TSA SECURITY EQUIPMENT
CONFIGURATION MANAGEMENT
AND
QUALITY ASSURANCE
PROGRAMS

June 27, 2007
INTRODUCTION

Moderator: Mr. John Tye

Lifecycle Quality Assurance and Configuration Management Functional Lead for the Transportation Security Administration (TSA) Office of Security Technology (OST) Lifecycle Support Division
AGENDA

- History (Where we were……..)
- System Overview (Where we are ……..)
- ISO 9001:2000
- Configuration Management & Quality Assurance (Where we’re going ……..)
- Open Discussion
Rapid deployment of Airport Security Equipment after 9/11 was done without the luxury of structured System Acquisition processes. As a result, much of the requirements analysis and related support analyses are being done after the fact.

Changing TSA’s Life Cycle Support focus from one of Deployment to one of sustainment has been filled with challenges.

Configuration Control, Requirements Management, Cost, Schedule, and Performance challenges are linked to the original need for difficult deployment.

Both the TSA and OEM’s have struggled with numerous, seemingly ordinary logistics issues that would have evolved out of a normal acquisition process.
“The mission of TSA OST is to protect the security of the multi-modal transportation system through test support and deployment support of explosive detection and other security technology. TSA OST is committed to complying with requirements and to continually improve the effectiveness of the Quality Management System.”
OBJECTIVE

“TSA OST will continue to develop our staff, physical infrastructure, and partnerships to enhance worldwide recognition for leadership in multi-modal transportation security, support development and testing, and by being a key partner in determining the application of multi-modal transportation security technology. Our technical ability will continue to improve the security of the transportation community.”
TSA SYSTEM OVERVIEW

Transportation Security Administration
Explosives Detection System (EDS) Equipment

GE CTX 2500

GE CTX 5500

GE CTX 9000

L-3 Examiner

Reveal CT80

AN6400
EDS Equipment Function

- **CTX 2500**, TSA certified, supports the latest in Computed Tomography (CT) explosives detection with compact design. Ideal for small lobby installation.

- **CTX 5500**, TSA-certified explosives detection system (EDS) with high throughput capabilities. Includes Threat Image Projection, Advanced User Interface & Dynamic Screening. For use in busy terminals

- **CTX 9000**, TSA-certified. Recognized for high performance and throughput rate, represents the latest in CTX technology, designed to integrate with baggage handling systems (BHS)

- **L-3 6000 Examiner**, A multi-slice CT Explosives Detection System (EDS), TSA-certified, measures and assesses material properties, maximizing automated explosives detection while minimizing false alarm rates, 3-D analysis of luggage and 2-D projected viewing angles
EDS Equipment Function

- Reveal CT-80, TSA-certified utilized proprietary Dual Energy, Computed Tomography (CT) architecture. Small size, low false alarm rate, fully multiplexed architecture, TIP/FDRS ready

- AN6400, Explosive Assessment Computed Tomography (EXACT) multi slice system provides advanced explosive section capabilities at high throughput rates while minimizing false positives. The EXACT rotates at 90 RPM and incorporates a high efficiency, multi-row, solid X-ray detector array coupled with a wide-dynamic range data acquisition system. Projection, axial, and 3-D images of the contents of the bag are provided for analysis.
Enhanced Metal Detector (EMD) Equipment

- CEIA 02PN20
- Garett 6500i
- Metorex 200HD
CEIA 02PN20, Enhanced Walk through Metal Detector for inspection of people in transit designed for all applications with stringent aesthetic and functional requirements. The technology used provides compliance with the strictest Security Requirements for EMD's, still maintaining a height flow rate.

Garrett PD6500i, Designed for maximum patron throughput without compromising safety. Multi-dimensional coil design, circuitry with advanced Digital Signal Processor (DSP) technology locates small hard-to-find floor level weapons.

Metor 200 HD, High Discrimination walk-through metal detector is designed especially for demanding, high traffic screening applications. It detects weapons efficiently and discriminations against harmless personal objects.
Whole Body Imager (WBI) Equipment

AS&E SmartCheck
Rapiscan Secure 1000
L-3 ProVision
AS&E SmartCheck, AS&E's SmartCheck system is an effective way to screen for contraband and threats hidden under a person's clothing. It simultaneously detects both metallic and non-metallic objects and other hidden threats and contraband. The optional privacy filter uses software algorithm to address privacy concerns.

Rapiscan Secure 1000, This people screening system produces high resolution images that enable the operator to easily identify concealed threat and contraband items. The system is ideal for high security environments because both organic and inorganic materials are apparent in the image.

