MDA QS Efficiencies

March 2012
Mike Wadzinski
QS Deputy Director BMDS and Chief Engineer
Missile Defense Agency
Agenda

- MDA Overview
- Do More With Less
- Effective QSMA Requirements
- Trust But Verify
- Partnerships
- Summary
- Questions
MDA System Configuration
End Of FY 2010 → End Of FY 2011

C2BMC = Command, Control And Battle Management Network
EWR = Early Warning Radar
OPIR = Overhead Persistent Infrared

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Do More With Less

- QS Matrix Organizational Structure
- MDA Assurance Representatives (MARs)
- Training
- Alignment of Goals
Do More With Less

• QS Matrix Organizational Structure
  – BMDS support
    • Develops requirements, SOPs, guidelines, tools
    • Provides subject matter expertise to programs as needed
    • Leads/supports failure review boards, pedigree reviews, audits, production readiness reviews etc
    • Interacts with other agencies
  – Program support
    • Provides dedicated personnel to each program
    • Sufficient personnel for each major product/assembly
QS Organization

QS Leadership

Deputy Director – BMDS Operations & Chief Engineer (HSV)

Business Operations (HSV)

Business & Financial Management (DOB/HSV)

BMDS

QSI (MARs) (COS)
QSC (COS) MDIOC
QSA Mission Assurance
QSS (HSV) Safety
QSQ (HSV) Quality
QSH (HSV) SOH

Program Element

SNQ (HSV)
THQ (HSV)
IPQ (HSV)
GMQ (HSV)
BCQ (HSV)
ABQ (Dahlgren)

TCQ (HSV)
DVQ (HSV)
DVMQ (HSV)
PTSS

Approved by Tom Bulk, Director, 31 January 2012
Do More With Less

• MDA Assurance Representatives (MARs)
  – 23 MARs at critical suppliers/locations
  – Support multiple programs
  – Monitor/Assess resident facility/suppliers and other facilities/suppliers in their region
  – Perform periodic
    • Facility checklist assessments
    • Facility reports
    • Lessons learned/advisories
  – Provide weekly reports to programs they support and to QS for consolidation and reporting to MDA Director
MDA Assurance Representative
Field Locations

- ATK, Magna, UT
- Northrop Grumman, SLC, UT
- Aerojet, Sacramento, CA
- Lockheed, Sunnyvale, CA
- Pac Sci, Hollister, CA
- Vandenberg AFB, Lompoc, CA
- Orbital, Chandler, AZ
- Pac Sci, Chandler, AZ
- Honeywell, Chandler, AZ
- Ft. Greely, AK
- Kodiak Facility, AK
- MDIOC, Colorado Springs, CO
- Eagle Picher, Joplin, MO
- Raytheon, Woburn, MA
- Raytheon, Andover, MA
- Lockheed, Moorestown, NJ
- ATK, Elkton, MD
- Dahlgren, VA (QS Rep)
- Boeing, Raytheon Huntsville, AL
- Lockheed, Courtland, AL
- Coleman, Orlando, FL
- Sea Based X-Band Radar (SBX)
- Honeywell, Clearwater, FL
- PMRF, Camden, AK
- Raytheon, Tucson, AZ
- Raytheon, Camden, AK
- Ft. Greely, AK
- Kodiak Facility, AK
Do More With Less

• Training/Cross Training
  – Encourage training to develop and maintain necessary skills
  – Develop training plans/guides
  – Establish training requirements
    • MDA requires minimum 80 hours of training for each employee
    • MDA requires Individual Development Plan for each employee
  – Develop/take advantage of in-house training capability
Do More With Less

• Align goals for suppliers with goals for employees
  – Common goals encourage teamwork and cooperation
  – Common metrics for Award Fee Criteria and Employee Performance Objectives/Appraisals
Requirements

• Establish effective QSMA requirements
  – MDA Assurance Provisions (MAP)
  – MDA Parts, Materials, and Processes Mission Assurance Plan (PMAP)
• Lead/support the development of new requirements as required
  – Counterfeit Parts
  – Supply Chain Risk Management (SCRM)
• Establish standard and effective QSMA RFP and SOW requirements
  – Quality Clause
• Establish standard, effective and challenging Award Fee Criteria
MDA Assurance Provisions (MAP)

- Developed as Comprehensive Set of MDA Best Practices for QSMA
- Application Based on Mission and Safety Critical Product/Services
- Applicable at the BMDS Element/Prime Developer Level
- MDA Direction for Inclusion in All New Contract SOWs
- Developers Required to Flow-Down Applicable QSMA Requirements to Critical Subcontractors/Suppliers

