate the collection of data that is used for tracking shipments and materiel until delivered to a storage point or the supported unit is just beginning to mature. The RFID technology requires a tag where the transported items are stored, a tag reader device for interrogating or creating the tags, and a communications method to move the collected data to a system where the information can be used or evaluated. Unlike the one-dimensional and two-dimensional labels, RFID tags can be reformatted and reused several times. Receiving and transportation processes must ensure that all tags are “captured” and read, or the benefits of the tag are lost.

Other Technologies

Other technologies/techniques that will be incorporated in ammunition logistic processes in the near future include the electronic product code tag (class 2) (as a successor to the current RFID tag media) and the use of unique identification numbers for costly ammunition items, as well as ammunition items that may meet other defined criteria.

CHAPTER 3

OPERATIONAL AMMUNITION

REQUIREMENTS DETERMINATION

Class V operational requirements can be described as the quantity of munitions required to equip a specified force structure to accomplish its assigned missions. This quantity of munitions is intended to support the CDR/JFC commander's requirements to execute combat operations, as well as materiel required for the conduct of subsequent security operations (during the transition from combat operations).

While the CG, MCCDC also has a role in the requirements determination process, the commander is ultimately responsible for determining that operational Class V requirements are sufficient to execute the mission. Ammunition requirements are determined based on the mission, commander's intent, assigned force levels, and established planning factors.

GROUND AMMUNITION

The operating forces use combat planning factors (CPFs) that are generated by MCCDC and used to assist in Class V(W) combat/continuity requirements planning. In general, ammunition requirements are determined by applying force structure (table of organization and table of equipment data), weapons mix, combat intensity, and phase duration to the appropriate combat planning factors.

Supportability of those requirements may be constrained by available inventories. The process for programming and budgeting for ammunition requirements is described in MCO 8000.7.

AVIATION ORDNANCE

The NNOR is the methodology used to calculate conventional ordnance requirements for the DON. The NNOR process is outlined in detail in OPNAVINST 8011.9A and uses a sophisticated model to calculate DON threat-oriented and level of effort ordnance requirements for Navy forces and Marine Corps aviation units. Model inputs regarding support and sustainment of the operating forces are provided by the warfighters. Model outputs that support operational requirements are reviewed and approved by the Nonnuclear Ordnance Planning Board, which provides top-level direction in the NNOR process. Class V(A) sustainment methodologies are predicated on theater and type, model, and/or series (T/M/S) of assigned aircraft for a given operational plan. The NNOR provides the factors for determining initial requirements and follow-on sustainment. Sortie generation rates are a primary determining factor in expressing the remaining endurance of MAGTF aviation and its ordnance support capability.

MODELING/DELIBERATE PLANNING FOR MAJOR OPERATIONS AND CAMPAIGNS

In deliberate planning, operational requirements will be developed by MCCDC, in active consultation with the MARFOR, using an automated computer modeling method. Aggregate requirements and individual combat planning factors are generated from this model. In order to attain precise outputs, a high degree of accuracy and

granularity is required in the model data inputs time-phased force and deployment data (TPFDD); phases; posture statements; and theater specific logistical constraints such as, terrain-related, open mountainous, or urban terrain that is provided by the MARFOR.

EXECUTION OF A DELIBERATE PLAN

In determining operational requirements for Class V, a number of considerations must be taken into account, bearing in mind the inherently fluid environment in which combat operations take place. Requirements must be reviewed, modified, and updated when conditions such as forces, force closure timeline, threat report, or target apportionment change or branching plans are considered or executed. Given that the inputted model data remains the same and only a force structure increase has occurred, additional operational requirements should not be determined by applying CPFs to the increased force structure; rather the additional units should be armed with combat loads that support Marine Corps doctrine of arming the force. Additionally, the increase of combat units/personnel may increase the Class V(W) logistical requirements, since additional personnel normally increase physical dispersion. Similar considerations must be taken into account when analyzing any of the above elements. Planning requirements always require revalidation prior to execution.

CRISIS ACTION/CONTINGENCY PLANNING AND IMMEDIATE REQUIREMENTS DETERMINATION

Class V(A) crisis action/contingency planning will be initially guided by the planned consumption rates established in the NNOR for the T/M/S aircraft assigned and adjusted to reflect locally available or readily accessible assets.

For operations where predetermined combat planning requirements have not been established by the WRMR model, refer to CPFs published on the MCCDC Web page www.mccdc.usmc.mil/CDD/Ammo/mysite/default.htm. The Web page, in conjunction with the ammunition requirements generator, will act as the sole source document for Class V(W) requirements determination.

TRANSITION OF CLASS V(W) COMBAT PLANNING FACTORS

As a regional theater matures, the combat planning factors used for initial planning may no longer support the operational requirements due to changes in tactics, techniques, and procedures or the overall scope of the mission. As conditions mature, planners must base their future sustainment requirements on current combat expenditure data as long as a correlation exists with planned future operations. This evolving process provides commanders with the maximum operational flexibility to prosecute near term current and planned future operations. Although the quantities for combat loads (CLs) (which provide the initial combat capability) may remain static, emergent tactics, techniques, and procedures and local tactical conditions will require adjustment of planning rates to complement operational considerations. Designation of expenditure-based planning factors for determining future ammunition requirements is a component function in a mature theater.

OPERATIONAL REQUIREMENTS IN A JOINT ENVIRONMENT

In an era of increasingly joint operations and the planned potential for implementation of common item support (CIS), new concepts and approaches for sustainment of the forces are required. Plans must consider the efficiencies that are gained by having integrated ammunition support. Plans

must be coordinated with the various Services that are involved to ensure the adequacy of personnel, assets, storage requirements, materials handling equipment, accountability procedures, and safety.

EXPRESSING CAPABILITIES AND REQUIREMENTS FOR CLASS V(W)

In expressing logistical capabilities and requirements, it is important to understand that ammunition requirements and capabilities are generally expressed in terms of CL and day(s) of ammunition (DOA). These terms are exclusive to ground ammunition and are not interchangeable. Each term of reference comes with its own set of advantages and liabilities.

Combat Load

In accordance with the MCO 8000.7, the CL is defined as the standard quantity and type of munitions carried by weapons platforms/troops and/or its dedicated support vehicle. Using the phrase CL implies that a weapons platform or an individual has its full doctrinal load of ammunition, in terms of quantity and type. It is important to note that the CL provides various durations of support depending on the weapon system when the CPFs are used as the divisor.

Day of Ammunition

By design, the DOA corresponds to a composite daily quantity that represents an average daily expenditure for total forces and weapons platforms over the entire battlespace during a specific period of time, typically measured in days. In

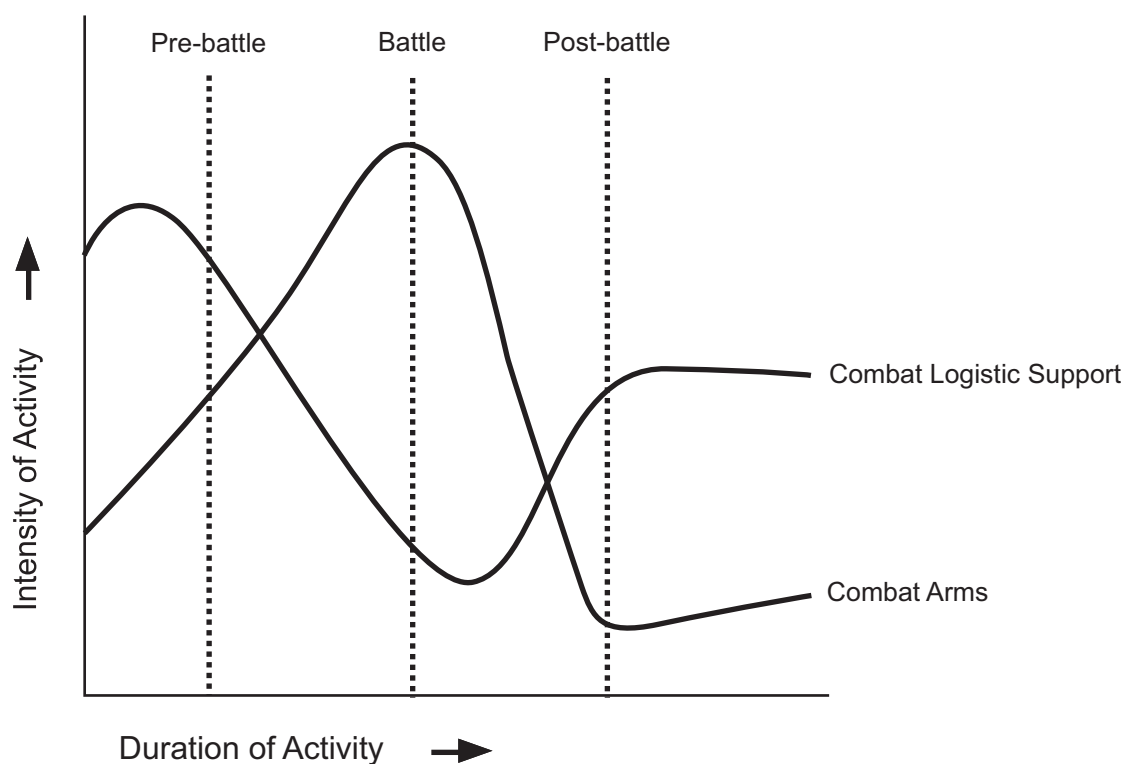


Figure 3-1. Logistic Demands Versus Duration and Intensity of Activity.

terms of the MCCDC modeled CPF, a DOA is the projected average quantity required to replenish the previous days expenditure from the CL.

The DOA provides a point in time measure of endurance and can fluctuate during different phases of an operation based on intensity and duration as depicted in figure 3-1. Assault phase combat operations will consume assets at a higher rate than stability operations.

Combat Load Versus Day(s) of Ammunition

Under combat conditions, the CL should be regarded as a tool for identifying initial combat

capability, while the DOA is more definitive for a commander to assess his logistic endurance, depending on current and future consumption. This approach requires that the commander understands the interrelation and fluidness of the terms, especially the DOA. In expressing endurance, the term DOA should be placed in a context where the planned requirements may be arrayed against estimated future operational needs. The MUREP and historical expenditures are valuable tools for the continual validation and comparison of the projected and actual expenditures as related to the available inventory.

CHAPTER 4

CLASS V MOVEMENT PLANNING

Movement planning is the art and science of selecting the forces and equipment that are to be moved and marshaled to arrive at their respective planned ports of embarkation (POE). Depending on the origin of the deploying force, it may be either a strategic deployment from the continental United States (CONUS) or an operational deployment from elsewhere within the theater. Movement planning is done in conjunction with deliberate or crisis action planning.

Any plan involving insertion of military forces into a conflict or contingency generally requires ammunition to initially arm and sustain that force. Therefore, Class V planning requires a careful analysis of what ammunition would be required, timing of the required ammunition deliveries, and sourcing of the required incremental shipments.

To facilitate ammunition requirements into planning, logisticians participate in all steps of the *Marine Corps Planning Process* (MCP) with representatives of the other warfighting functions, staff sections, and subject matter experts by participating in the operational planning team. The operating forces provide input to the joint planning process using the process described in Marine Corps Warfighting Publication (MCWP) 5-1, *Marine Corps Planning Process*. The MCP is designed for use at any echelon of command to plan force organization and employment, and it complements the joint deliberate and crisis action planning procedures.

PLANNING FOR CLASS V COMBAT LOGISTIC SUPPORT

Mission analysis is the first and, arguably, the most important step in the MCP for logisticians, and it is the step in the process where the commander and planners will determine the

unit's mission. If the mission is not correctly determined, follow-on planning in support of that mission will also be flawed.

The purpose of mission analysis is to review and analyze orders, guidance, and other information provided by higher headquarters and produce a mission statement. The inputs to the mission analysis step come from the higher headquarters and the commander. During the mission analysis process, intelligence preparation of the battlespace is a critical input for both the commander and the logistician.

The commander's initial guidance will broadly outline what is expected of the operational planning team and the products that are produced in the planning process. The most critical inputs to the planning process are those contained within the commander's orientation, which is comprised of his initial guidance and his commander's battlespace area evaluation. The Class V planner must look at the infrastructure within the battlespace and ask the following:

- Where are the ports, airfields, and roads?
- What are the choke points in the amphibious objective area?
- What are the limiting factors for RSOI of Class V materiel?

During this process, the Class V planner can derive the major POE(s) and begin to determine the anticipated throughput rates for these locations. The commander will also provide the first look at the friendly and enemy centers of gravity. The logistician will look at these from a logistic perspective to analyze where the center of gravity is for the operation. The commander will describe their intent and will outline what is viewed to be critical information requirements, both in planning and in execution. Logistic-related commander's critical information requirements

may be the capabilities of the port/airfield/bridges within the area of operations or the depth of sustainment available or desired. Necessarily, this includes Class V materiel.

The Class V planner should plan for main and intermediate storage locations and the sequences of actions that are best suited to supporting the maneuver forces. In addition, he should understand the probable timing of each action. These are initial projections, which should be derived from the various courses of action as they evolve. Class V planners should be aware of critical events and decision points to enable the logistic support to be in place prior to the critical event. Logistic critical events and decision points are likely to occur 24 to 48 hours ahead of MAGTF events and decision points that depend on the action and reaction continuum.

Special Consideration During Movement Planning

In planning Class V, special considerations have to be given to proper timelines. Services must be careful to consider all aspects of planning timelines such as, at a minimum, official release of assets by Service headquarters, requisitioning, containerization, depot out loading, and shipping in order to ensure that the assets do not arrive too late to support the CDR's concept of operations. Untimely or inaccurate planning can reduce depot responsiveness, tax commercial transportation mechanisms, congest ports, and ultimately jeopardize mission accomplishment. Additionally, costs for ammunition movements can reach exorbitant levels if it is not planned properly or if execution does not closely follow planning. For many reasons, planning must be carefully crafted and maintained in order to ensure that the available resources are used and to ensure a timely execution.

The Global Command and Control System

The United States' national command and control system—the Global Command and Control System (GCCS)—consists of an interoperable

family of systems that are necessary to plan, deploy, sustain, and employ forces. The GCCS provides joint operation planning and execution capabilities and facilitates the deployment and redeployment of MARFOR and associated supplies and equipment, to include ammunition.

Joint Operation Planning and Execution System

The Joint Operation Planning and Execution System (JOPES) enables supported commanders, supporting commanders, and other members of the joint planning and execution community to manage the deployment of forces and follow-on sustainment. See Chairman of the Joint Chiefs of Staff Manual (CJCSM) 3122.02C, *Joint Operation Planning and Execution System (JOPES), Volume III (Crisis Action Time-Phased Force and Deployment Data Development and Deployment Execution)*, for detailed information .

The Global Combat Support System-Joint

The GCSS-J provides universal access to information and interoperability of logistic information and other support functions through vertical and horizontal fusion. The GCSS-J will share information with other command and control systems to contribute to the CDR's/JFC's common operational picture. Ultimately, the GCSS-J will provide near real time command and control of the ammunition logistic pipeline from battlefield to sustaining base as a fused picture of combat support to the warfighter.

Joint Force Requirements Generator II

Planners use the Joint Force Requirements Generator II (JFRG II) (an automated tool) to develop force structure, tailor force lists, compute sustainment, estimate and plan lift requirements, and generate the TPFDD. The JFRG II also acts as a deployable JOPES enabling the planner to communicate with JOPES in order to transmit or receive TPFDD information. The forces and equipment entered in JFRG II are used to develop time-phased Class V(W) requirements. Plans may

be downloaded from JOPES to the JFRG II, modified, and transmitted to other logistics automated information systems (LOGAISs).

Logistics Automated Information Systems and Aviation Logistics

The LOGAISs are utilized by Marine aircraft wing/MALS aviation logistic planners and embarkation representatives while developing TPFDD in support of deliberate and crisis action planning. While designing force deployment, planning, and execution plans, Marine aviation logistic planners utilize data derived from the Support Equipment Resources Management Information System and the Shipboard Uniform Automated Data Processing System databases in order to develop TPFDD in support of deliberate and crisis action planning.

CLASS V SOURCING

Sourcing of Class V materiel (the function of identifying assets by Department of Defense identification code [DODIC], location, quantity, and mode of shipment for movement) to support warfighting requirements differs between ground ammunition and aviation ordnance. While the mechanisms are generally the same, the sources of supply are not.

The Marine Corps war reserve support is designated as either war reserve material stocks force-held (WRMSF) or war reserve materiel stocks in-stores (WRMSI). The WRMSF assets are prepositioned or regionally controlled by operating forces such as landing force operational reserve material (LFORM), maritime prepositioning forces (MPFs), and HN/NATO [North Atlantic Treaty Organization] storage activities and other available Marine Corps theater stocks to increase accessibility. The WRMSI stocks are held at wholesale depots, which are managed by the Service ICP.

War Reserve Positioning

A significant portion of Marine Corps-owned ammunition is held in Joint Munitions Command (JMC)-managed depot(s) and, to a lesser extent, Navy activities. The Navy also stores a portion of its inventory in JMC-managed facilities. The bulk of Class V(W) sustainment/WRMSI will be sourced from these wholesale level depots.

Unlike Marine Corps ground ammunition, a substantial portion of Class V(A) used by Marine aviation is embarked in amphibious and strike force vessels as mission load allowance (MLA), on CLF shipping as replenishment stocks, at naval weapons stations, and on MPS. A small percentage of Class V(A) aviation ordnance is also held in HN facilities as georepositioned stocks. The Army JMC is subordinate to the Army Material Command and performs logistic functions, as agreed upon with the single manager for conventional ammunition (SMCA). The JMC is a field operating activity that supports the SMCA executor and the Military Services. As such, the JMC is responsible for providing storage, physical security, basic housekeeping, and depot offloading for the Military Services. The PEO Ammo is designated as the executor for the SMCA.

Class V(W) Sourcing

During crisis, conflict, or wartime, a crisis response cell (CRC) is activated at PM Ammo, MARCORSYSCOM. Once requirements are determined and consolidated, the MARFOR/MEF will source the allocated WRMSF. Initial sourcing shortfalls are based on validated requirements, minus available WRMSF and other theater stocks, and forwarded to PM Ammo for sourcing from WRMSI. Figure 4-1, on page 4-5, illustrates this concept. Additional information on management and withdrawal of WRMSF and WRMSI stocks can be found in MCO P4400.39H, *War Reserve Materiel Policy Manual*.