L-3 ProVision, Body Screening System screens people for concealed threats – without exposure to harmful electromagnetic radiation. ProVision’s active millimeter wave imaging technology penetrates clothing and packing to reveal and pinpoint hidden weapons, explosives, drugs, and other contraband.
Explosive Trace Detection (ETD) Equipment

- GE Itemiser 3
- GE Itemiser FX
- Smiths Ionscan 400B
- Smiths Ionscan 500DT
- Smiths Document Scanner
- Thermo EGIS Defender
- Thermo EGIS II
ETD Equipment Function

- **GE Itemizer 3**, Trace detector that simultaneously detects positive and negative ions, allowing explosives and narcotics detection in a single sample.
- **GE Itemizer FX**, Same as Itemizer 3 but with a finger sampling desorber.
- **Smiths Ionscan 400B**, explosive and narcotic trace detector that provides the capability of detecting trace amounts of more than 40 explosive or narcotics substances in a quick 8 seconds.
- **Smiths Ionscan 500DT**, uses dual IMS detectors for simultaneous detection of explosives & narcotics. The system is capable of detecting and identifying explosives and narcotics during single analysis, which gives the ability to detect a broader range of substances while maintaining the high sensitivity and specificity.
ETD Equipment Function

- Smiths Document Scanner, provides the capability of detecting trace amounts of more than 40 explosive and narcotic substances in a quick 8 second analysis. The color coded display presents instrument status information and results to the operator in an easy to understand fashion. If detection is made, the specific explosive or narcotic is identified on the display.

- Thermo EGIS Defender, this Explosives Trace Detection (ETD) system combines forensic technology and performance with rugged packaging, portability, reliability and ease of use. The highly flexible dual technology platform provides low false positives for high inspection throughput. The system is based on High-Speed Gas Chromatography (HSGC) technology combined with Differential Ion Mobility Spectrometry.
ETD Equipment Function

- Thermo EGIS II, portable, bench-top explosives detection systems that detects plastic, commercial, and military explosives as well as ICAO taggants without using a radioactive source
Explosive Trace Portal (ETP) Equipment

GE Entry Scan3

Smiths Sentinel II
ETP Equipment Function

- GE Entry Scan 3, a high-throughput, non-intrusive walk-through portal that enables rapid detection of both explosives and narcotics. Microscopic traces of C4, nitroglycerin, PETN, RDX, Semtex and TNT can be detected and identified.

- Smiths Sentinel II, contraband Detection Portal designed specifically for screening people for trace amounts of explosives and drugs. Ideal for high throughout applications. Trace amounts of more that 40 explosives and drugs are detected and identified in seconds. Uses Ion Mobility Spectrometry Technology.
Auto-EDS Equipment

Analogic Cobra
Auto-EDS Equipment Function

- Analogic Cobra, reduced size Carry-On Baggage Real-Time Assessment (COBRA) Explosive & Weapons Detection System is a high performance, easy-to-operate detection system that integrates advanced Computed Tomography (CT) scanning and image interpretation software to screen carry-on/in baggage parcels for potential threats. It generates a 3-D image of all objects, gathers data in one pass and analyzes entire contents of bag automatically.
Tip Ready X-Ray (TRX) Equipment

Linescan 110 II
Smiths 6040i
Rapiscan 520B
Rapiscan 522B
TRX Equipment Function

- Linescan 110 II, Designed to meet the requirements of TSA's TIP Ready X-ray hand-carry baggage inspection system. Incorporates advanced technology with dual energy detectors, high-energy integrated X-ray source and latest electronics. Patented Touch Pad Operator Console with Configurable Operator Interface, Threat Image Projection, Operator Assist and Image Archive Advanced Software.

- Smiths 6040i, Compact X-ray inspection system ideal for cabin baggage and other small items. High-end processor technology, high-speed digital signal transmission, Hi-MAT advanced material classification, 24 Bit real time image processing.

- Rapiscan 520B, Pentium computer technology. Offers Crystal Clear as standard feature and may be optionally equipped with Operator Training Program, manual Image Archive and Enhanced Performance X-ray (EPX).
TRX Equipment Function

- Rapiscan 522B, this dual energy X-ray system provides automatic color coding of materials with different atomic numbers so screeners can identify objects within the parcel. Offers larger tunnel opening to accommodate larger luggage and parcels which cannot be screened by other X-ray systems.
TSA AREAS REGISTERED TO ISO 9001:2000

Quality Assurance

Quality Office

CM
### ISO DOCUMENTED PROCEDURES & FORMS

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<thead>
<tr>
<th>Registered Areas</th>
<th>Procedures/Forms</th>
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<td>Quality Office/All Reg. Areas</td>
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<td>Quality Assurance</td>
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<td><strong>TOTAL ISO PROCEDURES</strong></td>
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ISO 9001:2000 CERTIFICATE

Certificate of Registration

Department of Homeland Security

has demonstrated that its Quality Management System is in compliance with:

ISO 9001:2000

The following scope of registration applies:

The Certification of the Core Processes of Quality Office, Quality Assurance and Configuration Management.