MAP is the Standard QSMA Requirements for MDA

MAP Provisions
1. Management
2. Design
3. Software
4. Reviews
5. RM&A
6. Parts & Materials
7. Test Programs
8. T&ME
9. Interface
10. CM
11. NCM
12. Fabrication & Quality
13. Supplier Management
14. Safety
MDA Parts, Materials, & Processes (PMP) Requirements

- Applicable Documents (References)
  - Government and Commercial
- PMP Management Structure, Roles, and Responsibilities
  - PMP Board, PMP Control Board, PMAG
- PMP Requirement examples:
  - EEE Parts Quality Requirements
  - Materials
  - Corrosion Prevention
  - Prohibited Parts and Materials
  - PMP Quality Requirements
  - PMP Procurement Management
  - Radiation Hardness Assurance
  - PMP Qualification
  - COTS Management
  - Failure Analysis
  - Environmental Controls
  - Handling
  - Preservation, Packaging and Storage

- Appendices
  - EEE Derating
  - PEM
  - COTS
  - Radiation Hardness
  - Prohibited PMP
  - PMAP Data Items
  - Corrosion Prevention

The Missile Defense Agency has a Director Approved Parts and Materials Requirements Document with Stringent Part Procurement Requirements

MDA Contractor and Industry Acceptance Achieved!
MDA Counterfeit Part Risk Reduction

- MDA established counterfeit part risk reduction requirements in 2006 via the Parts, Materials, and Processes Mission Assurance Plan (PMAP).
- Policy Memorandum #50 Part Procurement Requirements was issued in June 2009 to further address the counterfeit part risk.
- MDA has performed site audits of contractors and Independent Distributors
  – 51 assessments of Independent Distributors
  – 11 assessments of Contractors
- Over the last year and a half, MDA/QS provided direct support to the SASC sub-committee during their investigation of the counterfeit part risk and development of new requirements.
- MDA/QS is a regular participant and chairs a sub-committee within the OSD Anti-Counterfeit Working Group.
- MDA/QS has published 11 Advisories related to counterfeit parts/products.
Quality Clause

- Quality escape clause was applied on the GMD DSC Contract HQ0147-12-C-0004 which was awarded on 30 December 2011; Quality Clause H-DSC-15
- Applicable only to CLINS 0313 and 0605
- Contracting Officer may make an equitable reduction in any performance incentive fee paid under the contract if it is determined that a quality escape occurred that was caused solely by the Contractor (or its subcontractors), and it resulted in harm to the Government.
- Accounts for quality issues that have had significant impact to the Program beyond the objective measures in the incentive fee plan.
Award Fee Requirements

• Fee only awarded for performance above satisfactory
• Stretch goals
  – Reduction in defects per unit
  – Reduction in Average time to determine root cause and corrective action for non-conformances (NCs)
  – Reduction in number of repeat NCs
  – Reduction in number of out-of-phase quality escapes
  – Performance to POAM for critical test incidents
  – Performance of planned audits and closeout of findings
  – Performance of planned first article inspections, hardware acceptance reviews and closeout of findings
Trust But Verify

• Verify flowdown of appropriate requirements to all safety and mission critical suppliers
  – Verify contracts to suppliers
• Verify performance of contractual requirements
  – Audits
    • No-knock
    • Formalized process
    • Skilled auditor team
    • Standardized checklists
    • Limited time to respond to and close out findings
    • Verify corrective action
### QS Audits Performed in FY11

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mission Assurance Manufacturing Discipline</td>
<td>3</td>
</tr>
<tr>
<td>Mission Focused Audits: Quality Discipline</td>
<td>1</td>
</tr>
<tr>
<td>Mission Assurance Audit</td>
<td>1</td>
</tr>
<tr>
<td>Pedigree Reviews</td>
<td>9</td>
</tr>
<tr>
<td>Facility Checklist Assessments: Manufacturing Readiness</td>
<td>44</td>
</tr>
<tr>
<td>Facility Checklist Assessments: Mission Assurance Rep</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>82</td>
</tr>
</tbody>
</table>

This is 3 times the number of assessments/audits than previous years.
### Facility Assessment Scoring Example