Items that are not supportable from the Marine Corps worldwide inventory are considered unsourced requirements. Unsourced requirements should be identified in the TPFDD as shortfalls in order to plan movement at a later date if assets become available.

The PM Ammo will attempt to negotiate wholesale cross-leveling actions prior to procuring additional assets. Additional assets are procured only if funding and industrial capacity exists to facilitate production of new material. It should be noted that lead times for procurement of ammunition can be in the range of 12 to 36 months, depending on the item.

Class V(A) Sourcing

During crisis, conflict, or wartime, a CRC is activated at NOLSC, reporting directly to the CNO (N411). The purpose of the CRC is to facilitate timely sourcing, distribution, and accurate expenditure reporting of naval ordnance. While crisis action planning is conducted using the same fundamental methods as deliberate planning, requisitions in support of the crisis are immediately processed and sourced. If a requisition cannot be filled, the CRC will identify shortfalls and provide alternatives to the CNO (N411) and DC for Aviation, Aviation Logistics Support Branch. Sourcing decisions will be made by the CNO (N3/N5), DC for Aviation, and the logistics directorate of a joint staff (J-4) as appropriate in consultation with supported and/or supporting CCDRs and/or JFCs and Navy components.

In order to meet sourcing needs in a crisis, the CRC reviews the MUREP that is submitted by the Navy component in theater, as required by CJCSM 3150.14B, *Joint Reporting Structure—Logistics*. The MUREP identifies critical shortfalls in theater. The CRC/CNO (N411) staff develops the MUREP and forwards it to J-4. The CRC utilizes the MUREP to expedite production for critical items, as well as to resolve ordnance allocation issues to mitigate identified shortfalls.

TRANSPORTATION PLANNING

The JMC's joint munitions transportation coordinating activity (JMTCA) analyzes the combined munitions requirements of the Services. The JMC compares the daily offload requirements that are identified in the plan to the Service, depot-level assets; the daily offloading capacity of the depots; the capacities of the road and rail networks that are to reach the assigned POEs; and the available port throughput capacity. The JMTCA ensures that the amount planned for shipment does not exceed the ability to load and ship at any point. The JMTCA works closely with the Services and the supported CCDRs/JFCs.

The United States Transportation Command (USTRANSCOM) is the distribution process owner for the DOD. The JMTCA works closely with USTRANSCOM, as the lift provider, and its components (Air Mobility Command [AMC], Military Sealift Command [MSC], and Military Surface Deployment and Distribution Command [SDDC]) to ensure proper transport prioritization and port utilization occurs.

After all Class V requirements have been sourced and the remaining unsourced requirements are identified, the data are converted into unit line numbers and entered into JFRG II. When completed and reviewed, the JFRG II data file is provided to the component commander so that it can be loaded into JOPES as input to the TPFDD.

TIME-PHASED FORCE AND DEPLOYMENT DATA

The TPFDD is a planning database used to identify, organize, plan, and schedule the movement of forces, equipment, and materiel required to support the CCDR/JFC. With specific regard to Class V materiel, the TPFDD depicts the gross tonnages of Class V that must be

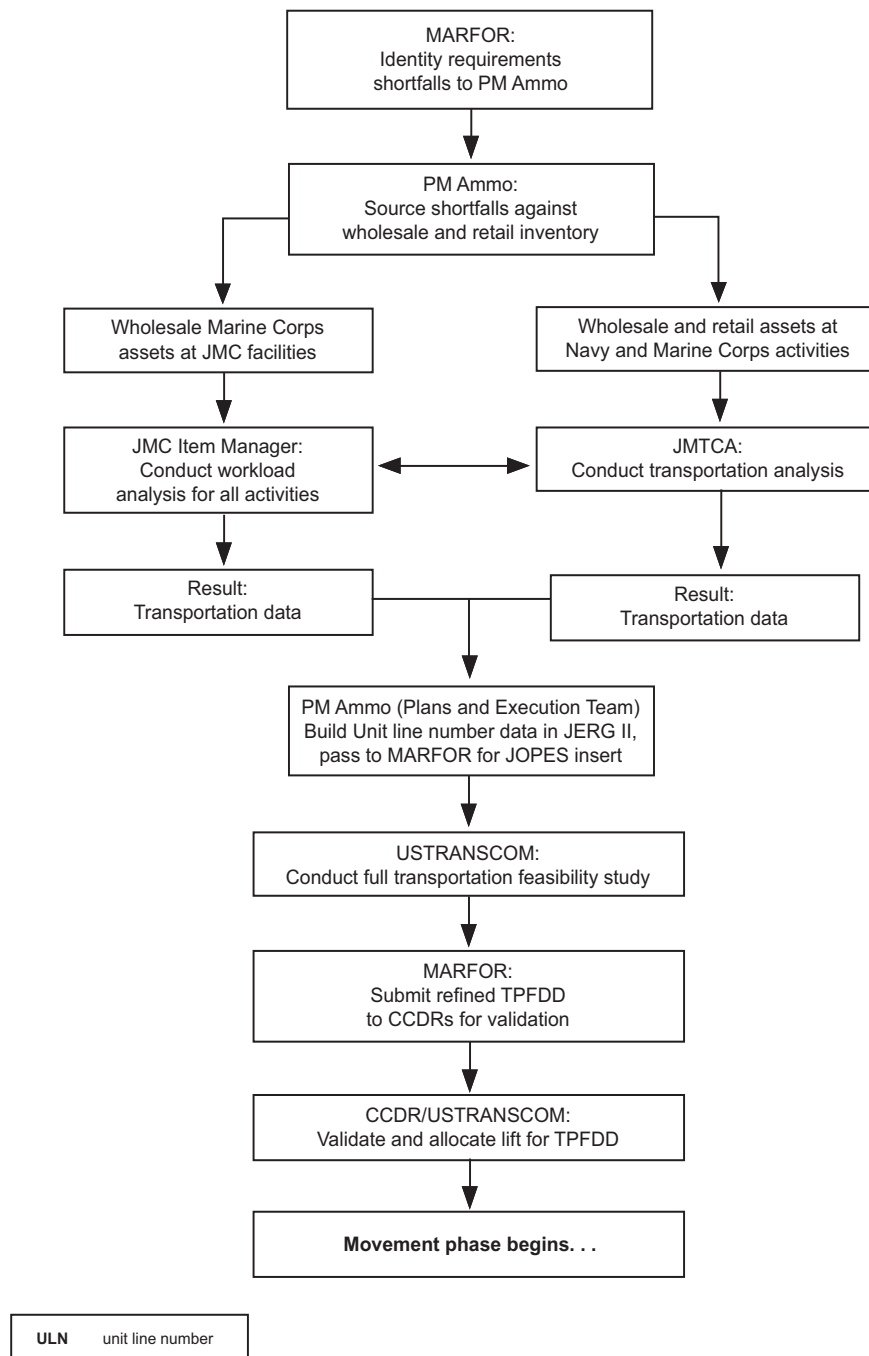


Figure 4-1. Class V(W) Sourcing and Transportation Planning Process.

moved, when the material must be at the POE, and when it must arrive in theater to meet the CCDR's/JFC's requirements.

At progressively greater levels of detail, planners and the operating forces can identify specific

Class V requirements by individual DODIC/naval ammunition logistics code; identify when the material is scheduled to arrive; the quantity being moved; and piece detail such as height, weight, cube, number of pallets or containers. The transportation agencies and the depots use this

information to contract for laborers, trucks, containers, railcars, ships, and blocking/bracing materials that are used to prepare ammunition for movement.

Class V planners should refer to CJCSM 3122.02C, Volume III for additional details on TPFDD development and maintenance. Planners must continuously refine the TPFDD throughout the deployment process in order to reflect current information and monitor the status of force flow execution.

See MCWP 5-11.1, *MAGTF Aviation Planning*, for detailed information regarding the processes, functions, and responsibilities associated with developing the TPFDD with respect to aviation logistics and the use of JFRG II/LOGAIS in support of aviation logistic force deployment, planning, and execution.

The TPFDD is the GCCS portion of an operation plan that contains time-phased force data, nonunit related cargo and personnel data, and movement data, and it includes the following:

- Units that are in-place.
- Units (identified by priority) that will be deployed in support of the operation plan, which indicates the desired sequence of arrival at the ports of debarkation (PODs).
- The routing of deploying forces and movement data.
- Estimates of nonunit related cargo and personnel movements that will be conducted concurrently.
- Estimates of transportation requirements that must be fulfilled by common-user lift resources.
- Requirements that can be fulfilled by organic or assigned transportation resources.

Validation

The Services' transportation requirements are validated during the TPFDD forces and transportation feasibility conferences during both

the deliberate planning process and the refinement planning conferences. Requirements are normally adjusted during the refinement conferences due to changes in the availability of planned forces, force closure timelines, or updated threat or branch plan execution. The CCCR uses the appropriate annex of the operation plan to establish the commander's intent for support and sustainment of the ammunition requirements.

Reports

Knowledge of the kinds of data in the TPFDD and how the data can be packaged in standard or ad hoc reports is critical in order to verify and validate a unit's movement requirements. Three reports that are commonly used are the summary of forces and deployment data working paper (F11D); the time-phased transportation requirements working paper (F11E-TON[TN] and F11E-SQUARE[SQ]), and the cargo detail working paper report (F11W). Additional details about these reports can be found in Marine Corp Reference Publication 4-11.3G, *Unit Embarkation Handbook*.

Flow Initiation Class V(W)

Upon plan activation, the MARFOR will submit TPFDD unit line numbers for ammunition through the JOPES to the combatant/joint force commander. These lift requirements will be validated by USTRANSCOM. United States Transportation Command will assign lift for identified requirements and forward this information back to the MARFOR via the JOPES. On validation by USTRANSCOM, the MARFOR will submit a request to PM Ammo (for Class V[W]) or ASL-30 (Aviation Ordnance) (for Class V[A]) to activate movement requests by the JMC for assets that are stored in single manager depots. A sample of this request can be found in the current edition of MCO P4400.39H.

Planned Class V Sustainment Flow Notification

As the TPFDD is activated and the movement phase begins, notification of the current status of the Class V movements is critical to situational awareness. The focal points for information receipt and dissemination as follows:

- PM Ammo provides all TPFDD movement status reports for Class V(W) such as depot

offload reports and port loading and shipment status reports to the MARFOR.

- NOLSC provides Class V(A) movement notifications to the MARFOR and other agencies.
- MARFOR provides theater logistic agencies with updates for estimated arrival dates of planned Class V sustainment and force-held assets such as LFORM and MPF. This allows coordination of transportation and storage requirements at the destination as part of overall planning efforts.

CHAPTER 5

MOVEMENT, MOBILITY, AND DEPLOYMENT OF CLASS V MATERIEL

A central concept in the national military strategy is strategic mobility. Strategic mobility includes the ability of the United States Armed Forces to deploy expeditionary forces, and their supplies and equipment, to any region in the world and sustain them for the full range of military operations.

Marine Corps forces maintain strategic mobility through the forward deployment of combined arms capabilities (conventional forces in the form of MAGTFs), the prepositioning of equipment and supplies aboard ships at sea and at geoprepositioning sites (e.g., MCPP-N [Marine Corps Prepositioned Program-Norway]), and the rapid deployability of units by sea and air.

Deployment encompasses all activities from origin or home station through destination, specifically including intra-CONUS, intertheater, and intratheater movement legs, staging, and holding areas. While the definition is simple, executing deployment of a large force and its accompanying supplies and equipment, to include the required Class V materiel, is a complex undertaking. This chapter discusses the activities of Class V support for the deployment of forces such as air contingency MAGTF, MPF Marine expeditionary brigade (MEB), additional MAGTF/follow-on forces and sustainment, with the exception of Marine expeditionary units (MEUs). Due to their unique character, MEUs warrant a separate discussion, which can be found in chapter 8.

Agencies involved in the processes discussed in chapter 4 for Class V materiel support planning are the same agencies responsible for the movement, mobility, and deployment of expeditionary forces and their supplies.

TRANSPORTATION FUNDING

Costs of containerization and movement of Class V assets from the depots to their final destination are Service-funded. Strategic ammunition movement demands levied by the Services must contain a transportation accounting code or be accompanied by a DOD Form 448, *Military Interdepartmental Purchase Request*.

TRANSPORTATION AND ASSET TRACKING

Tracking containers involves the use of RFID tags placed on all International Organization for Standardization (ISO) containers, 463L air pallets, and palletized ammunition shipments that are being shipped outside the continental United States (OCONUS). Each container must have active RFID tags on them written with content level data. Tags will be applied at the point of origin. All activities, including vendors that fill the containers or build the air pallets, will apply the tags in accordance with the current DOD RFID tag data specifications contained in DOD Directive (DODD)4140.1-R, *DOD Supply Chain Materiel Management Regulation*; Defense Transportation Regulation 4500.9-R, *Part II, Cargo Movement*; and Military Standard-129P, *Standard Practice, Military Marking for Shipment and Storage*. Containers and pallets that have been reconfigured during transit must have their RFID tag data updated to accurately reflect the containers current contents by the organization making the change. The RFID tags are not authorized for use with Class V(A) ammunition.

ORGANIZATIONS

SUPPORTING MOVEMENT OF CLASS V

Class V ammunition represents the single largest commodity requiring movement to sustain the force. Movement planning and execution requires the concerted efforts of a number of organizations.

United States Transportation Command

The USTRANSCOM is one of the nine unified commands and is responsible for providing mobility and transportation services for DOD components and agencies. The USTRANSCOM is also designated as the distribution process owner, positioning USTRANSCOM as the single executive agency with management oversight of the end-to-end distribution process: from factory to foxhole.

Air Mobility Command

The AMC is the Air Force component of USTRANSCOM and provides the long-haul strategic airlift that is required by the CCDRs/JFCs. The AMC uses a fleet of aircraft to meet this requirement. In times of extreme national need, USTRANSCOM may contract for the services of specific aircraft that is owned by a US entity or citizen. This program is known as the civil reserve air fleet. The level of support requested by DOD dictates the number of heavy lift civilian aircraft that are pressed into service for transport of troops and supplies.

Military Sealift Command

The MSC is the Navy component of USTRANSCOM and provides a variety of Ready Reserve, prepositioning, and commercial shipping for movement of DOD equipment and supplies.

Prepositioning Ships

The successful deployment of US military forces depends on the ability to act quickly. The MSC's

prepositioning ships provide for a fast response by US forces anywhere in the world. The Prepositioning Program has strategically located ships laden with military equipment and supplies for the Army, Marine Corps, Navy, and Air Force.

The MSC prepositioning ships are specifically designed for transporting Marine Corps supplies and equipment. The MPS are divided into three squadrons. Each squadron carries a preponderance of the material and equipment that is required to support a notional, brigade-sized MAGTF for up to 30 days.

Sealift Ships

The Sealift Program is responsible for a fleet of chartered tankers and dry cargo ships that move DOD cargo during peacetime and war. In addition, the program oversees the MSC's activation and operation of the other ships that are maintained in reserve including 8 fast sealift ships; 11 large, medium-speed roll-on/roll-off ships in the MSC's surge force; and 62 Ready Reserve Force (RRF) ships that are maintained by the US Maritime Administration.

The RRF is a fleet of 62 reserve ships that are maintained and crewed by the US Maritime Administration. When activated, RRF ships come under the operational control of the MSC. The RRF includes government-owned tankers, crane ships, roll-on/roll-off ships, lighter aboard ships, modular cargo delivery system ships, heavy lift ships, and one troop ship for surge sealift requirements.

Military Surface Deployment and Distribution Command

The SDDC is the Army component of USTRANSCOM that provides global surface distribution management and services in order to meet national security objectives in peace and war. The SDDC is a joint-Service, major Army command and the surface transportation component of USTRANSCOM.

Joint Munitions Command

Marine Corps interest in the JMC is related to its functions as the field operating activity for the DOD. It is charged with producing, storing, maintaining, and demilitarizing common conventional ammunition for all Military Services.

Marine Corps ammunition is primarily stored in the JMC's Tier I depots. The JMC maintains three levels of installations. Tier I activities are fully staffed and support munitions storage and issue for training and war reserve materiel, Tier II activities are partially staffed in peacetime and are used for long-term storage, and the single Tier III activity is minimally staffed and is used for storage of the DOD excess munitions. Factors considered in ranking the installations were the capabilities to offload, inspect and test, ship, store, maintain, and demilitarize ammunition; the costs of operations; and the location relative to the training sites and ports.

Tier I facilities store ammunition for training and the first 30 days of war reserve ammunition. The following are Tier I ammunition facilities.

- East—Blue Grass Army Depot, KY.
- East—Crane Army Ammunition Activity, IN.
- Central—McAlester Army Ammunition Plant, OK.
- West—Tooele Army Depot, UT.

Joint Munitions Transportation Coordinating Activity

The JMTCA serves as the joint Service focal point for export munitions ship planning, coordination, and execution actions for those munitions that are moving aboard common user sealift. The JMTCA, under command and control of CG, JMC, consolidates all of the Services munitions requirements into effective and efficient movement plans that are designed to provide the joint ammunition community's decisionmakers with advanced shipment planning visibility.

Naval Operational Logistics Support Center

The NOLSC, headquartered in Mechanicsburg, PA, combines the functions of naval petroleum, transportation, and ammunition to provide a comprehensive operational logistic support command. The NOLSC provides the requisite Class V(A) support to Marine aviation, in concert with support provided to Navy component commanders and the CCDRs/JFCs.

The Naval Operational Logistics Support Center Ammunition (NOLSC AMMO) serves as NAVSUPSYSCOM's ordnance ICP and logistic support provider for all activities in the Navy and Marine Corps (aviation) that manage conventional ordnance. The NOLSC AMMO develops, implements, and administers the naval ordnance stockpile management policy.

As discussed in chapter 2, the current Navy, Marine Corps, and Coast Guard ordnance inventory management systems are evolving into the comprehensive OIS that provides critical near real-time worldwide visibility. The OIS will improve and simplify the functions of day-to-day ordnance inventory management.