Registered Site: Transportation Security Administration, Office of Security Technology
Building 51, Atlantic City Intl. Airport, New Jersey
08455-0001 USA

Certificate Number: CEI70012607
C/O 043
April 17, 2002
April 12, 2005
April 11, 2008

Transportation Security Administration,
Office of Security Technology
201 South 10th Street
Alexandria, Virginia
22302 USA

Certificate Number: CEI70012607
1054 / 43
June 1, 2007
June 1, 2007
May 31, 2010

Wendy J. Timbrell
President of QMI

7/9/2007
CONFIGURATION MANAGEMENT & QUALITY ASSURANCE
PROGRAM PHASING & MILESTONES

OST CM and QA Responsibilities

Legend:
- ITR - Initial Technical Review
- ASR - Alternative System Review
- SDR - Systems Design Review
- QAP - Quality Assurance Plan
- SQAP - SW Quality Assurance Plan
- SSR - System Software Review
- PDR - Preliminary Design Review
- CDR - Critical Design Review
- TRR - Test Readiness Review
- DPBCA - Developmental Product Baseline Configuration Audit
- QPL - Qualified Product List
- PCA - Physical Configuration Audit
- PCR - Physical Configuration Review
- QVC - Quality Version Control
- ISR - In Service Review

Legend:
- Technical Baseline
- Preferred System Concept
- Functional Baseline
- SW Allocated Baseline
- Allocated Baseline
- Functional Baseline
- Product Baseline
- SW Product Baseline
- Field Verifications, Surveys & Audits

Legend:
- ITR - Initial Technical Review
- ASR - Alternative System Review
- SDR - Systems Design Review
- QAP - Quality Assurance Plan
- SQAP - SW Quality Assurance Plan
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PROGRAM INITIATION PHASE

Prepare the Contract Deliverable Package to include:

• Statement of Work (SOW)
• Contract Deliverable Requirements List (CDRLs)
• Data Item Descriptions (DIDs)

Note: CM and QA contract language is now available to be incorporated into all solicitation packages
CONCEPT AND TECHNOLOGY DEVELOPMENT PHASE

• Review and Comment on QA and CM Plan
• Review Configuration Item List (CIL)
• Review and Process Developmental Deviations
• Review Configuration Status Accounting (CSA) Report
• Review Configuration Audit Plan
• Review Configuration Audit Summary Report (CASR)
• Review Master Test Plan
• Review Factory Acceptance Test Plan, Procedures, and Report
• Review Site Acceptance Test Plan, Procedures, and Report
CAPABILITY DEVELOPMENT AND DEMONSTRATION

• Verify Certified Pre-Production System CIs at TSL
• Monitor First Article Test and Evaluation (FAT&E)
• Monitor Regression Testing
• Monitor Preliminary Design Review (PDR)
• Monitor Critical Design Review (CDR)
• Conduct Certified Product Baseline Configuration Audit (CPBCA)
• Conduct Developmental Product Baseline Configuration Audit (DPBCA)
• Conduct Functional Configuration Audit (FCA)
• Conduct Physical Configuration Audit (PCA)
• Develop Product Baseline
• Conduct Operational Utility Evaluation (OUE)
PRODUCTION AND DEPLOYMENT PHASE

• Review First Article Test and Evaluation Plan, Procedures, and Report
• Review Factory Acceptance Test Plan, Procedures, and Report
• Review Site Acceptance Test Plan, Procedures, and Report
• Review and Comment on QA Plan
• Review and Comment on CM Plan
• Review and Process Engineering Change Proposals (ECPs),
  Request for Deviations (RFDs), and Request for Waivers (RFWs)
• Update Product Baseline
• Conduct Functional Configuration Audit
• Conduct Physical Configuration Audit
OPERATIONS AND SUPPORT PHASE

• Conduct Baseline Integrity Audit
• Process change notices and maintain product baselines

END OF LIFE PHASE

• Ensure proper documentation received for disposal of HAZMAT CIs
CHANGE NOTICE YEARLY TREND ANALYSIS

Engineering Change Notices

ECNs Received

Year

- Deviations
- Developmental Deviations
- Waivers
- ECPs

2004 2005 2006 2007

75 46 3 42 3 147 61 16 11 40 1 60

0 50 100 150 200 250 300
## CHANGE NOTICES BY MODEL
9/1/06 – 3/31/07

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<th>Deviations/Waivers</th>
<th>Developmental Deviations</th>
<th>ECPs</th>
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**Due to Multiple models on ECNs the total does not match previous slides.**

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<th>Total ECNs</th>
<th>% of Total ECNs</th>
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## TOP 5 MODELS GENERATING ECNs