#### Assessor Answers Y or N

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ELECTRICAL, ELECTRONIC and ELECTROMECHANICAL (EEE) PARTS</th>
<th>Y, N, or N/A</th>
<th>Contract or Internal Req (Y or N)?</th>
<th>Deduction Factor (preassigned)</th>
<th>Defic. Score (DS)</th>
<th>Observ. Score (OS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>Does the supplier have documented policies &amp; procedures in place, both in-house and for their subcontracts, to notify their customer or MDA before parts are purchased from an Independent Distributor, and is there objective evidence they are effectively implemented? (Reference MDA Policy Memo #50)</td>
<td>Y</td>
<td>21</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td><strong>Objective Evidence:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>302</td>
<td>Does the supplier perform Lot sample decapsulation and die verification when parts are procured from Independent Distributors?</td>
<td>N</td>
<td>Y</td>
<td>21</td>
<td>21</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td><strong>Objective Evidence: Not present in test report ABC 123</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>310</td>
<td>Are electronic piece parts and materials labeled with lot date codes and/or are they serialized (e.g. hybrids, ASIC, etc.)?</td>
<td>N</td>
<td>N</td>
<td>11</td>
<td>0.00</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td><strong>Objective Evidence: Part HBS 9989 has no LDC/SN</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**SCORE = 79**

If this answer is “No”, Assessor answers next column

Green = 90-100, Yellow = 80-89, Red < 80

Colors are shown on Report Cards

These scores auto calculate.
Facility Checklist Assessment Display

Example

<table>
<thead>
<tr>
<th>Training &amp; Op Certs</th>
<th>EEE Parts</th>
<th>Software</th>
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DEFICIENCY SCORE

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OBSERVATION SCORE

Assessor’s Signature:

Comments and Signature from Company Assessed:

Comments and Signature from MDA Program Office:
Partnerships

• Other Agencies
  – DCMA
    • Overarching Memorandum of Agreement
    • Supplier Assessment Database
  – DOE
    • Potential common audits
    • Potential common certified suppliers
  – NASA, NRO
    • MOAs
      – Information sharing
      – Potential common audits
Quality/Mission Assurance Forums

US Space Enterprise Strategic Guidance Flow

Government Facilitated Forums

Defense Space Council
chair: DoD EA for Space 3 star level membership

Space Industrial Base Council
chairs: SECAF & D/NRO
Sponsors: MDA; NASA; NRO; SMC
SPAWAR; DCMA; SAF/SP

Legend
- Government Customers Lead
- Government Customers and Oversight Lead
- Government Customers and Industry Lead
- Industry Lead
- Existing Communication
- Future Communication
Line thickness indicates communication bandwidth

Aerospace Facilitated

Mission Assurance Summit
Leadership: MDA; NASA; NRO; SMC
additional Government participation
Primary Focus: Mission Assurance Strategic direction

MAIW
Industry, FFRDC / UARC, and Government
Primary Focus: Actionable Mission Assurance Products

SQIC
Industry and Aerospace Stakeholders: MDA; NASA; NRO; SMC; DCMA; SAF/SP; DNI;
Primary Focus: Quality and MA

SSC
Industry and Aerospace Stakeholders: MDA; NASA; NRO; SMC; SAF/SP
SPAWAR Primary Focus: Industrial Base

Joint Meetin
SSC Industry and Aerospace Stakeholders: MDA; NASA; NRO; SMC; SAF/SP
SPAWAR Primary Focus: Industrial Base

MA Roadmap Work Products
- Collaboratively developed actionable products to address a critical Mission Assurance challenge
- Recommended solutions to key Mission Assurance challenges
- Sponsors working groups to examine MA challenges and recommends solutions
- Address Space Supplier issues and recommend actionable solutions
- Identify factors that negatively impact the supplier community, especially regarding interaction with the prime
- Collaborate on government unique responsibilities relative to Mission Assurance
- Create synergy between acquisition center’s MA programs

Member of Multiple External Government and Industry MA Forums Sharing Lessons Learned, Best Practices, and Component Advisories/Alerts
Summary

- MDA QS is doing/has done the following to establish an effective and efficient QSMA program
  - Implemented an effective matrix organization
  - Established an effective standard set of Quality, Safety, and Mission Assurance (QSMA) Requirements
  - Leading DoD effort to establish requirements to mitigate risk of counterfeit parts in DoD Supply Chain
  - Established standard contract requirements
  - Established a process and database to track its supply chain
  - Established an effective audit process to verify supplier compliance with MDA QSMA requirements
  - Working with Government and Industry partners
Questions?