MODES OF SHIPMENT

Two modes of strategic transportation are used to move ammunition: air movement and surface movement (rail, truck, or ships are modes of surface movement). Air movements are generally more time-sensitive than surface movements and far more constrained. In general, while moving ammunition from CONUS depots to OCONUS, primary and secondary modes of transportation will be used. Primary modes generally consist of movement by ship or air, considering that they normally make up the preponderance of transportation. Secondary modes usually include movement by commercial truck or rail from

CONUS depots to the aerial port or seaport of embarkation. When planning and executing munitions distribution, each mode of shipment must be considered.

Airlift

Airlift, as a rule, is seldom used for ammunition movement except to expedite delivery of critical shortfalls. In any case, the most common air movements consist of channel air (via AMC or Service aircraft) or intertheater airlift (via AMC or AMC-contract aircraft), including contracted carriers. Space and weight limitations have more of a direct affect on air movements than with sea movements that utilize the containerized ammunition distribution system.

Strategic Airlift

Strategic airlift flights are considered dedicated lift, they do not require clearance for explosives holding areas and are not required to be cleared by the airlift clearance authority. Typically, at least 15 short tons must be moved in order to qualify the movement for strategic airlift.

Channel Lift

Channel lift for munitions differs from strategic airlift in the sense that items are shipped on a space available basis according to priority. All munitions awaiting transportation via channel lift must be coordinated between the Service airlift clearance authority, the JMTCA, and the aerial port of embarkation.

Ship Movement

Containerized ammunition distribution using 20-foot ISO containers is the preferred method of movement for Class V materials via ship since it facilitates the ease of handling and maximizes space utilization aboard ship.

Surface Movement

Unless a break-bulk requirement exists in support of surface movement or amphibious operations, 20-foot ISO containers will be the sole movement mechanism for Class V. Break-bulk cargo, consisting of individual palletized loads, is the least preferred method because handling times and costs are greatly increased at each transportation node.

STRATEGIC AMMUNITION PORTS

There are three ports that have been designated by USTRANSCOM as strategic ammunition ports to be used during contingencies. They are the Military Ocean Terminal Sunny Point, NC; the Military Ocean Terminal Concord, CA; and the Navy Munitions Command, Detachment Indian Island, WA.

Military Ocean Terminal, Sunny Point

The Military Ocean Terminal, Sunny Point is operated by the 597th Transportation Group and is the only designated East Coast port for strategic movement of ammunition.

Military Ocean Terminal, Concord

The Military Ocean Terminal, Concord is one of two West Coast ports operated by the 834th Transportation Battalion and is currently in a reduced operating status. The Military Ocean Terminal, Concord is not used for routine general cargo movement; instead, it is maintained in reduced operating status and exercised on a limited basis to maintain readiness.

Navy Munitions Command, Detachment Indian Island

The Navy Munitions Command, Detachment Indian Island is expected to be available for joint

transportation operations following Navy ship offload. It is capable of supporting simultaneous break-bulk and container loading operations.

**ADDITIONAL AMMUNITIONS
PORTS (NONSTRATEGIC)**

The following port activities have limited capacity for Class V operations.

**Navy Munitions Command,
Detachment Charleston**

The Navy Munitions Command, Detachment Charleston, SC is used as the throughput port for the Army's prepositioned assets and as the

maintenance location for Marine Corps prepositioned ammunition.

Navy Munitions Command, Detachment Earle

The Navy Munitions Command, Detachment Earle, NJ is capable of both break-bulk and limited container handling using portable cranes. Some of the MEU LFORM ammunition is loaded here.

Blount Island Terminal, Jacksonville

The Blount Island Terminal, Jacksonville, FL is operated by the Marine Corps Blount Island Command. It is used predominantly in support of MPS, but can also be used for ammunition movement during contingencies.

CHAPTER 6

AMMUNITION/AVIATION ORDNANCE OPERATIONS

This chapter provides a broad understanding of ammunition and aviation ordnance operations.

When deploying a MEF-sized MAGTF, personnel are generally flown to the destination with their personal equipment and a limited amount of supplies to sustain themselves for a few days until they marry up with prepositioned supplies and equipment embarked on MPS.

RECEPTION AND STAGING

When ammunition shipments arrive in the area of responsibility at the various PODs, they have completed the travel that is specified in the TPFDD. Once in theater, the assets are effectively under the control of the CCCR/JFC. In the early stages of the campaign, it may be the responsibility of Service components to conduct their own offload and staging operations until a structured theater capability has matured to assume general responsibility for the arriving and departing materiel. This is especially true for MPS and other afloat-prepositioned assets that arrive early in the flow, before theater-level capabilities can be activated. Sufficient ammunition personnel and requisite support gear should arrive in-theater prior to the reception and staging of Class V in order to prepare for ammunition operations such as establishing a FASP.

Naval Expeditionary Logistics Support Force

The Naval Expeditionary Logistics Support Force (NAVELSF) provides expeditionary logistic capabilities to CCCR/JFC, combining active duty and mobilization ready Navy Reserve forces. The NAVELSF also provides logistic support during emergent task force missions, stability operations, and humanitarian aid and disaster relief operations.

The NAVELSF consists of Navy cargo-handling battalions (NCHBs), Navy air cargo handling battalion, Navy supply support battalions, Navy ordnance reporting and handling battalion, and Navy expeditionary logistics response cell.

The NAVELSF battalions that are of interest to the Marine Corps for deployed operations are the NCHB and the Navy ordnance reporting and handling battalion, and specifically their involvement during Class V operations at the POD/POE and related RSOI operations.

Navy Cargo Handling Battalion

The NCHBs load and offload all classes of cargo except for bulk petroleum. The NCHBs are organized, trained, and equipped to load and offload Navy and Marine Corps cargo that are carried in MPS, container ships, or aircraft in all environments. This includes the capability to operate temporary ocean or air cargo terminals.

Naval Ordnance Reporting and Handling Battalion

The Navy ordnance reporting and handling battalion provides commanders with expeditionary ordnance documentation capability for Navy munitions, including Class V(A) used by Marine Corps aviation. They provide a full spectrum capability of handling, reporting, and stowage for palletized and containerized ordnance and ammunition.

Port and Terminal Operations

The SDDC will deploy port and terminal operations capabilities early in the execution phase. These early arrivals, in concert with NAVELSF component units, and components of the MLG

will form the nucleus of initial reception and staging operations.

Operational Safety Concerns

In the case of Class V, it is important to keep the port area as clear as possible in the event of a mishap. Class V materiel should not be allowed to accumulate in the port operations area. Instead, it should be segregated in a separate staging area until determinations can be made for its final disposition. Strict adherence to explosive safety quantity distance (ESQD) criteria is extremely important to protect these critical stocks in the event of a mishap. In the early stages of the campaign, this will likely remain a Service component responsibility until theater capabilities can be established.

ONWARD MOVEMENT AND INTEGRATION

Once the materiel has been identified, the Service owner determined, and a final destination selected, the materiel can be forwarded out of the port area to transient holding for transportation or directly on to its destination. Dispersion of all cargoes to their intended destinations, including Class V, will require use of a significant fraction of the commander's organic transportation assets, which is augmented by contracted line haul if locally available. At this stage, the final destination is normally the facilities operated by the supporting logistics combat elements (LCEs).

Operating in a joint environment may result in the Marine Corps depending on Army ammunition support activities. The three types of Army ammunition support activities that receive, store, issue, and maintain conventional ammunition stocks are ASPs, corps storage areas (CSAs), and TSAs. The TSA carries the largest amount of ammunition, followed by the CSA, and then the ASP. The TSAs receive 100 percent of its ammunition from the POD, whether it is a surface port, aerial port, or logistics-over-the-shore operations.

The ammunition and components received are either containerized, break-bulk, or a combination of both. The TSAs normally operate in a permanent or semi-permanent storage facility that enables retrograde operations. However, in a combat environment, the TSA may be relocated to a field environment where the ammunition stocks are kept in open storage. The CSAs are the primary source of high-tonnage Class V ammunition for an Army division, corps, or similar sized unit. Stockage levels normally range from 10 to 15 days during the initial buildup, to 7 to 10 days for sustainment operations. The storage environment of the CSA depends on the tactical situation. The ASPs generally maintain a 1- to 3-day supply of ammunition in order meet routine, surge, and emergency requirements for an Army corps, division, or similar sized unit. Unlike the TSA and CSA, ASP stocks are most often stored on the ground on unimproved surfaces.

MOVEMENT

The movement of personnel, equipment, and/or supplies during operations requires an enormous amount of planning and coordination. Resources must be balanced against operational requirements to determine whether transportation capabilities are adequate to support and sustain the operation. Transportation security must also be taken into consideration, to include route selection, sufficient transport assets, communications, security personnel, and sufficient arming. Logistic units must coordinate security with the appropriate supporting units to ensure force protection. Operational risk management procedures must be used in evaluating protective measures necessary to ensure Class V is exposed to the lowest threat level.

Wartime HN support must be considered during movement planning. In many cases, ammunition movement requirements exceed the organic capability of the Service component and wartime HN support must be utilized.

COMBAT LOGISTIC SUPPORT DURING AMPHIBIOUS OPERATIONS

Combat logistic support during amphibious operations basically involves the process of providing initial supplies and sustainment for the assault echelon and assault follow-on echelon as the transition from the sea-based to shore-based operations occur. Each ship participating in offload operations requires a well-conceived offload/discharge plan to ensure sustainment is available as required. The conduct and sequencing of the offload will, in many cases, be constrained by the availability of offload systems. At the landing points, beach cargo movement will be constrained by the number and availability of beach offload points. The RSOI planning is critical for this stage of landing force operations.

STORAGE

Storage planning, once the notional requirements are known, is a relatively straightforward matter. In deployed environments, permanent, earth-covered reinforced, concrete magazines are not available, and they cannot be readily constructed. Utilization of hardened structures would also hinder the force's ability to displace efficiently.

The force must plan for a significant deliberate engineering effort to construct one or more FASPs. The FASP design does not provide the safety margins of error that exist in a permanent storage facility from the risks of propagation by fire or explosion in the event of an accident or enemy action. The FASP uses the guidelines in Naval Sea Systems Command Ordnance Publication (NAVSEA OP) 5, Volume 3, *Ammunition and Explosives Ashore, Advanced Base*, provide a level of risk that is acceptable, and manageable when using the storage and handling principles

described in NAVSEA OP 5, Volume 1, *Ammunition and Explosives Safety Ashore*.

The LCE component will establish the FASP at designated sites. For larger forces and their ammunition needs, the footprint of the FASP may be as large as 2 miles by 1 mile, although terrain or other operational considerations may dictate a smaller area. The following series of figures depict the FASP layout, drilling down from the ASP to a module, and then down to a cell.

Whether the FASP has one or up to eight storage modules, the general layout depicted in the figure 6-1 will hold true for the external activities that are collocated with FASP operations.

The sling out area illustrated in figure 6-1, on page 6-4, requires a 90-foot x 90-foot pad and a minimum of 1,800 feet from other ammunition storage. Unserviceable ammunition and captured enemy ammunition must be segregated at least 2,340 feet from other ammunition storage. The demolition area must be a minimum of 1,800 feet from ammunition storage and 2,340 feet from any other areas. It is important to note that these distances are situationally dependent and driven by maximum net explosive weight (NEW) values. A smaller FASP may never attain the 250,000-pound per cell threshold that is used to establish the distances depicted in figure 6-1.

Each of the storage modules will be comprised of one to eight storage cells of varying dimensions regarding overall length and width. However, the critical dimensions for both the outer module walls and the individual cell walls within are the 24-foot base and 12- to 15-foot berm height, depending on the native soil or other amending construction materials. These two-dimensional characteristics are the principal static safety feature of the FASP for minimizing risks of propagation by explosion. Each cell will be rated for 250,000 pounds of NEW. Using the safe separation distance tables from NAVSEA OP 5, Volume 1, the minimum safe distance for all collocated operations may be calculated.

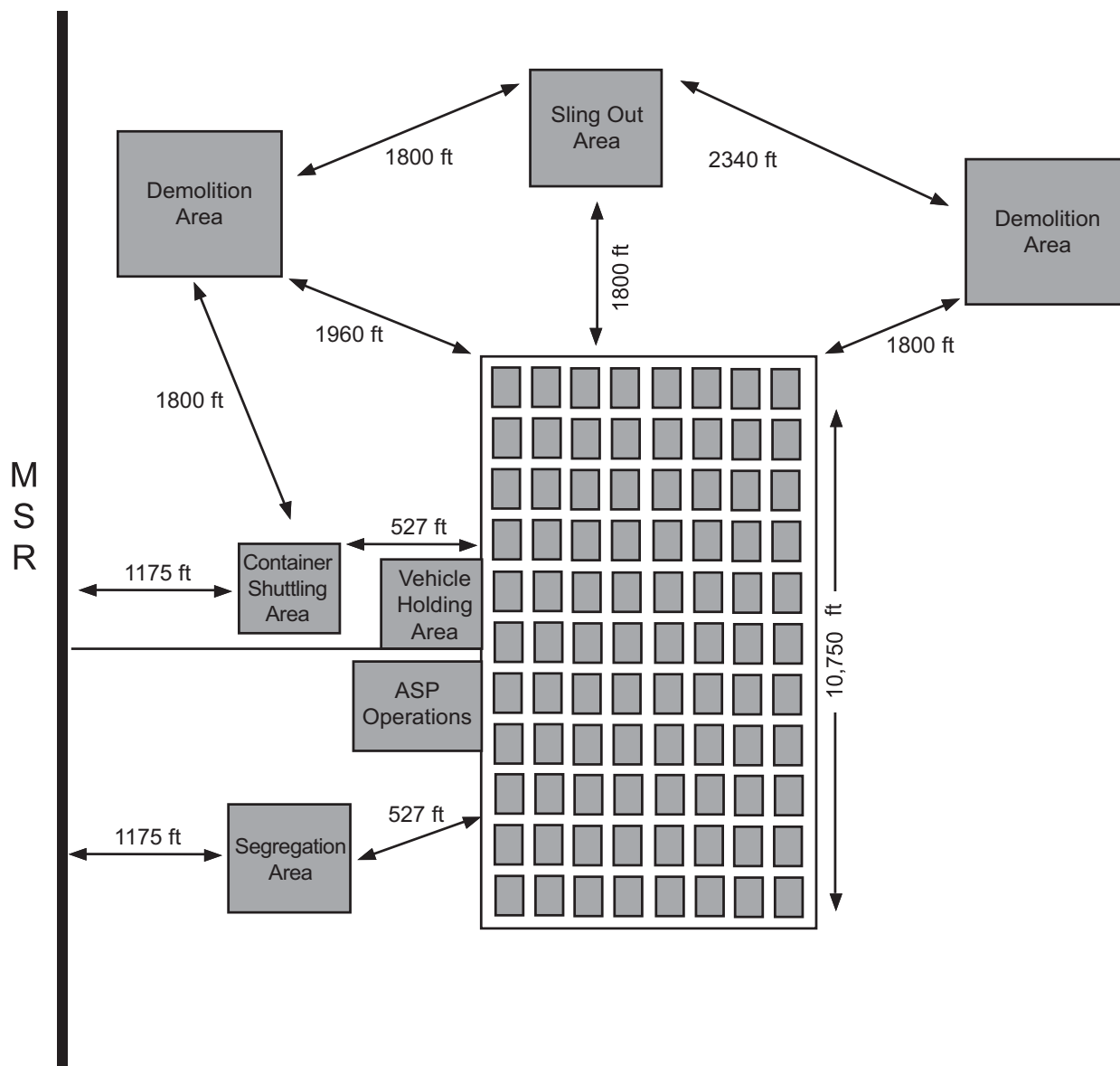


Figure 6-1. Example for General Layout of the FASP.

Figure 6-2 depicts containerized ammunition storage, but can just as easily be adapted to bulk storage of palletized ammunition once it is removed from the shipping ISO container. There are times when emptied containers become

useable for other, unintended purposes. However, to the maximum extent possible, emptied containers should be staged away from the FASP and marshalled for retrograde or recovery and reuse.

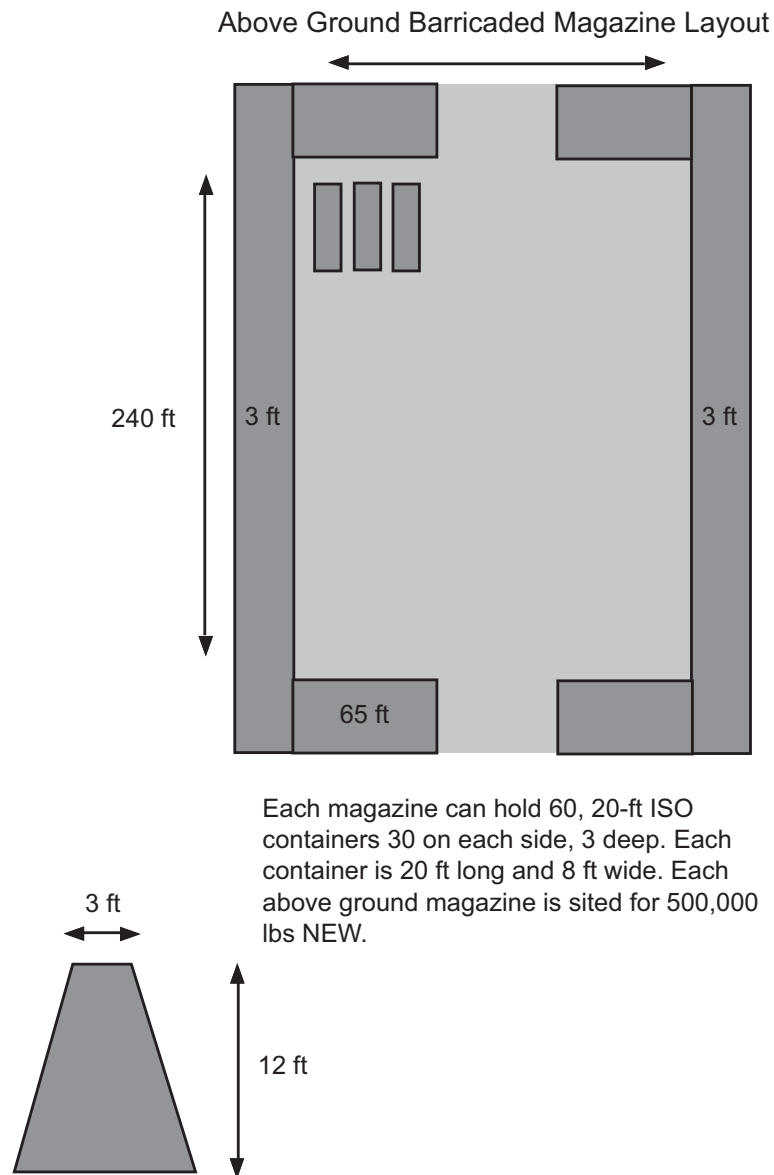


Figure 6-2. Sample Layout of a Storage Cell.