**9/1/06 – 3/31/07**

<table>
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<tr>
<th>Model</th>
<th>Deviations/Waivers</th>
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QA OEM PROGRAM

• Evaluate OEM Quality Assurance Plans
• Developed procedures to expand scope of ISO 9001:2000 to OST Activities
• Validate and verify OEM quality control programs
• Perform quality in process reviews on site
• Review and track quality related outputs of CDRLs and DIDs
QA OEM PROGRAM ACTIVITIES

• Conduct audits of assigned functional areas at OEM facilities
• Collect data as required
• Conduct interviews of the auditee as assigned
• Document the results of all auditing, research, and data collection
• Prepare draft observations and corrective action reports;
• Prepare draft final reports
• Track all corrective action reports written during QMS audits; and ensure that follow-up audits include assessments of the OEMs’ corrective actions taken in response to previously written corrective action reports
DATABASE CONSOLIDATION PROJECT

- OST CM Team coordinates and consolidates existing CM data
- Data encompasses lifecycle CM activities
- Database backed web front end records all change notice information
- Enables technical review and approval of change notices and facilitates CM activities independent of geographical location
- Improves information sharing as well as operational efficiency and effectiveness
CI LIST VERIFICATION TASK

- Ensure accuracy of CI data for TSE
- Provide confidence in operational product baselines across 14 legacy systems
- Needed to conduct IV&V, update operation and maintenance instructions, provide training, and acquire spare and repair parts
- Provide an accurate baseline from which to evaluate OEM proposed changes
- To be utilized for improved database functionality allowing automatic baseline updates at the time of change notice approval
- Guarantee accurate data for other LCSB and TSA initiatives (i.e. SEAR, STIP)
- Provide system baselines to the logistics organization on a real time basis
STANDARD CONTRACT LANGUAGE

- Developed SOW, CDRLs and DIDs to aid OEMs in submitting correct deliverables to TSA for CM and QA
- Ensures integrity of system documentation
- Legal ramifications
- Provides a basis for quality checkpoints
- Provides ability to evaluate deliverables against an established standard
The OST Contract Documentation Requirements for CM and QA is a single integrated package (requiring no external references) that contains:

- **Statement of Work (SOW)** - Specific supplier tasking
- **SOW Appendix** - Additional CM Guidance for supplier
- **Contract Data Requirements List (CDRL)** - Specifies contract deliverables and their distribution
- **Data Item Descriptions (DIDs) instructions** - Provides preparation instructions and formats for data items
- **Self-referencing CD with all documents**
STATEMENT OF WORK APPENDIX A
ADDITIONAL CM GUIDANCE

- Configuration Items (CI)
- Configuration Change Management (Configuration Control)
- Request for Development Deviation (DEP)
- Engineering Change Proposal (ECP)
- Request for Deviation (RFD)
- Request for Waiver (RFW)
- Configuration Status Accounting (CSA)
- Configuration Audit
- Acronyms

- Definitions
CM/QA CDRLs/DIDs

- A010/CTO-QA-001 – Quality System Plan
- A036 – Quality Assurance Surveillance Plan (QASP)
- A011/CTO-CM-001 – Configuration Management Plan (CMP)
- A012/CTO-CM-002 – Configuration Item List (CIL)
- A013/CTO-CM-003 – Request for Developmental Deviation (DEP)
- A014/CTO-CM-004 – Engineering Change Proposal (ECP)
- A015/CTO-CM-005 – Request for Deviation (RFD)
- A016/CTO-CM-006 – Request for Waiver (RFW)
- A017/CTO-CM-007 – Configuration Status Accounting Report (CASR)
- A018/CTO-CM-008 – Configuration Audit Plan (CAP)
- A019/CTO-CM-009 – Configuration Audit Summary Report (CASI)
- PMP/CTO-CM-999 – CM/QA Portions of Program Management Plan (PMP PM 001)
SUPPLIER CONTRACT CM GUIDANCE

SOURCES

SOW – MIL-HDBK-61A/MIL-STD-973, and EIA-649A

SOW Appendix – MIL-HDBK-61A

CDRLs – MIL-HDBK-61A/MIL-STD-973

DIDs – MIL-HDBK-61A/MIL-STD-973

DID Attachments - MIL-HDBK-61A/MIL-STD-973 and ISO
• MIL-STD-973 – Configuration Management. This standard has been cancelled; but it may still be cited on some older contracts. MIL-STD-973 contained definitive instructions for supplier.

• ANSI/EIA 649A – National Consensus Standard for Configuration Management. This standard replaced MIL-STD-973, which prescribed definitive CM tasks for supplier.

• MIL-HDBK-61A – Configuration Management, is the primary reference for accomplishing Configuration Management.

• ISO 10007 – Quality Management – Guidelines for Configuration Management