AVIATION GROUND SUPPORT

Aviation ground support (AGS) consists of ground support functions required (less aircraft supply, maintenance, and ordnance) for sustained air operations at forward operating bases and air bases. The AGS directly supports employment

across all functions of Marine aviation. See MCWP 3-2, *Aviation Operations*, for more detailed information.

The AGS is the critical component that gives Marine aviation its expeditionary capability. The AGS consists of numerous ground functional capabilities that support the MAGTF aviation assets in austere environments. The subject of

general AGS is discussed in great detail in MCWP 3-21.2, *Aviation Logistics*. The following paragraphs address Class V interests under the umbrella of AGS.

Aviation Logistic Support

In addition to the AGS, the ACE will require aviation logistic support in order to operate ashore. The MALS and the MAGTF LCE provide aviation logistic support capabilities to the ACE. The MALS provides logistic support, which includes aviation supply and maintenance support for the aircraft, aviation support equipment, and aviation armament and ordnance equipment. Refer to MCWP 3-2 for more information on the role of a MALS in support of Marine aviation. The MAGTF LCE provides logistic support to the Marine wing support squadron (MWSS) as required. The MWSS determines, requests, and coordinates logistic support from the LCE, as described in MCWP 4-11, *Tactical Level Logistics*.

Forward Arming and Refueling Points

The FARP's mission is to provide fuel and ordnance that are necessary for highly mobile and flexible helicopter and fixed-wing operations. The size of the FARP varies with the mission and the number of aircraft that require service. Normally, FARPs are temporary, transient facilities established for a specific duration and mission. The scope of flight operations in the FARP area should include, but not be limited to, individual aircraft, sections, or divisions of aircraft requiring ordnance and refueling.

The objective of a FARP is to minimize response time and decrease turnaround time in support of sustained operations. Achieving these objectives involves minimizing flight time to and from the FARP and reducing the refueling time and the rearming time within the FARP. Fueling and arming of assault support aircraft can be accomplished in about 20 to 30 minutes, while processing an attack aircraft may take up to 45 to 50 minutes. In both instances, fueling takes 10 to 15

minutes and ordnance uploading takes up the remainder of the time. The overriding factor in estimating FARP processing time revolves around ordnance requirements. Processing times depend on environmental factors, aircraft armament, and support personnel proficiency. The FARP operations should be considered aviation operations, while FARP planning, coordination, and executions are logistic responsibilities of the requesting unit.

The FARPs are not exclusively AGS operations. Other elements of the ACE may also be present, such as Marine wing communications squadron, Marine air traffic control mobile team, low altitude air defense, MALS, or Marine aircraft group or squadron assets.

The knowledge and experience in logistics, aircraft refueling, and security resident in the MWSS make it the ideal source for providing personnel who will become the second in command of the FARP. The FARP officer in charge deconflicts requirements and interacts with various agencies outside of the FARP such as Marine tactical air command center, direct air support center, low altitude air defense, and pilots, while the MWSS representative manages and supervises the activities internal to the FARP. Refer to Naval Air Systems Command Manual 00-80T-109, *Aircraft Refueling Naval Air Training and Operating Procedures Standardization Manual*, for details regarding FARP operations. The notional FARP organization is detailed in figure 6-3.

Security

Physical security and force protection activities are important components of the FASP and the FARP operations. Terrain, operational conditions, and threat assessment will dictate the security provisions that are required. It could, however, range from a simple guard post and perimeter security, to a full-blown defense in depth with guard posts, guard towers, security lighting, and even active patrolling. Munitions and fuels are the commodities most susceptible to

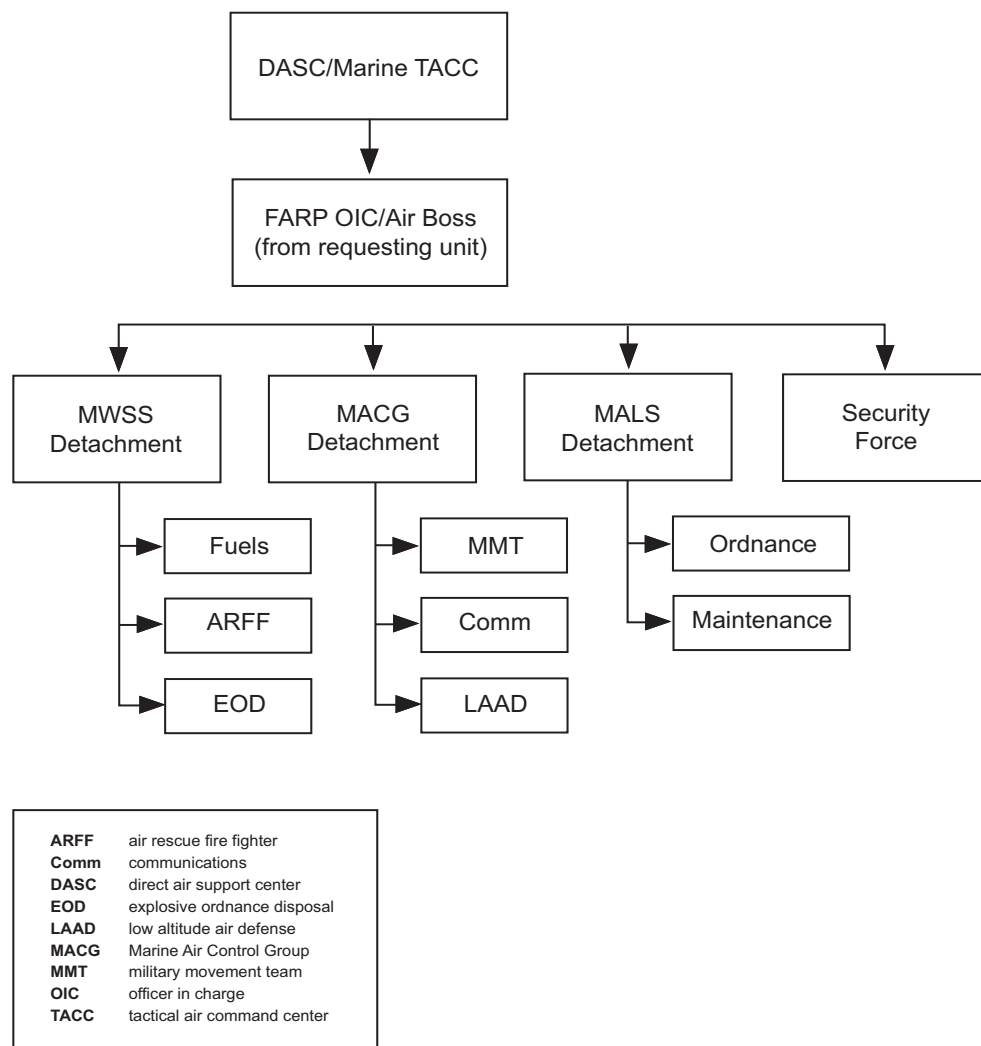


Figure 6-3. Notional FARP Organization.

interdiction by enemy action with potentially catastrophic results; of the two, munitions are the most difficult to reconstitute.

DISTRIBUTION

Distribution of materiel to the supported units is a singularly difficult task, whether distributing the assets from a central distribution point or making direct deliveries to the supported units. The general support ammunition company of the MLG is

tasked and organized to operate two separate direct support ammunition platoons providing supply point distribution to the supported units with organic transportation and conducting mobile combat support operations to the supported units without organic transportation. The general support ammunition company may be augmented with aviation ordnance personnel when providing general support to ACE units. The MALS provides general support/direct support to its parent Marine aircraft group and assigned squadrons, and, on order, establishes and operates the FARP.

Distribution Methods

The two distribution methods are supply point distribution and unit distribution.

Supply Point Distribution

The supply point distribution method is employed when the supported units are issued supplies from a central point such as a depot, airhead, navigation head, railhead, or a logistic train site, and then the supported unit moves the supplies using organic transportation.

Unit Distribution

The unit distribution method is employed when supplies are delivered directly to the supported units and the supporting unit provides transportation. The supported unit is then responsible for internal distribution. The supported unit generally establishes a basic load ammunition holding area. These are areas in which a unit can hold their assets for immediate internal distribution to support unit operation. The area can be used as a holding area for critical munitions, Security Risks Category 1 and 2 items, and assets above the basic load that can be supported by the unit's organic transportation assets. Supported units usually prefer the unit distribution method. However, the MAGTF seldom has enough transportation assets to permit unit distribution to all supported organizations.

Distribution Method Considerations

The MAGTF commander usually determines the distribution method used. When supply point distribution is used, care must be taken not to restrict operations for units with limited organic transportation. When the MAGTF commander selects unit distribution, the LCE/ACE commander must develop a transportation network from the supported organization to the rear supply area that does not generate equipment shortages in rear areas. In practice, the limited transportation assets will compel the MAGTF commander to use a combination of supply point and unit distribution.

THE MUNITIONS REPORT

The MUREP, when activated by the CCDR/JFC or the joint staff, will be utilized to report the status of Class V from every organization in the chain of command. Each major subordinate command will consolidate the MUREP data from their subordinate units and forward that consolidated report to higher headquarters. The MUREP reports requirements, receipts, projected deliveries, expenditures, and asset posture in quantifiable terms. This allows the CCDR and/or joint staff to measure available Class V inventories against requirements in order to assess warfighting endurance and assist logistical decisionmaking. The MUREPs are required once daily via message, or any other practical method, unless otherwise dictated in local battle rhythms.

SUSTAINMENT AND RESUPPLY

The MAGTF Class V sustainment includes accompanying supplies and resupply. Accompanying supplies are an integral part of the MAGTF logistic load in virtually all situations. Operational factors and/or supply availability may require readjusting accompanying and resupply balances. The minimum baseline of accompanying supplies for a MEF-sized MAGTF is historically 30 days. The availability of aviation ordnance and ground ammunition fluctuates and is theater dependent.

Class V Resupply

Resupply must be planned for and scheduled prior to expending accompanying supplies and to continue through the entire period as established by the supported theater CCDR's/JFC's guidance.

Accompanying supplies are a combination of supplies aboard the MPS, supplies accompanying the amphibious forces, and additional items shipped from CONUS or key locations around the world. The Marine Corps logistic system is

designed to support most general MAGTF requirements from on-hand supplies through the LCE as depicted in figure 6-4, on page 6-10. The Navy supply system provides aviation-peculiar support through the MALS. External support may be provided to meet the MAGTF requirements. Wartime HN support and inter-Service support agreements may also be established.

Theater-Level Class V General Support

To provide operational-level support, the Marine Corps component commander may establish a Marine logistics command (MLC). The MLC is responsible for establishing the theater support structure to facilitate arrival, assembly, and RSOI operations. In addition, the MLC could provide operational logistic support to Marine Corps forces as the Marine component commander's operational level logistic agency in theater.

Normally, the MLC mission is assigned to a specific MLG. Additional resources may also be assigned—based on the operational situation, theater geography, and infrastructure requirements—to the MLG for the conduct of theater-support logistic operations.

CLASS V(A) SUSTAINMENT

Class V(A) sustainment is based on combat expenditures of the ACE's generated munitions requirements. Ordnance personnel in the CCDR's/JFC's area of responsibility and the NOLSC AMMO monitor the expenditures and submit requisitions for resupply based on the on-hand balance of the requirements or new mission tasking for the ACE.

Sustainment Planning

During deliberate planning, each Service's calculation of the operation plans munitions requirements are sourced and entered into the JOPES by the respective Service component

under the CCDR/JFC that is responsible for each major operation and campaign that is defined in DODI 3000.4.

The Navy fleet commanders, as logistic agents for naval forces, should conduct, in coordination with the MARFOR, periodic assessments of the CCDR and/or JFC requirements in support of major operations and campaigns, small-scale contingencies, and current operations/forward presence requirements. These assessments compare Class V requirements against inventories and serve as the basis for sourcing ammunition and TPFDD planning and execution.

Supply Rates

Commanders must carefully monitor the projected requirements and the available inventory compared to actual expenditures in order to ensure that any potential support shortfalls are identified in a timely manner. In the event that in-theater assets are insufficient to support requirements, the component commander must determine the best course of action, which may include constrained supply rates.

CLASS V EXTERNAL SUPPORT

Even though "arming the force" is a Service responsibility, circumstances may create the need for giving or receiving external support. By utilizing common-user logistics, the CCDR/JFC may produce significant economy of force in equipment, personnel, and supplies. The costs and benefits of this action must be weighed carefully against the overall plan, logistics, and inventory constraints.

Common Item Support

Common item support is a CCDR-designated inter-Service support agreement or directive authority for logistics, tasking one Service component to provide materiel and/or services

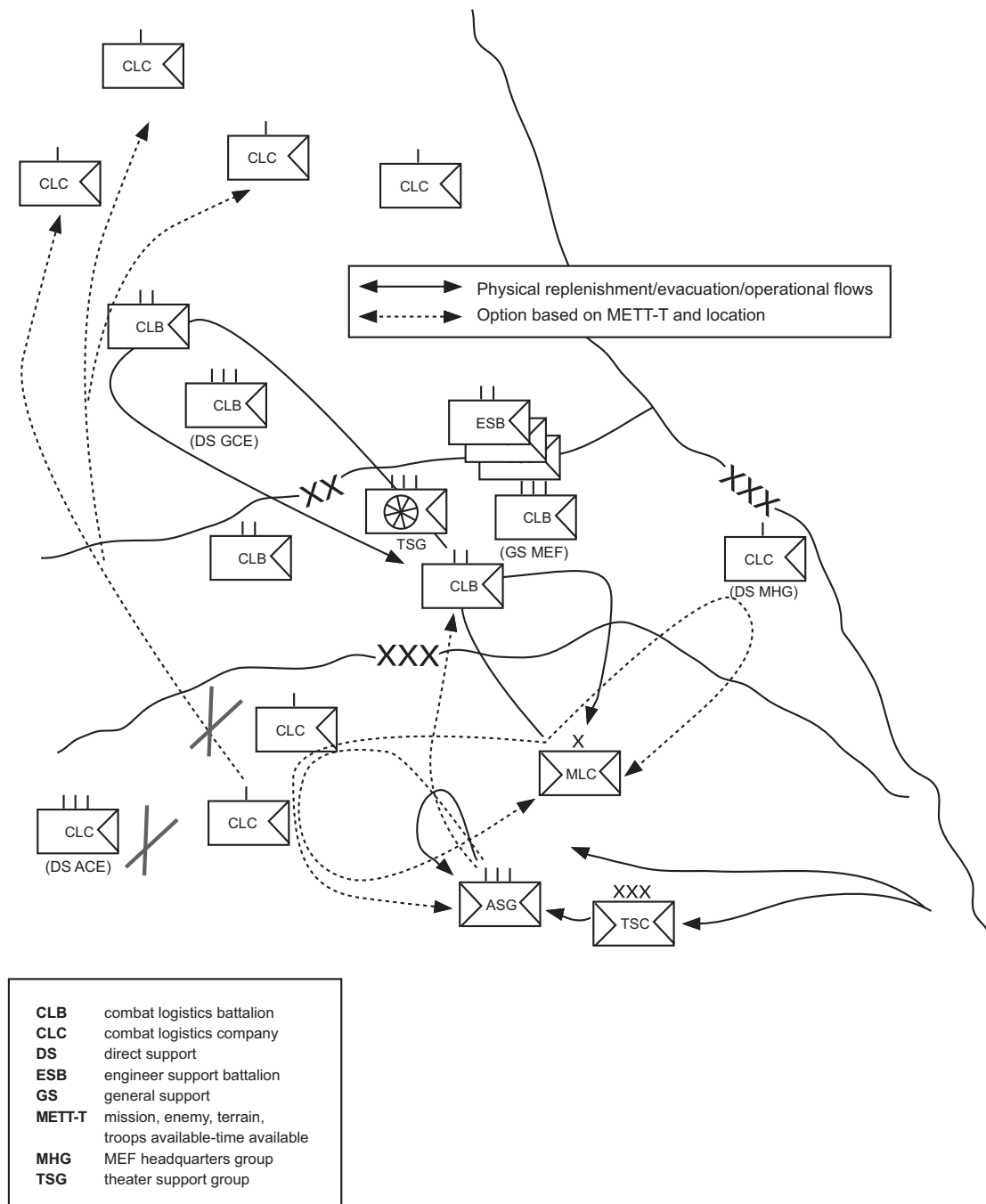


Figure 6-4. Notional Logistical combat Support Concept of Operations.

(such as classes V & VIII [Graves Registration]) and line haul. In the context of Class V, the responsibility for providing CIS, when appropriate, is generally assigned based on the “pre-dominant user” concept. In practice, this arrangement can work well for Class V(W) ground

ammunition because of the significant commonality between Marine Corps and Army weapons systems, and it can work reasonably well for rotary-wing attack aviation. Depending on the scenario, CIS may also be directed for Class V(A). Regardless of which Service is

considered to be the dominant user, CIS must never be considered as an avenue to circumvent Service-level logistic responsibilities.

Cross-Service Support

Cross-Service support is appropriate when DOD procedures for CIS or inter-Service support agreements already exist. The CCDRs/JFCs have directive authority for logistics by which they may authorize cross-Service support within their theater.

Coalition, bilateral, and/or HN support agreements authorize specified support across national lines. The component commanders coordinate requests for cross-Service or cross-national logistic support.

Common Item Support Versus Cross-Leveling

Common item support and cross-leveling are both functions of cross-servicing by one Service component command in support of another for which reimbursement is required from the Service receiving support. However, CIS and cross-leveling are not synonymous.

Cross-leveling is conducted to mitigate the effects of local inventory imbalances, to support immediate operational necessity, and to reduce the risk of

depleting ammunition stores. Cross-leveling reimbursement generally occurs in theater.

Common item support is accomplished to reduce redundancy and identify a single source provider for specific services and material in a designated area of operations. Common item support reimbursement occurs at the Service level.

Class V(A) and Common Item Support

Since Class V(A) aviation ordnance used by the Marine Corps is owned, managed, and procured by the Navy, CIS exists by default. Once initial and sustaining supplies of Class V(A) have been exhausted, the Navy component commander may proportionally reallocate theater naval assets until resupply can be achieved.

Additionally, where appropriate, CIS can be instituted between Army, Navy, Marine Corps, or Air Force components or coalition forces depending on aircraft compatibility with the available ordnance and the mission to be flown. However, the potential availability of CIS for Class V at some future point in time does not relieve commanders of the obligation to plan for their initial and sustaining requirements during the early stages of a campaign or operation: this remains a Service responsibility.

CHAPTER 7

RETROGRADE OPERATIONS

Class V retrograde operations are the directed, organized movement to the rear or away from the enemy. Retrograde is complex, requiring detailed planning and considerable in-theater resources. Retrograde operations are broken down into three separate and distinct operations, with different end objectives: redeployment, reconstitution, and regeneration (R3).

- Redeployment is the transfer of Class V in order to support other operational requirements or to return it to the home station/depot.
- Reconstitution is the action taken to restore units to a desired level of combat effectiveness commensurate with mission requirements and available resources. In the case of Class V, it is generally the restoration of assets to a suitable state for re-embarkation.
- Regeneration is the rebuilding of a unit through large-scale replacement of personnel, equipment, and supplies. Class V regeneration is a continuation of the reconstitution effort and involves the restoration of prepositioned munitions to a suitable state for re-embarkation and return to their normal duty station to resume routine operations. These activities apply to the MPS supplies and equipment, the LFORM, and the MLA for the embarked MEU assigned to the expeditionary strike group.

In most cases, these three functions of retrograde will often operate concurrently and at multiple locations. Some locations will process ground ammunition or aviation ordnance exclusively. Others will run combined operations, especially those that are closest to the consolidation points supporting the POE.

GENERAL RETROGRADE PLANNING

Retrograde operations must be included in the initial planning of every exercise/operation, not when the exercise/operation is drawing to a close. Planning and responsibility for retrograde operations is a Service component responsibility, in conjunction with theater support agencies if they are available, and is based on the mission requirements and the characteristics of the force to be supported.

In order to conduct effective retrograde operations, leaders must enforce supply discipline at the time of issue to the supported units and during the initial unpacking. This includes the salvage and maintenance of the packing materials that are going to be used in retrograde. Tremendous resources are required in order to restore and repackage ammunition. Besides organic assets, contractor and HN support may be required.

Before R3 operations begin, and while the combat operations are still ongoing, logistic planners monitor the levels of munitions in the theater. Maintaining situational awareness of munition levels in the theater serves multiple purposes; among them, enabling estimation of the packing materials that are needed to retrograde munitions.

The majority of R3 operations will frequently occur at the farthest points forward, generally where the supported unit has conducted their turn-in. The R3 operation will become progressively more sophisticated as materiel moves farther to the rear, through the ASP/FARP and other storage activities, to a theater depot or port, and onward to a CONUS/OCONUS depot or MPF/CLF shipping, as appropriate. To ensure

compliance with storage and transportation regulations, load drawings for the containerization of Class V items can be found at the JMC Defense Ammunition Center Web site.

The R3 planning incorporates a vast array of critical issues and concerns. One of the key issues planners must address during the initial phases is how to recover and retrograde ammunition that remains after the operation or exercise ends. During past operations like Operations Desert Shield, Desert Storm, Joint Endeavor, and Iraqi Freedom, significant amounts of munitions were requisitioned and issued to the deploying forces. A large part of these munitions were not expended and the retrograde stockpile that resulted placed an enormous strain on the ammunition support systems of all the Services.

The R3 plans differ significantly from movement plans that are made before leaving CONUS. Personnel, time, equipment, and materiel become more important when the main effort is directed at retrograding and reconstituting personnel and equipment to CONUS and munitions and equipment to MPF shipping and other storage sites as quickly as possible. At a minimum, planners should consider the following:

- Begin planning for Class V-related retrograde operations as early in the deployment as possible.
- Plan for a retrograde process that promotes consolidation of Class V materiel at logical points to return to one or more central processing sites for preparation, loading, and eventual shipping.

OPERATIONAL SAFETY

Safety is a fundamental concern during all ammunition logistic operations. The specter of preventable noncombat casualties resulting from improper handling and repackaging of munitions is never acceptable. At the conclusion of operations following a major deployment, there is a natural tendency for operational urgency to

diminish. In that state, it is easy to allow complacency to set in. Leaders must enforce safety discipline during all ammunition operations, including unpacking, restoration, repacking, and retrograde.

CONDITION OF MUNITIONS

For planning purposes, the MARFOR commander must consider the following assumptions about the condition of munitions under the control of the supported forces:

- Munitions have been removed from the original packing and are no longer in pristine condition.
- The supported units have not retained packing or packaging materials.
- All Class V assets will require a serviceability inspection, including the assets that are in containers, to ensure that the load is secured properly with blocking and bracing.
- All of the Class V assets that are removed from the containers for storage or issue to the supported units must undergo formal sentencing to assign an appropriate condition code for the purpose of transportation. The governing directives for this process are NAVSUP P-805, *Navy and Marine Corps Conventional Ammunition Sentencing Receipt, Segregation, Storage and Issue Sentencing*, and NAVSUP P-807, *Navy and Marine Corps Conventional Ammunition Sentencing—Fleet Sentencing, Volume 3*.

FUNCTIONAL CONSIDERATIONS

To ensure that all facets of retrograde planning are addressed, all of the retrograde plans should include the following:

- Assign specific responsibilities of the MARFOR headquarters, MLC or LCE, supporting ammunition units, and supported units.
- Establish reporting requirement and capabilities for packaging, storing, consolidating, and security.

- Obtain and provide empty storage containers, as well as other materials that are needed to build and repair pallets and containers.
- Form retrograde planning cells.
- Identify special requirements for the classified munitions, munitions assigned Controlled Inventory Item Code (CIIC) Categories I and II or critical sensitive items.
- Contact the appropriate ICP to request specialized teams of personnel that will assist in retrograde planning and operations.
- Assign responsibilities for recovery of packing materials.
- Prepare for possibly significant disposal efforts.
- Develop plans that define the expected retrograde procedures. These plans must identify tasks required to return ammunition to its original packing configuration or some other authorized configuration.

Retrograde Operations

Upon completion of military operations or field training exercises, the tedious job of collecting, identifying, preparing, repackaging, loading, and shipping the ammunition begins. These tasks commence the redeployment, reconstitution, and regeneration processes and signal the start of the munitions retrograde program within the Class V community. During retrograde operations, the supporting ASP/FARP may also continue to provide munitions to residual security forces while relocating the excess to the MLC ammunition storage area, other designated ASP, or theater support activities.

The following factors should be taken into consideration before actual retrograde operations begin:

- Availability of facilities.
- Availability of shipping points from the theater.
- Availability of HN and logistical support.
- Availability of qualified Navy and Marine Corps quality assurance (QA) and QE personnel.

During the various stages of buildup and actual conflict, arrangements must be made for the recovery and storage of packing materials. These materials can occupy an extraordinary amount of space. They can be backhauled to a central location or stored in a separate area near the CSA or in any other area having the capability and capacity.

Visibility and Accountability

If the supported unit has not established Class V visibility and accountability while in possession of the ammunition, then it must be established at the ASP/FARP level where assets have been turned in. This is most particularly true with CIIC I and serial controlled munitions. Accountability problems are exacerbated with the commencement of hostilities; however, as much as possible, visibility of packing materials must be maintained as diligently as possible. If this is done successfully, shortages will be easier to identify and correct.

Segregation and Inspection

At the segregation area, unexpended ammunition is identified and segregated by type and lot number, checked for nonstandard or hazardous conditions, and repacked or palletized and stored consistent with separation distances required by NAVSEA OP 5, Volume 3. In established theaters of operation, qualified QA personnel conduct surveillance activities. These personnel inspect and classify ammunition and its components during movement, storage, and maintenance operations. They also inspect equipment, facilities, and operating procedures. A designated inspector will visually inspect opened ammunition containers and determine the serviceability of both the ammunition and its containers. Additionally, inspectors must check for compatibility and ammunition in a hazardous condition. Added precautions should be taken when handling munitions not factory packed; especially depleted uranium. See Technical Bulletin 9-1300-278, *Guidelines for Safe Response to*

Handling, Storage, and Transportation Accidents Involving Army Tank Munitions or Armor Which Contain Depleted Uranium.

Packaging and Packing Materials

When retrograded munitions reach the designated ASP, they have to be accounted for, cleaned to the extent practicable, reconfigured, repackaged, inspected, and assigned a condition code. Generally, the packing materials that are used by opposing forces should not be used; munitions can be misidentified and usually are not of the proper size or quality for US items. However, these materials can be used for retrograde of captured enemy munitions and weapons. Packing and packaging of these munitions for transportation must meet or exceed the DOD transportation standards that are required for US munitions. Return of captured munitions or weapons should be a rigidly controlled process, with a single authority, and only done when it serves an explicit purpose, such as foreign intelligence collection.

Unserviceable Munitions

During retrograde operations, unserviceable munitions are typically destroyed in the HN rather than repatriated. The responsible supporting ammunition unit will request disposition instructions before destroying the munitions, unless the munitions are in a hazardous or unsafe state, requiring immediate disposal. Also see appendix B for additional information regarding environmental issues that must be considered across the full range of military operations.

Other Considerations

Captured enemy ammunition will follow the same criteria used for US munitions, it must be accounted for, stored, guarded, and kept separate from US munitions.

If contractor/HN support is to be used for retrograde operations, it must be negotiated early in the operation. Contractors must know and fully

understand the scope of work necessary to complete the mission. Security personnel should thoroughly screen HN personnel to ensure that the appropriate clearances are granted.

Safety

During retrograde operations, leaders must ensure safety policies and procedures are carefully observed. Safety policies and procedures must address—

- Complacency that accompanies a general sense that the operation is concluding may cause Marines to become inattentive and careless.
- The collection of battlefield souvenirs may include unexploded ordnance and should be explicitly prohibited and rigorously enforced. This sort of preventable transgression presents extreme unwarranted hazards to personnel, property, and transportation assets.
- Taking shortcuts to avoid established safety procedures may result in serious injury when processing and handling ammunition and explosives (A/E).
- Once the ammunition has been properly inspected, repaired, repackaged, and sentenced as serviceable or unserviceable by QA/QE personnel, it must be retrograded from the theater or applied to reconstitution efforts.

DESTRUCTION OF AMMUNITION

Commanders must follow applicable safety and environmental regulations when destroying munitions. The two categories of ammunition destruction are routine and emergency.

Routine Destruction

Routine destruction occurs during normal day-to-day operations; for example, the destruction of unserviceable ammunition. See appendix B for additional information. In large part, local mission, enemy, terrain and weather, troops and support available—time available constraints

control the destruction of ammunition. However, a general plan for the destruction of unserviceable ammunition and captured enemy ammunition must be prepared for every storage activity. The destruction site should be carefully selected so that explosive fragments, debris, and toxic vapors do not become a hazard to personnel, materiel, facilities, or other on-going operations.

The Marine Corps or Navy DDA must authorize destruction of unserviceable ammunition, as applicable. Whenever practical, ammunition destruction operations should be supervised by qualified explosive ordnance disposal personnel.

Emergency Destruction

Emergency destruction of ammunition prevents the ammunition from being captured by enemy forces. Only the division, wing, and MLG commanders and above have the authority to order the emergency destruction of ammunition. This authority may be delegated to subordinate commanders. Technical Manual 43-0002-33, *Destruction of Conventional Ammunition and Improved Conventional Munitions (ICM) to Prevent Enemy Use*, is the technical reference for emergency destruction of ammunition.

If it is necessary to conduct emergency destruction operations, the ammunition must be rendered unserviceable. When possible, emergency destruction should be planned and conducted to impede enemy troop movements without creating hazards to friendly troops.

The first priority for emergency destruction is classified ammunition and its associated documentation. The second priority is ammunition that the enemy could immediately use against friendly forces, such as hand grenades, landmines, surface-to-air missiles, or small arms.

AMMUNITION MAINTENANCE

To ensure that ammunition is returned to a high state of readiness, maintenance must sometimes

be performed after it is inspected. Maintenance operations include minor packaging and preservation operations, such as:

- Cleaning Class V(W) only.
- Minor rust and corrosion repair Class V(W) only.
- Repair and replace boxes and crates.
- Replace or augment packaging
- Restenciling of containers.
- Desiccant replacement.

The ammunition company of the MLG and the MALS of the Marine aircraft group do not possess maintenance capability beyond limited first echelon maintenance. All supported units that have ammunition on hand should perform limited organizational maintenance with technical assistance from the supporting ammunition units.

Ammunition units will perform packaging and preservation operations as required, to prevent further ammunition deterioration. If added maintenance is required, it will be accomplished as determined by on site QA/QE personnel or higher headquarters. Supporting ammunition units should be prepared to perform as much packaging and preservation as possible in order to maintain ammunition in a serviceable condition. In most cases, ammunition that requires maintenance or repair that is beyond local capabilities is usually considered unserviceable and will require evacuation or retrograde to a depot or local destruction point if it is determined by higher headquarters to be uneconomical to repair.

Ammunition reported as unserviceable should be conspicuously marked and segregated pending final disposition. Ammunition that is sentenced to condition codes that are uneconomically repairable will be stored in a separate, location-pending disposition. Unrepairable munitions that pose an immediate threat may be destroyed prior to the receipt of disposition instructions.

PHYSICAL SECURITY

At the conclusion of combat operations the enemy threat changes. Even though the organized enemy has been defeated, there will remain asymmetric threats from pockets of resistance, guerrilla units, or terrorists that want to continue the fight. Commanders must be mindful and develop effective physical security plans to prevent the capture or destruction of munitions stocks. Follow the general guidance provided by OPNAVINST 5530.14A, *Department of the Navy Physical Security and Loss Prevention*, for physical security of A/E. Commanders must ensure that their unit has developed an effective security plan based on applicable regulations, command directives, and the tactical situation. At a minimum, the plan must include the following:

- Unit mission.
- Current tactical situation.
- Level of threat expected.
- Available resources.
- Unit vulnerability.

The security plan must consider all aspects of physical security. These include the following:

- Access control.
- Guard force operations.
- Personnel screening.
- Document and materiel accountability.
- Emergency actions.

Particular care must be given to providing security for Category I and II munitions items. See OPNAVINST 5530.13C, *Department of the Navy Physical Security Instruction for Conventional Arms, Ammunition, and Explosives (AA&E)*, for guidance to properly secure CIIC I and II munitions.

Note: CIIC I includes munitions, missiles, and rockets in a ready to fire configuration. Examples are complete round munitions, such as the Stinger when assembled with gripstock, Javelin, and the AT-4.

CIIC II includes high explosives and white phosphorous hand and rifle grenades, anti-tank and antipersonnel mines. It also includes the shoulder-launched multipurpose assault weapon family of rockets.

TRANSPORTATION AND STORAGE

When transporting or storing A/E for retrograde, the precautions and procedures used should mirror those established during buildup. Organic transportation assets are used to retrograde munitions stocks to designated locations. The logistic movement control center (LMCC) regulates all Marine Corps highway movement during the retrograde operation, and it identifies evacuation routes, publishes movement schedules, and designs a transportation circulation plan. The MARFOR transportation system will be severely taxed by the movement of units, supplies, and equipment; therefore, the LMCC may need to request additional transportation support from HN assets or theater sources. The respective Service component and theater movement control agency will coordinate with MARCORSYSCOM PM Ammo and HQMC, ASL Aviation Logistics Support Branch for instructions on relocating ammunition to CONUS or other theaters for subsequent operations.

The force movement control center is the MAGTF commander's agency to control and coordinate all deployment support activities. It is also the agency that coordinates with the transportation component commands—AMC, MSC, and SDDC—of USTRANSCOM. When the MAGTF operates as part of a joint force, the force movement control center coordinates with USTRANSCOM via the JFC. The JMC coordinates the requirements for all Service components.

An LCE, or its supporting logistic units, organizes LMCCs near deploying units. The force movement control center tasks the LMCC to provide organic or commercial transportation, transportation scheduling, materials handling

equipment, and other support during marshalling and movement. The MLG/LCE can also establish two additional movement control organizations subordinate to the LMCC to support deployment: the arrival/departure airfield control group and the port operations group.

The LMCC functions as the agency that is responsible for executing the MEF surface movement control priorities from unit areas to the aerial and surface POEs and from the aerial and surface PODs to the unit tactical assembly areas. The LMCC will continue to control all MEF requirements for intratheater lift, lift support, and movement control based on the MEF commander's priorities of movement through all operational phases and the eventual redeployment of forces.

When established, the MLC will facilitate movement support for the MEF throughout the established communications zone.

- Each element of the MEF MAGTF will activate a unit movement control center to manage organic lift requirements and will funnel external requirements to the LMCC for sourcing. Each unit movement control center will execute zonal movement control under the direction of the LMCC.

- For smaller scale operations, each MAGTF will activate a unit movement control center to coordinate and control movements and movement support.

Ammunition Supply Points

Ammunition supply points are usually the primary consolidation hubs for returned or backup ammunition storage containers and packing materials. Also, materials for building or repairing pallets, aviation ordnance details, and various ammunition and ordnance storage containers are consolidated at this location.

Retrograde Turn In

Supported units will ideally return munitions that are identified for retrograde to the ASP that originally provided their ammunition support; in reality; however, it is unlikely that this will occur because of the dynamics of modern warfare and the mobility of the force. Ultimately, supported units will turn in A/E at the nearest ASP along the supported unit's route of exit. The ASP will collect, consolidate, and ship ammunition as directed.

CHAPTER 8

CLASS V FOR THE MARINE EXPEDITIONARY UNIT

Class V support for the MEU includes all of the logistic tactics, techniques, and procedures that have been discussed in the previous chapters, plus shipboard requirements. The guidance, direction, and information discussed in this chapter may also be applied to any MAGTF afloat.

THE MEU AS PART OF AN EXPEDITIONARY STRIKE GROUP

When the MEU (special operations capable) is embarked in an amphibious ready group and combined with robust strike, antiair, antisurface, and antisubsurface capabilities of cruisers, destroyers, and attack submarines, it constitutes a naval expeditionary strike group. Centered on the proven flexibility and combat power of a combined amphibious ready group and MEU, the expeditionary strike group gives the CCDRs/JFCs a wider variety of options and enables independent operations in more dynamic environments.

LANDING FORCE SUPPLIES

Collectively, LFORM and MLA assets compose the landing force supplies that are required to sustain the assault echelon and the assault follow-on echelon of the landing force. They include the initial supply support required before the arrival of resupply in the amphibious objective area for the MEU. Landing force supplies are generally identified as combat load, prepositioned emergency supplies, and remaining supplies.

Combat Load

A combat load consists of the types and quantities of supplies that assault forces carry to a

specific mission, including the supplies carried by individuals. Combat loads will differ based on the assigned mission. However, they should not exceed the capabilities of the MEU's organic transportation.

Prepositioned Emergency Supplies

The commander uses prepositioned emergency supplies for replenishment early in the ship-to-objective maneuver. These supplies are available on-call for immediate delivery to the units ashore.

Remaining Supplies

The remaining supplies are all the MAGTF supplies that are not included in the combat load or the prepositioned emergency supplies. They constitute the major portion of the supplies that are transported to the amphibious objective area in the assault echelon and the assault follow-on echelon. When the tactical situation permits, the commander uses some of these supplies to build stock points ashore. The LCE offloads the bulk of the remaining supplies during the general offload.

LANDING FORCE OPERATIONAL RESERVE MATERIAL

Supporting the MEU, LFORM is war reserve materiel embarked in naval amphibious shipping and is considered sufficient to sustain the MEU for a short period of limited operations, historically planned as 15 days. The combat cargo officer embarks the following classes of supply as LFORM:

- I—Rations.
- III—Petroleum, oils, and lubricants.
- IV—Field fortifications.
- V(W)—Ammunition.

For Class V(W), it consists of ammunition for all table of organization and equipment weapons embarked with the MEU and level-of-effort munitions based on the size of the notional MEU.

The notional load of Class V for the MEU is generally considered to be 15 days based on the guidance contained in the MCO P4400.39H. Planned quantities for Class V(W) are contained in the TMR. For Class V(A), the planned quantities are identified in the NNOR for the T/M/S of aircraft that are assigned to the ACE. Actual quantities embarked for the LFORM and the MLA, especially ammunition and ordnance items, are often limited by shipboard storage space, and related safety factors.

The LFORM Class V(W) is Marine Corps-owned, ground ammunition designated to support the landing force during an actual contingency, allowances are controlled by the parent MARFOR and requisitioned by the MEF. Tailoring of the types and quantities of Class V(W) LFORM may be coordinated between the applicable MARFOR and amphibious group, as required. The LFORM tailoring must be done prior to the assets being embarked aboard ships.

With the exception of requisitioning the specific items, the ship is responsible for all other aspects of the LFORM and its accountability. It is important to remember that once embarked, the LFORM is not under the Marine Corps control until released by the numbered fleet commander.

MISSION LOAD ALLOWANCE

The MLA is Navy-owned war reserve materiel embarked on naval amphibious shipping to support the ACE of the MEU. Historically, the MLA 15 days of supply is considered sufficient to sustain the ACE for a short period of limited operations. The combat cargo officer embarks Class III (aviation petroleum, oils, and lubricants) and the ships weapons department embarks Class V(A) (aviation ordnance) into the MLA.

At the discretion of the numbered fleet commander, additional MLA stocks may be embarked in other amphibious task force or accompanying CLF shipping, when available. Class V(A) consists of aviation ordnance for all T/M/S aircraft embarked with the MEU, both rotary-wing and fixed-wing. The MLA consists primarily of level of effort munitions based on the aircraft population and types, aircrew escape systems, and cartridge-actuated devices. The planning factors on which these requirements are based can be found in the Navy's prepositioned WRMR for the parent MARFOR.

The respective Commander, United States Fleet Forces Command/United States Pacific Fleet controls allowances. The ship requisitions the MLA from the NOLSC Detachment, Mechanicsburg, PA and the usual source of supply.

Tailoring of the aviation MLA must be coordinated with the appropriate numbered fleet commander via the ship's chain of command. The ship's ammunition administrator is responsible for all aspects of the MLA account management.

GROUND AMMUNITION PERSONNEL AFLOAT

A military occupational specialty (MOS) 2311 staff noncommissioned officer typically holds the MEU ammunition chief position. The ammunition chief provides Class V(W) related logistic expertise to the MEU commander, particularly as it involves issues of safety and compliance with regulatory requirements. This unique operating environment, from workup through deployment, creates a challenge when managing ammunition assets. The ammunition chief has to be prepared to deal with a wide variety of situationally-driven ammunition responsibilities in a dynamic environment.

The ammunition chief manages the MEU training ammunition allowance and works closely with the MEU S-3 and S-4, and MEF G-4 to ensure that

the training ammunition requirements are properly identified and positioned to support the MEU's training objectives. This includes the proper forecasting of ammunition training requirements, requesting generation, and monitoring and reporting the expenditures of subordinate units.

The ammunition chief is also the central point of contact within the MEU for all Class V(W) operations. He provides planning and coordination between the elements of the MEU and other commands as required to ensure success of operations that require Class V(W) support. The ammunition chief also takes the lead on preparing the MEU SOPs for ammunition operations. The SOPs should also include knowledge, sources of supply, and procedures for Class V(W) replenishment.

Overarching responsibilities of the MEU ammunition chief include the preparation and embarkation of Class V(W) in coordination with the ship's combat cargo officer, QA of ground ammunition assets, and preparations for establishing operations ashore. This includes, but is not limited to, establishing procedures for requisitioning

resupply/sustainment and the release of LFORM, forecasting combat load requirements for each element of the MEU, and being able to rapidly determine the requirements for any size force.

AVIATION ORDNANCE PERSONNEL AFLOAT

The MEU ACE is normally embarked aboard an aviation-capable ship such as an LHA [amphibious assault ship (general purpose)] or an LHD [amphibious assault ship (multipurpose)]. Aviation ordnance personnel of MOS 65xx would be assigned in support of the embarked MALS element for the ACE.

Marine Corps aircraft squadrons operating from an aircraft carrier would receive support from similar entities aboard the carrier. Ordnance personnel from the MALS and the aircraft squadrons generally augment the Navy personnel assigned to these sections by working collocated in shipboard spaces to provide the required support.

APPENDIX A

CLASS V SUPPORT UNDER UNIFIED ACTION

The term “unified action” refers to the broad scope of activities taking place within unified commands, subordinate unified commands, or joint task forces under the overall direction of the commanders of those commands. Within this general category of operations, subordinate commanders of forces conduct either single-Service or joint operations to support the overall operation to achieve unity of effort in the operational area.

SUPPORT RELATIONSHIPS

A support relationship is established between subordinate commanders by a superior commander when one organization should aid, protect, complement, or sustain another force. Support may be exercised by commanders at any echelon at or below the level of combatant command. Several categories of support have been defined for use within a combatant command as appropriate to better characterize the support that should be given. Support relationships may be categorized as general, mutual, direct, and close. (Additional information on these relationships may be found in Joint Publication 1, *Doctrine for the Armed Forces of the United States*.)

Geographic Area

Establishing a joint force based on a geographic area is the most commonly used method to assign responsibility for continuing operations. A JFC assigned a geographic area is considered an area commander. Only commanders of geographic combatant commands are assigned areas of responsibility. Subordinate JFCs are normally assigned other operational areas.

Functional Area

Sometimes a joint force based solely on military functions without respect to a specific geographic area is more suitable to fix responsibility for certain types of continuing operations. The commander of a joint force established on a functional basis is assigned a functional responsibility by the establishing authority.

DIRECTIVE AUTHORITY FOR LOGISTIC MATTERS

Commanders of the combatant commands exercise the directive authority for logistics and may delegate the directive authority for a common support capability. The exercise of directive authority for logistics by a CCCR includes the authority to issue directives to subordinate commanders, including peacetime measures that are necessary to ensure the following:

- Effective execution of approved operation plans.
- Effectiveness and economy of operation.
- Prevention or elimination of unnecessary duplication of facilities and overlapping of functions among the Service component commands.

A CCCR’s directive authority does not discontinue Service responsibility for logistic support, discourage coordination by consultation and agreement, or disrupt effective procedures or efficient use of facilities or organizations. Unless otherwise directed by the Secretary of Defense, the Military Departments and Services continue to have responsibility for the logistic support of their forces assigned or attached to joint commands.

Unity of effort and unity of command demand that a single command authority be vested with the responsibility and the authority for common logistic support to Army and Marine Corps integrated joint operations. The purpose is to improve efficiency and effectiveness and to prevent unnecessary duplication of logistic efforts among the Service components.

DELEGATION OF DIRECTIVE AUTHORITY

The geographic CCDR may not delegate directive authority for logistics. However, through his combatant command (command authority), the CCDR may delegate directive authority for a common support capability within the joint operations area to the JFC, Service component, or DOD agency. This delegation of authority is usually directed to the dominant user of a particular logistic commodity or service. In some cases, however, the dominant user may not be the most capable Service or agency; therefore, the CCDR must be very deliberate in determining which Service or agency, if any, will be required to provide common user logistic support within a joint force.

COMMON USER CLASS V LOGISTIC SUPPORT TO THE MARINE EXPEDITIONARY BRIGADE

With the exception of Class V(A), and other supplies and maintenance requirements peculiar to Marine Corps equipment, the Army typically deploys the capacity to provide common logistic

support that may exceed the capability of the MLG or LCE.

There is a significant difference between Army and Marine Corps combat ammunition logistic support doctrine. While the Marine Corps provides logistic support through a variety of generalized vehicles, the Army has developed a specialized logistic system specifically designed for ammunition movement. The palletized loading system consists of a transport vehicle that is designed to carry the containerized roll-on/off platform. The palletized loading system is the centerpiece of a transportation-intensive, continuous throughput system resulting in limited forward stocking of Army Class V. Marine Corps logistic doctrine places considerably more emphasis on stocks uploaded on organic vehicles in the combat force and less emphasis on a structured distribution system.

Additionally, the Army prepositioned stocks utilizes the configured load concept for building supported unit loads such as infantry/weapons company loads/packages with multiple DODICs loaded on a single containerized roll-on/off platform. Typically, the Marine Corps administratively loads prepositioned assets on MPS for economy of space and inventory control. Thus, the configuration of stocks arriving in the area of operations determines the requirements for handling and transloading stocks, especially where cross-Service support is involved.

Shipment from the storage area to forward ASPs may be effected by Army palletized loading system vehicles carrying combat-configured Class V loads or by conventional cargo transporters and trucks.

APPENDIX B

SAFETY, TRAINING, AND ENVIRONMENTAL/REGULATORY REQUIREMENTS

The Marine Corps Ammunition and Explosives Safety Program (see MCO P8020.10B, *Marine Corps Ammunition and Explosives Safety Policy*) based on the policy established in OPNAVINST 8020.14, *Department of the Navy Explosives Safety Policy Manual*, was established to ensure policies and procedures are in place to prevent the premature, unintentional, or unauthorized initiation of explosives and devices that contain explosives. The program is also concerned with minimizing the harmful effects of such explosions to people and property.

Navy and Marine Corps conventional ordnance/ammunition is designed with a high degree of safety and reliability. Many items are designed with “fail-safe” or redundant safety features and backup functioning systems. However, in spite of designed safety features and extensive testing prior to approval for full production, conventional ordnance is always inherently dangerous and capable of major malfunctions under certain conditions.

The Marine Corps Ammunition and Explosives Safety Program applies to all personnel—civilian and military—that are assigned to any part of the DON and Marine Corps where conventional ordnance and explosives are or may be present. The Marine Corps Ammunition and Explosives Safety Program sets forth standard safety regulations for the research, design, development, production, maintenance, care, handling, storage, preparation for shipment, use, and disposal of conventional ordnance items. The safety regulations are intended to control the potential blast, fire, lightning, hazards of electromagnetic radiation, and propagation associated with explosives-handling operations. Explosives safety

management focuses on minimizing risk to personnel, facilities, and equipment throughout all phases of the ordnance item’s life cycle.

REGULATORY ACTIVITIES

Specific individuals are assigned to explosives safety management positions at all DOD, Navy, and Marine Corps echelon levels. However, everyone working with or around ordnance is responsible for explosives safety management and for identifying and minimizing risk. The organizational relationship of the commands involved in explosives safety management is shown in figure B-1.

Department of Defense Explosives Safety Board

The 70th Congress established the Department of Defense Explosives Safety Board (DDESB), formerly called the Armed Forces Explosives Safety Board, in 1928 after a major disaster occurred at the Naval Ammunition Depot, Lake Denmark, NJ in 1926. The accident virtually destroyed the depot, causing heavy damage to adjacent Pica-tinny Arsenal and the surrounding communities, killing 21 people and seriously injuring 51 others. The monetary loss to the Navy alone was \$46 million. As a result of a full-scale congressional investigation, Congress formed the DDESB to establish DOD-wide explosives safety standards that are designed to prevent or correct hazardous conditions associated with A/E manufacturing, testing, handling, reworking, transporting, storing, and disposition throughout DOD.

The DDESB’s mission is to provide objective advice to the Secretary of Defense and Service

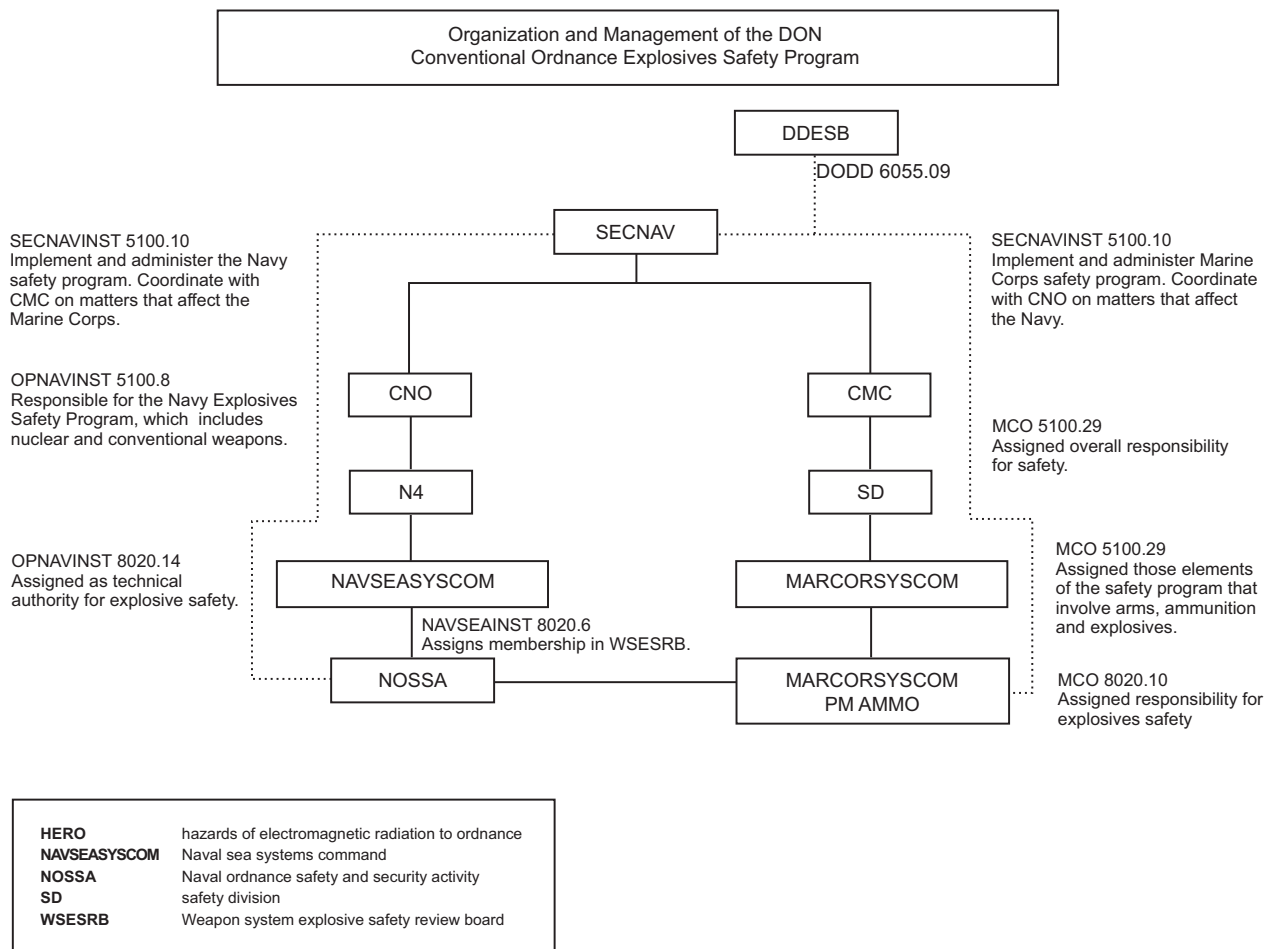


Figure B-1. Explosives Safety Organization.

Secretaries on matters concerning explosives safety and to prevent hazardous conditions to life and property on and off DOD installations from the explosive and environmental effects of DOD-titled munitions. The DDESB provides storage site approval for all DOD facilities.

The jurisdiction of the DDESB extends to facilities where explosives are manufactured, tested, handled, reworked, transported, stored, or disposed of by the Military Services within the United States, its territories, and its possessions within areas where the US has long-term rights, or as specifically designated by the Secretaries of the Services. Specific DDESB responsibilities are

delineated in DOD Directive 6055.9E, *Explosives Safety Management and the DOD Explosives Safety Board*.

Naval Ordnance Safety and Security Activity

The Naval Ordnance Safety and Security Activity, which is delegated by the CNO and the NAVSEASYSKOM, provides explosives safety support by conducting the Weapon System Explosive Safety Review Board, the Ammunition and Hazardous Materials Handling Review Board, and explosives safety inspections. In addition, technical assistance is provided on explosives safety matters to all DON components.

Environmental and Explosive Safety Team (Class V[W] Specific)

Delegated by HQMC Safety Division and embedded within the PM Ammo, the environmental and explosives safety team provides environmentally compliant, explosives safety support throughout the life cycle of the ammunition. This includes representing the Marine Corps as a voting member on the DDESB; DOD-level groups, boards, and committees; or other organizations that address explosives safety. Specific duties of the environmental and explosives safety team are the development of ammunition management policies in support of the MARFOR ensuring the compliance of Service environmental and explosives regulations and providing compliant munitions disposition directives.

SAFETY IN GARRISON OPERATIONS

The Secretary of Defense has established basic explosives safety policies in DOD 6055.9-STD, *DOD Ammunition and Explosives Safety Standards*, to be observed by DOD components in the performance of operations involving A/E. The DON follows these regulations and implements them for the Navy and Marine Corps to the maximum practicable extent.

EXPLOSIVES SAFETY ASHORE IN CONUS

The safe handling, storage, production, maintenance, use, research and development, and disposal of the conventional ordnance items at the DON and the Marine Corps shore activities in CONUS, regardless of ordnance and explosives ownership, is under the cognizance of the Naval Ordnance Safety and Security Activity. These processes shall conform to the regulations stated in NAVSEA OP 5, Volume 1, as well as the safety standards promulgated by the DON/CMC

and applicable federal, state, and local regulations. The OP 5 Volume 1 establishes the prescribed standardized safety regulations for the production, renovation, care, handling, storage, preparation for shipment, and disposal of ammunition, explosives, and other hazardous materials. These regulations and instructions are considered basic guidelines that may require further research for additional detailed information.

Explosives Safety Quantity Distance Standards

Ordnance handling must be conducted at site-approved piers, airfield handling pads, or rail/truck transfer points. Any location where DOD ammunition is loaded/offloaded to a transportation mode or transferred between conveyances creates ESQD arcs. The ESQD arcs are defined as the areas around the ordnance activities (production, maintenance, handling, transporting, storing) that provide the inhabitants of nearby communities, the personnel of Navy and Marine Corps stations and shore activities, and adjacent public and private property reasonable safety from serious injury or destruction. The ESQD arcs minimize the loss of valuable ammunition stores, including inert ordnance items, from fires or explosions. Specific criteria for the ESQD arcs can be found in NAVSEA OP 5, Volume 1, chapter 7.

Ammunition and Explosives Handling

Criteria for ship handling of explosives at a pier, airfield handling pad, or rail/truck transfer point is provided in OPNAVINST 8020.14. See NAVSEA OP 5, Volume 1, for all transportation modes.

In general, A/E handling criteria are different for each type of handling operation and should be reviewed carefully to ensure that the greatest attainable observance of safety requirements is consistent with operational needs. Where it is absolutely necessary to assume greater risk, this risk must be identified to the chain of command

in order to support the informed decisions. There is a process that has been established in OPNAVINST 8020.14 for requesting a waiver or exemption from the provisions of these documents for limited periods of time and under extraordinary circumstances.

EXPLOSIVES SAFETY TRANSPORTATION POLICY

Safety regulations and requirements for shore station operations involving inspection, loading, offloading, and on-station transportation of conventional ordnance and explosives are found in NAVSEA OP 5, Volume 1. Safety requirements for off-station ordnance transportation are found in the Naval Sea Systems Manual (NAVSEA Manual) SW020-AC-SAF-010, *Transportation and Storage Data for Ammunition, Explosives and Related Hazardous Materials*, and the following references:

- Title 49, *Code of Federal Regulations*.
- DTR 4500.9-R.
- Naval Sea Systems Command Instruction 8020.18, *Transportation Accident Prevention and Emergency Response Involving Conventional DOD Munitions and Explosives*.
- NAVSEA Manual SW020-AG-SAF-010.

Transportation Compatibility

Compatibility requirements for explosive materials that are loaded on and transported by motor vehicle over public highway or by railcar are contained in Title 49, *Code of Federal Regulations*, and Naval Sea Systems Manual (NAVSEA Manual) SW020-AC-SAF-010.

Compatibility requirements for explosives being prepared for air shipment are contained in the MCO P4030.19H, *Preparing Hazardous Materials for Military Air Shipments*.

Transportation Security

Ordnance is most vulnerable while in-transit. Risk factors are determined for each item and the appropriate CIIC is assigned. The CIIC determines the degree of physical security in storage and the transportation protective service that an item receives while in transit. Based on the evaluation, items may be shipped utilizing additional protective services, but not less than the minimal requirements. Transportation security standards and procedures that are used in safeguarding categorized and classified ordnance are found in DODD 5100.76-M, *Physical Security of Sensitive Conventional Arms, Ammunition, and Explosives*.

Storage Compatibility

Ordnance that is stored in magazines ashore can only be stored together in the same magazine if authorized by the storage compatibility chart contained in NAVSEA Manual SW020-AC-SAF-010.

Waivers and Exemptions

There may be situations involving contingency, readiness, and/or operational requirements in which a command cannot meet the explosives safety criteria. OPNAVINST 8020.14 establishes the policy for requesting explosives safety waivers and exemptions. A waiver is written authority that is given to deviate from the mandatory explosives safety requirements for the purpose of temporary satisfaction of recurring readiness or operational requirements. The waiver is generally issued for two years pending the completion of corrective measures. An exemption is the authority in writing to deviate from mandatory explosives safety requirements for the purpose of long-term satisfaction of recurring readiness or operational requirements. The exemption is usually issued for a maximum of 5 years. Although the use of these processes is authorized, the risks involved and operational necessity should be

carefully balanced prior to requesting any deviation from the standard safety criteria. Procedures and criteria for requesting waivers and exemptions are delineated in NAVSEA OP 5, Volume 1. Exemptions from mandatory safety requirements must be submitted to the CNO via the appropriate chain of command.

Note: Approval authority for event waivers, however, has been delegated to the CG, MARCORSYSCOM for Class V(W).

EXPLOSIVES SAFETY AFLOAT

The basic DOD explosives safety requirements for conventional ordnance applicable to Navy ships are found in NAVSEA OP 4. The detailed specifications for construction of Navy ships and the individual ship's blueprints designate the only authorized ordnance and explosives spaces or magazines for each ship type and class. Explosives safety standards for combatant ships and tenders at US naval shore activities are contained in OPNAVINST 8020.14, NAVSEA OP 4, and NAVSEA OP 5, Volume 1. The commanding officer of a commissioned Navy ship or other craft that is at anchor, or at a pier or a wharf that forms part of a naval shore activity, must comply with all ship and station explosives safety regulations. Precommissioning units must conform to explosives safety criteria in effect in the shipyard or other naval installation.

Stowage Compatibility

For DON vessels, ordnance can only be stowed together in the same magazine if the appropriate stowage compatibility chart contained in NAVSEA OP 4 authorizes it. Stowage compatibility of military ordnance aboard commercial vessels shall be as described in Title 49, *Code of Federal Regulations*, sec. 176.83 (c) and (f).

Explosives Safety Quantity Distance Arcs on Ships' Stowage Compatibility

Ships carrying ammunition for use in their own weapons system or weapons carried on-board for embarked aircraft or for special warfare, explosives ordnance disposal, or Marine Corps usage create ESQD arcs only during handling evolutions. The arcs are based on the amount of ammunition that is handled. Cargo ammunition ships such as an ammunition ship or a fast combat support ship carrying bulk ammunition for transshipment generate ESQD arcs when berthed or anchored. These arcs are based on the total NEW of ammunition on board, as well as the NEW of ordnance being loaded/offloaded. See OPNAVINST 8020.14 and NAVSEA OP 4 for specific criteria for shipboard operations.

EXPLOSIVES SAFETY OCONUS

The explosives safety requirements for designated overseas ordnance activities are found in OPNAVINST 8020.14 and NAVSEA OP 5, Volumes 1 or 3, as appropriate. In addition, overseas activities may be required to comply with HN regulations that may be more restrictive.

Safety in Deployed Operations

The objective of explosives safety is to safeguard personnel, assets, public welfare, and the environment while maintaining optimum levels of mission capability. The MARFOR safety office should be consulted in theater tactical explosives safety planning and contingency support. The DOD 6055.9-STD will be used as the overarching policy document and NAVSEA OP 5, Volume 3, will provide amplifying guidance for tactical operations. Concerns of explosives safety in the tactical environment include, but are not limited to the following:

- Storage site approvals.
- Pier operations.

- Airfield operations.
- Convoy routes.
- Disposal.
- Retrograde.
- Exemptions and waivers.
- HN coordination.
- Explosives safety inspection/evaluation coordination.
- Amnesty program.

Safety cannot be overlooked during deployed operations. Accidents can kill and injure personnel, possibly destroy essential supplies, damage valuable equipment, and reduce the speed and efficiency of the overall operation. Most accidents are avoidable provided the proper safety precautions are used.

Handling and Storage Compatibility Requirements During Contingencies

The NAVSEA OP 5, Volume 3, addresses unique requirements for handling and storing ordnance during contingency operations. These requirements are intended to provide the safest environment possible and are presented in a manner that provides commanders with evaluations of predicted damages in order to make knowledgeable decisions. If permanent sites are established, site approvals must be requested. Deviations from criteria will require waivers; however, the area commander may issue them during combat.

FORCE PROTECTION

Class V is a critical combat capability and as such is a highly susceptible target of opportunity. The MARFOR, MEF, and theater logistics unit must coordinate security with the appropriate supporting units. Operational risk management procedures will be used in evaluating the protective measures that are necessary to ensure Class V is

exposed to the least threat. The key areas of vulnerability to Class V are:

- Convoy Security. Considerations include route selection, sufficient motor transport assets, communications, security personnel, and sufficient arming of escort personnel and vehicles.
- FASP Security. FASP security force personnel requirements should be identified during the planning phases of deployment to ensure adequate personnel are trained and assets are sourced for force protection.

PERSONNEL TRAINING

Class V materiel, by its nature, is hazardous and indiscriminate. Safety and training are of paramount importance to ammunition and aviation ordnance personnel. Complacency, carelessness, or deliberate actions can all set the stage for catastrophic accidents that result in loss of life, or significant damage to property and equipment. However, training, no matter how intense, is perishable. The skills acquired in initial training, and during advanced training later in a Marine's career, must be sustained through validation, verification, and certification.

Initial Training

Initial training of ammunition and aviation ordnance personnel occurs in multiple locations.

Ground Ammunition Personnel

Enlisted ground ammunition personnel, MOS 2311, receive their initial training currently at Army's Redstone Arsenal in Huntsville, AL but will transition to Fort Lee, VA in 2011. Marine students spend part of their training time acquiring basic skills alongside their Army counterparts. The latter portion of the course is devoted to Marine-specific training presented by the Marine Corps element assigned to the Army school.

Staff sergeants and above, staff sergeant select with approval from the school house, and newly-appointed ammunition warrant officers (MOS 2340) will attend the Ammunition Manager's Course for follow on MOS training.

Aviation Ordnance Personnel

Enlisted aviation ordnance personnel receive their basic indoctrination (Aviation Ordnanceman ["A" School]) at Naval Air Station, Pensacola, FL. Marines are trained side-by-side with their Navy counterparts. After initial training, aviation ordnance personnel are assigned a primary MOS of 6531 or 6541.

Follow-on and Sustainment Training

Training after initial qualification is essential for maintaining perishable skills for handling, storing, transporting, disposing, and accounting for ammunition, explosives, and other dangerous articles.

Ground Ammunition Personnel

Junior noncommissioned officers receive early and mid-career development training through the Noncommissioned Officer Course, presented in a mobile training team environment by the Marine Corps element based at Redstone Arsenal. Senior noncommissioned officer and staff noncommissioned officer (MOS 2311) attend the Manager's Course for career development training, also located at Redstone Arsenal. The Marine Corps element at Fort Lee, VA will conduct this training starting in FY11.

Aviation Ordnance Personnel

Personnel assigned the MOS of 6531 are trained to perform those duties and functions associated with O-level [organizational level] maintenance for specific T/M/S platforms. Depending on the T/M/S assigned, MOS 6531s will receive additional training at the Center for Naval Aviation Technical Training schools located at Marine Corps Air Station Cherry Point, NC;

Marine Corps Air Station, Camp Pendleton, CA; Naval Air Station, Lemoore, CA; Naval Air Station Whidbey Island, WA; Naval Air Station Oceana, VA; or Eglin Air Force Base, FL. Personnel assigned the MOS of 6541 are trained to perform those duties and functions associated with I-Level [intermediate level] maintenance in support of all T/M/S platforms. Follow-on training for MOS 6541 is conducted at the Center for Naval Aviation Technical Training, Marine Corps Air Station Cherry Point, NC. At the rank of gunnery sergeant (E-7), all MOS 6531s and 6541s become 6591s (aviation ordnance chiefs). The MOSs 6591 and 6502 (aviation ordnance officers) receive additional career progression training by attending the Aviation Ordnance Officer's Career Progression Course Levels I, II, and III at Pensacola, FL. The Aviation Ordnance Officer's Career Progression Course training track begins immediately following warrant officer accession training and culminates in specialized training in preparation for increased levels of responsibility and authority associated with aviation ordnance management.

Training and Readiness Manuals

Training and readiness manuals are designed to serve as a single reference for occupational field, collective, and individual training requirements. Replacing individual training standards, these publications not only give commanders a standardized way to plan for and train Marines, but evaluate them as well. Based on the notion we fight as we train, these standardized training outlines cover every facet of the ammunition field. For MOSs 2311 (ground ammunition technician) and 2340 (ground ammunition officer), these training and readiness standards facilitate a continuum of training from entry level to senior levels. By focusing in operational terms, training and readiness manuals provide commanders with a baseline to measure the capabilities and combat readiness of individuals and units.

QUALIFICATION/CERTIFICATION PROGRAM

The Marine Corps' Personnel Qualification and Certification Program for Class V Ammunition and Explosives were established as a safeguard against the catastrophic consequences associated with explosives mishaps. See table B-1.

The requirements of this program are described in MCO 8023.3A, *Personnel Qualification and Certification Program for Class V Ammunition and Explosives*. Such mishaps are infrequent, but not unknown. They can result from improper handling, loading, processing, and testing of ordnance items/explosives devices. The increased complexity of modern weapons systems and weapons can be a factor, but a large number of accidents and incidents involving A/E are not due to the complexity of equipment, but rather, directly result from:

- High tempo operations combined with haste and inattentiveness.
- Inexperience, mental attitude, and complacency of assigned personnel.
- Lack of knowledge or failure to follow pertinent technical manuals, checklists, loading manuals, SOPs, and safety directives.
- Assumption of unnecessary risk.
- Disregard of common safety practices.

REGULATORY/ENVIRONMENTAL REQUIREMENTS

The Environmental Protection Agency (EPA) is charged with enforcement of the nation's laws regarding environmental issues, especially those that deal with waste products and industrial by-products. The EPA also provides assistance to State environmental management offices in management of their programs, where requested.

Resource Conservation and Recovery Act

In 1976, the Resource Conservation and Recovery Act (RCRA) was passed into law and has been amended several times since then. However, in order to clarify the Federal Government's obligations to comply with its own laws, several other actions were taken. One of these actions was to pass the Federal Facilities Compliance Act in 1992 that requires Federal Government agencies to comply with federal standards. Part of the outfall from the Federal Facilities Compliance Act was a requirement to bring the Military Departments and their activities under the RCRA rules. Accordingly, in 1994, the EPA issued its first proposed rulemaking that would apply to military munitions. Following more than 2 years of public comment, and extensive DOD negotiations with state and EPA regulators, the EPA issued the final Munitions Rule (MR) in 1997.

Munitions Rule

The preliminary MR (62nd Federal Register, 6621, February 12, 1997) identifies when and how conventional and chemical military munitions become hazardous waste under federal law. The final MR became effective on August 12, 1997. The MR impacts the DOD, the US Coast Guard, other Federal agencies such as the Department of Energy, and government contractors who produce or use military munitions for DOD. Some parts of the rule, however, apply to both military and nonmilitary activities such as emergency response operations, storage standards, and limited exemptions from certain transportation requirements. The rule addresses the fundamental question of when unused military munitions become a waste and thereby subject to the requirements of RCRA. In short, the rule states that unused munitions become a waste when the following occurs:

- The munitions are abandoned.
- The munitions are removed from storage to be disposed of, burned, or incinerated before disposal.

Table B-1. Ammunition and Explosives Qualification/Certification Process.

Activity	A/E Qualification/Certification Requirements
Storage/Stowage	Receipt Storage Segregation Packaging/unpackaging Preparation for shipment Inspection/sentencing Issue functions Field returns Inventory accuracy
Handling	Breakout, lifting, and repositioning in order to facilitate storage or stowage, assembly and disassembly, loading and downloading, or transportation.
Assembly/Disassembly of Ordnance/Explosives	Buildup/breakdown of ordnance items/explosives; e.g., <ul style="list-style-type: none"> • MK-82 bomb (attaching fins, installing electrical fuses, adapter boosters) • ML-76/BDU-45/48 practice bombs (installing signal cartridges) • SUU-25 (loading paraflares in dispensers)
Loading/Downloading	Comply with aircraft loading manual/checklists
Tubeloading	Loading of rockets into rocket launchers suspended from aircraft in accordance with approved directives.
Arming/Dearming	Placing ordnance item/explosive devices (such as rocket launchers, guided missiles, guns, and paraflares) in a ready or safe condition in accordance with approved directives
Installation/Removal	Installation/removal of cartridges/cartridge-actuated devices associated with— <ul style="list-style-type: none"> • Aircraft bomb racks/pylons • Egress systems • Electronic attack dispensers • Engine fire extinguisher system cartridges • Aircrew survival distress signals • Canopy removal devices, and explosive bolts
Aircraft Release and Control	Comply with applicable aircraft loading manual/checklists
Gun-Jam Clearing	Comply with applicable gun-jam clearing regulations (not applicable to operators of crew-served guns)
Transportation	Involves the movement and positioning of ordnance/explosive devices that not appropriately packaged per Department of Transportation requirements; e.g., unit issues and assembled aircraft rockets/bombs loaded on weapons skids and trailers. <i>Note: Personnel positioning or loading/offloading aircraft within the flight line or combat aircraft loading area using weapons loaders are licensed under the Naval Aviation Maintenance Program. Separate certifications in this category are not required.</i>
Pneumatic Nailers	Comply with applicable training for pre-fabricated dunnage construction and installation of dunnage for A/E
Pier/Wharf Operations	Containerization operations (stuffing/unstuffing and loading/offloading) LFORM and MLA loading/offloading. Break bulk commercial ship loading/offloading
Safing	Perform maintenance on safe aircraft ejection seats (advanced logistic support site personnel only) or safe aircraft bomb racks, such as rotation of the locking lever on bomb racks from the armed or unlocked position, only on those aircraft bomb racks suspending external fuel tanks. <i>Note: Safing does not include the installation and removal of aircraft weapons systems, as qualified/certified aviation ordnance personnel only shall perform these procedures.</i>

- The munitions are deteriorated or damaged beyond repair, recycling, or reuse.
- The munitions are declared a waste by an authorized military official.

DOD Response

As a result of the DOD's effective management practices for the storage, transportation, and emergency response, the EPA incorporated several existing DOD practices into the MR. The DDESB amended the DOD 6055.9-STD in January 1998, to reflect several of the changes that are found in the MR. Also in response to the EPA's promulgation of the MR amendments to RCRA, the Military Services developed and promulgated DOD's policy to implement the EPA's MR, effective July 1, 1998.

The DOD Munitions Rule Implementation Policy and the Designated Disposition Authority

This policy commonly referred to as the DOD Munitions Rule Implementation Policy, established the Military Services' policy for the implementation and management of MR. Chapter 8 of the DOD Munitions Rule Implementation Policy created the DDA as well as the process Services are to use to request disposition instructions for excess, obsolete, unusable, unserviceable, and waste Military munitions. The DDA concept was

created within DOD to ensure excess, obsolete, and unserviceable munitions that could potentially become hazardous waste are provided visibility and opportunity to be used beneficially consistent with RCRA and Service standards. The DDA is the only person within each Service authorized to designate unused munitions (other than those that automatically become waste per the MR) as hazardous waste.

Marine Corps Responsibilities

In consideration of the severe financial penalties or other administrative sanctions that can be imposed under MR by the states or the EPA, the Marine Corps DDA is the exclusive authority for determining when to designate Marine Corps Class V(W) munitions as waste. Designated disposition authority is assigned under the PM Ammo, MARCORSYSCOM. The current edition of MCO P8020.10B discusses the MR in extended detail and should be referenced for answers to specific questions.

For additional information on Marine Corps environmental policy and responsibilities for compliance with both statutory/regulatory requirements and the management of Marine Corps programs, see MCO P5090.2A, *Environmental Compliance and Protection Manual*.

GLOSSARY

SECTION I – ACRONYMS AND ABBREVIATIONS

ACE	aviation combat element	G-4	Marine Corps component logistics staff officer
A/E	ammunition/explosives	GCCS	Global Command and Control System
AGS	aviation ground support	GCSS-J	Global Combat Support System-Joint
AMC	Air Mobility Command		
ASP	ammunition supply point		
CCDR	combatant commander		
CG	commanding general	HN	host nation
CIIC	Controlled Item Inventory Code	HQMC	Headquarters, Marine Corps
CIS	common item support		
CJCSM	Chairman of the Joint Chiefs of Staff manual	ICP	inventory control point
CL	combat load	ISO	International Organization for Standardization
CLF	combat logistics force		
CMC	Commandant of the Marine Corps	J-4	logistics directorate of a joint staff
CNO	Chief of Naval Operations	JFC	joint force commander
CONUS	continental United States	JFRG II	Joint Force Requirements Generator II
CPF	combat planning factor	JMC	Joint Munitions Command
CRC	crisis response cell	JMTCA	joint munitions transportation coordinating activity
CSA	corps storage area	JOPES	Joint Operation Planning and Execution System
DC	deputy commandant		
DDA	designated disposition authority	LCE	logistics combat element
DDESB	Department of Defense Explosives Safety Board	LFORM	landing force operational reserve material
DOA	day(s) of ammunition	LMCC	logistic movement control center
DOD	Department of Defense	LOGAIS	logistics automated information system
DODD	Department of Defense directive		
DODI	Department of Defense instruction	MAGTF	Marine air-ground task force
DODIC	Department of Defense identification code	MALS	Marine aviation logistics squadron
DON	Department of the Navy	MARCORSYSCOM	Marine Corps Systems Command
EPA	Environmental Protection Agency	MARFOR	Marine Corps forces
ESQD	explosive safety quantity distance	MCCDC	Marine Corps Combat Development Command
FARP	forward arming and refueling point	MCO	Marine Corps order
FASP	field ammunition supply point	MCPP	Marine Corps Planning Process
ft	foot/feet		

MCWP	Marine Corps warfighting publication	PM Ammo.....	Program Manager for Ammunition
MEB	Marine expeditionary brigade	POD	port of debarkation
MEF	Marine expeditionary force	POE.....	port of embarkation
MEU	Marine expeditionary unit	QA.....	quality assurance
MLA	mission load allowance	QE.....	quality evaluation
MLC	Marine logistics command	R3	redeployment, reconstitution, and regeneration
MLG	Marine logistics group	RCRA	Resource Conservation and Recovery Act
mm	millimeter	RFID.....	radio frequency identification
MOS	military occupational specialty	RRF.....	Ready Reserve Force
MPF	maritime prepositioning force	RSOI.....	reception, staging, onward movement, and integration
MPS	maritime prepositioning ships	S-3.....	operations staff officer
MR	Munitions Rule	S-4.....	logistics staff officer
MROC.....	Marine Requirements Oversight Council	SDDC	Military Surface Deployment and Distribution Command
MRP	munitions requirements process	SMCA.....	single manager for conventional ammunition
MSC	Military Sealift Command	SOP.....	standing operating procedure
MUREP.....	munitions report	TECOM	Training and Education Command
MWSS.....	Marine wing support squadron	TMR	total munitions requirement
NAVELSF	Naval Expeditionary Logistics Support Force	T/M/S	type, model, and/or series
NAVSEASYSKOM	Naval Sea Systems Command	TPFDD	time-phased force and deployment data
NAVSEA OP	Naval Sea Systems Command ordnance publication	TSA.....	theater storage area
NAVSUP	Naval Supply Systems Command (publication)	TTR.....	training and testing requirement
NAVSUPSYSCOM	Naval Supply Systems Command (organization)	UNP	universal need process
NCHB	Navy cargo-handling battalion	UNS	universal need statement
NEW.....	net explosive weight	US.....	United States
NNOR.....	nonnuclear ordnance requirement	USTRANSCOM.....	United States Transportation Command
NOLSC	Naval Operational Logistics Support Center	WRMR	war reserve materiel requirement
NOLSC AMMO...	Naval Operational Logistics Support Center Ammunition	WRMSF	war reserve materiel stocks force-held
OCONUS	outside the continental United States	WRMSI...	war reserve materiel stocks in-stores
OIS	Ordnance Information System		
OPNAVINST	Office of the Chief of Naval Operations instruction		
PEO.....	program executive office		
PEO Ammo.....	Program Executive Office, Ammunition (Army)		

SECTION II. TERMS AND DEFINITIONS

ammunition—See munition.

ammunition supply point—An area designated to receive, store, reconfigure, and issue Class V material. Also called **ASP**. (MCRP 5-12C)

aviation combat element—The core element of a Marine air-ground task force (MAGTF) that is task-organized to conduct aviation operations. The aviation combat element (ACE) provides all or a portion of the six functions of Marine aviation necessary to accomplish the MAGTF's mission. These functions are antiair warfare, offensive air support, assault support, electronic warfare, air reconnaissance, and control of aircraft and missiles. The ACE is usually composed of an aviation unit headquarters and various other aviation units or their detachments. It can vary in size from a small aviation detachment of specifically required aircraft to one or more Marine aircraft wings. In a joint or multinational environment, the ACE may contain other Service or multinational forces assigned or attached to the MAGTF. The ACE itself is not a formal command. Also called **ACE**. (MCRP 5-12C)

civil reserve air fleet—A program in which the Department of Defense contracts for the services of specific aircraft, owned by a US entity or citizen, during national emergencies and defense-oriented situations when expanded civil augmentation of military airlift activity is required. These aircraft are allocated, in accordance with Department of Defense requirements, to segments, according to their capabilities, such as international long range and short range cargo and passenger sections, national (domestic and Alaskan sections) and aeromedical evacuation and other segments as may be mutually agreed upon by the Department of Defense and the Department of Transportation. (JP 1-02)

Class v—Ammunition of all types, which includes, but is not limited to, chemical, radiological, special weapons, bombs, explosives, mines, detonators, pyrotechnics, missiles, rockets, propellants, and fuzes. (Proposed for inclusion in the next edition of MCRP 5-12C.)

combatant commander—A commander of one of the unified or specified combatant commands established by the President. Also called **CCDR**. (JP 1-02)

combat load—The minimum mission-essential equipment, as determined by the commander responsible for carrying out the mission, required for soldiers to fight and survive immediate combat operations. (Proposed for inclusion in the next edition of MCRP 5-12C)

combat logistics force—A force that includes both active Navy ships and those operated by the Military Sealift Command within the naval fleet auxiliary force that carry a broad range of stores, including fuel, food, repair parts, ammunition, and other essential materiel to keep naval forces operating at sea for extended periods. (Proposed for inclusion in the next edition of MCRP 5-12C.)

combat planning factor—Factor to be used during initial planning for combat operations that reflect the anticipated expenditure of ground ammunition over designated time periods of combat operations.

forward arming and refueling point—A temporary facility—organized, equipped, and deployed by an aviation commander, and normally located in the main battle area closer to the area where operations are being conducted than the aviation unit's combat service area—to provide fuel and ammunition necessary for the employment of aviation maneuver units in combat. The forward

arming and refueling point permits combat aircraft to rapidly refuel and rearm simultaneously. Also called **FARP**. (JP 1-02)

Global Combat Support System-Joint—The primary information technology application used to provide automation support to the joint logistician. Also called **GCSS-J**. (JP 1-02)

Global Command and Control System—A deployable command and control system supporting forces for joint and multinational operations across the range of military operations with compatible, interoperable, and integrated communications systems. Also called **GCCS**. (JP 1-02)

inventory control point—An organizational unit or activity within a Department of Defense supply system that is assigned the primary responsibility for the materiel management of a group of items either for a particular Service or for the Defense Department as a whole. Materiel inventory management includes cataloging direction, requirements computation, procurement direction, distribution management, disposal direction and, generally, rebuild direction. Also called **ICP**. (JP 1-02)

Marine air-ground task force—The Marine Corps' principal organization for all missions across the range of military operations, composed of forces task-organized under a single commander capable of responding rapidly to a contingency anywhere in the world. The types of forces in the Marine air-ground task force (MAGTF) are functionally grouped into four core elements: a command element, an aviation combat element, a ground combat element, and a logistics combat element. The four core elements are categories of forces, not formal commands. The basic structure of the MAGTF never varies, though the number, size, and type of Marine Corps units comprising each of its four elements will always be mission dependent. The flexibility of the organizational structure allows for one or more subordinate MAGTFs to be assigned. In a joint or

multinational environment, other Service or multinational forces may be assigned or attached. Also called **MAGTF**. (MCRP 5-12C)

Marine logistics group—The logistics combat element (LCE) of the Marine expeditionary force (MEF). It is a permanently organized command tasked with providing combat service support beyond the organic capabilities of supported units of the MEF. The Marine logistics group is normally structured with direct and general support units, which are organized to support a MEF possessing one Marine division and one Marine aircraft wing. The Marine logistics group may also provide smaller task-organized LCEs to support Marine air-ground task forces smaller than a MEF. Also called **MLG**. (MCRP 5-12C)

movement planning—The art and science of selecting the forces and equipment to be moved, and marshalled to arrive at their respective planned ports of embarkation.

munition—A complete device charged with explosives, propellants, pyrotechnics, initiating composition, or nuclear, biological, or chemical material for use in military operations, including demolitions. Certain suitably modified munitions can be used for training, ceremonial, or nonoperational purposes. Also called ammunition. (Note: In common usage, "munitions" [plural] can be military weapons, ammunition, and equipment.) (JP 1-02)

ordnance—Explosives, chemicals, pyrotechnics, and similar stores, e.g., bombs, guns and ammunition, flares, smoke, or napalm. (JP 1-02)

war reserve materiel requirement—That portion of the war materiel requirement required to be on hand on D-day. This level consists of the war materiel requirement less the sum of the peacetime assets assumed to be available on D-day and the war materiel procurement capability. (Proposed for inclusion in the next edition of MCRP 5-12C)

REFERENCES AND RELATED PUBLICATIONS

United States Code

Title 49 Code of Federal Regulations

Office of the Secretary of Defense

Military Standard (MIL-STD)

129P Standard Practice, Military Marking for Shipment and Storage

Department of Defense Instruction (DODI)

3000.4 DOD Munitions Requirements Process (DOD MRP)

Department of Defense Directive (DODD)

4140.1-R DOD Supply Chain Materiel Management Regulation

6055.9E Explosives Safety Management and the DOD Explosives Safety Board

5100.76-M Physical Security of Sensitive Conventional Arms, Ammunition, and
Explosives

Defense Transportation Regulation (DTR)

4500.9-R Part II, Cargo Movement

Department of Defense Standard

6055.9-STD DOD Ammunition and Explosives Safety Standards

Chairman of the Joint Chiefs of Staff Manual (CJCSMs)

3122.02C Joint Operation Planning and Execution System (JOPES)

3150.14B Joint Reporting Structure—Logistics

Joint Publication (JP)

1 Doctrine for the Armed Forces of the United States

North Atlantic Treaty Organization Standardization Agreements (STANAG)

2459 Procedures for Ammunition Interchangeability

2232 Catalog of Ammunition with National Approval for Specified Inter-
changeability-AOP-6 Volume II

2928 Catalog of Ammunition Held by Nations that Satisfy Interchangeability
Criteria of Form, Fit and Function Only-AOP-6 Volume I

Army Publications

Field Manual (FM)

4-30.13 Ammunition Handbook: Tactics, Techniques, and Procedures for
Munitions Handlers

Technical Bulletin (TB)

9-1300-278 Guidelines for Safe Response to Handling, Storage, and Transportation
Accidents Involving Army Tank Munitions or Armor Which Contain
Depleted Uranium

Technical Manual (TM)

43-0002-33 Destruction of Conventional Ammunition and Improved Conventional
Munitions (ICM) to Prevent Enemy Use

Marine Corps PublicationsMarine Corps Orders (MCO)

4340.1A Reporting of Missing, Lost, Stolen, or Recovered (MLSR) Government
Property (with change 1)
5100.29A Marine Corps Safety Program
8000.7 Marine Corps Capabilities-Based Munitions Requirements (MCCBMR)
Process for Ground Ammunition (Class V[W])
8023.3A Personnel Qualification and Certification Program for Class V Ammu-
nition and Explosives
8025.1D Class V(W) Malfunction and Defect Reporting (with change 1)
P4030.19H Preparing Hazardous Materials for Military Air Shipments
P4400.39H War Reserve Materiel Policy Manual (with change 1)
P5090.2A Environmental Compliance and Protection Manual
P8020.10B Marine Corps Ammunition and Explosives Safety Policy

Marine Corps Doctrine Publications (MCDP)

4 Logistics

Marine Corps Warfighting Publications (MCWPs)

3-2 Aviation Operations
3-21.2 Aviation Logistics
4-1 Logistics Operations
4-11 Tactical Level Logistics
4-11.7 MAGTF Supply Operations
5-1 Marine Corps Planning Process
5-11.1 MAGTF Aviation Planning

Marine Corps Reference Publication (MCRP)

4-11.3E Unit Embarkation Handbook

Navy PublicationsChief of Naval Operations Instruction (OPNAVINSTs)

4850.1 Conventional Ordnance Assessment and Maintenance Requirements
Policy
5100.8G Navy Safety and Occupational Safety and Health Program DTD 21 Jun
2007

5102.1D	Navy & Marine Corps Mishap and Safety Investigation, Reporting and Record Keeping Manual
5530.13C	Department of the Navy Physical Security Instruction for Conventional Arms, Ammunition, and Explosives (AA&E)
5530.14A	Department of the Navy Physical Security and Loss Prevention
8010.12F	Naval Conventional Ordnance Operational Logistics Policy
8011.9A	Non-Nuclear Ordnance Requirements (NNOR) Process
8020.14	Department of the Navy Explosives Safety Policy Manual
8026.2	Navy Munitions Disposition Policy

Secretary of the Navy Instruction (SECNAVINST)

5100.10J	Department of the Navy Policy for Safety, Mishap Prevention, Occupational Health and Fire Protection Programs
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Naval Supply Systems Command (NAVSUPs)

P-724	Conventional Ordnance Stockpile Management Policies and Procedures
P-805	Navy and Marine Corps Conventional Ammunition Sentencing Receipt, Segregation, Storage and Issue Sentencing
P-807	Navy and Marine Corps Conventional Ammunition Sentencing–Fleet Sentencing, Volume 3

Naval Sea Systems Command Publications (NAVSEAINST)

8020.18	Transportation Accident Prevention and Emergency Response Involving Conventional DOD Munitions and Explosives
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Naval Sea Systems Manual (NAVSEA Manual)

SW020-AC-SAF-010	Transportation and Storage Data for Ammunition, Explosives and Related Hazardous Materials, Volume 1
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Naval Sea Systems Command Ordnance Publication (NAVSEA OP)

4	Ammunition Afloat
5	Volume 1, Ammunition and Explosives Safety Ashore
5	Volume 3, Ammunition and Explosives Safety Ashore, Advanced Base

Naval Air Systems Command Manual (NAVAIR)

00-80T-103	NATOPS Conventional Weapons Handling Procedures Manual Ashore
00-80T-109	Aircraft Refueling Naval Air Training and Operating Procedures Standardization Manual

Miscellaneous

Naval Air Systems Command (NAVAIR) Manual 00-80T-103, *NATOPS Conventional Weapons Handling Procedures Manual Ashore*

Naval Air Systems Command Manual 00-80T-109, *Aircraft Refueling Naval Air Training and Operating Procedures Standardization Manual*