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<th>Report Documentation Page</th>
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<td>FEB 2010</td>
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<tr>
<td>PEO Missiles and Space Overview Briefing</td>
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<td>5a. CONTRACT NUMBER</td>
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<td>Program Executive Office Missiles and Space, Redstone Arsenal, AL, 35898</td>
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Standard Form 298 (Rev. 8-98)
Prepared by ANSI Std Z39-18
MISSION:
Provide an Unprecedented Level of Service and Support for the Systems for Which We are Responsible

What We Do:
• Centralized Management for All Army Tactical and Air Defense Missile Programs and Selected Army Space Programs
• Full Life-Cycle Management of Assigned Systems
• World Wide Support of Fielded Weapon Systems
• Key Link Between the User and Tech Base

What We Manage:
• Nine Project Offices
• Thirteen ACAT I, Two ACAT II and Eight ACAT III Programs
• Two International Cooperative Development Programs

Government Workforce
~1,000
(Civilian and Military)

Managing
FY10
Appropriated Funding > $3.0B
FMS > $13B, 35 Countries

To
Support the Warfighter

PEO MS Vision: Be the Trusted Worldwide Provider of Missile Systems for Our Allies and U.S. Warfighters with Uncompromising Service in Development, Procurement, and Sustainment

Any Warfighter – Anywhere – All the Time...
Any Warfighter – Anywhere – All the Time...

PEO MS Organizational Structure

- PEO Missiles and Space
  - DPEO-Aviation & Maneuver (Provisional)
    - JAMS
    - PFRMS
    - Space
  - Chief of Staff
    - Chief Engineer
      - Assistant Chief of Staff
    - APEO FMS
      - APEO Bus Mgt
    - APEO Log
      - APEO IM / IA
      - APEO SPO
  - DPEO-Integration (Provisional)
    - IAMD
    - CMDS
    - NLOS-LS
    - LTPO

Matrix Support
Any Warfighter – Anywhere – All the Time…
PEO Missiles and Space Portfolio

Joint Attack Munition Systems (JAMS)
- Hydra-70
- Joint Air-to-Ground Missile (JAGM)
- Hellfire
- Viper Strike

Close Combat Weapon Systems (CCWS)
- Javelin
- Tube-Launched, Optically-Tracker, Wire-Guided (TOW)
- Improved Bradley Acquisition Subsystem (ITAS)
- Improved Target Acquisition System (ITAS)

Non-Line of Sight Launch System (NLOS)
- Container Launch Unit (CLU)
- Precision Attack Missile (PAM)
- Integrated Air and Missile Defense (IAMD)

Cruise Missile Defense Systems (CMDS)
- Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System (JLENS)
- Surface Launched Medium Range Air-to-Air Missile System (SLAMRAAM)
- Sentinel
- Stinger
- Avenger

Precision Fires Rocket and Missiles Systems (PFRMS)
- Guided Multiple Launch Rocket Systems (GMLRS)
- Army Tactical Missile Systems (ATACMS)
- High Mobility Artillery Rocket System (HIMARS)

Upper Tier Project Office (UTPO)

Responsive Space Operations (RSO)

Lower Tier Project Office (LTPO)
- PATRIOT
- PATRIOT Advanced Capability (PAC-3)
- Medium Extended Air Defense System (MEADS)
- Joint Tactical Ground Station (JTAGS)
- Missile Segment Enhancement (MSE)
## The Cost of Corrosion

<table>
<thead>
<tr>
<th>Rank (Out of 20)</th>
<th>LIN</th>
<th>Nomenclature</th>
<th>Maintenance Cost ($M)</th>
<th>Corrosion Cost ($M)</th>
<th>% of Maintenance Cost Due to Corrosion</th>
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<tr>
<td>13</td>
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<td>Launcher Tubular Guided Missile</td>
<td>$55.7</td>
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<td>16</td>
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<td>PATRIOT: PAC-3 Launcher Station</td>
<td>$150.3</td>
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<td>Launcher; guided missile aircraft</td>
<td>$41.9</td>
<td>$6.4</td>
<td>15.3%</td>
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**• OSD Cost of Corrosion Study related to Army Aviation and Missiles**

- **OSD Sponsored AMCOM Cost of Corrosion Study** estimated that AMCOM spent approximately $1.6 Billion in 2005 for corrosion maintenance actions where more maintenance dollars were spent on Corrective maintenance versus Preventive Maintenance on weapon systems.

- **The Cost of Maintenance Due to Corrosion for Missile Systems Ranged from Roughly 5% to 20% of Total Cost of Maintenance for the Missile Systems Studied**

* The Annual Cost of Corrosion for Army Aviation and Missile Equipment, Report No SKT50T3
The Other Costs of Corrosion

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<td>$247.9</td>
<td>$25.4</td>
<td>10.2%</td>
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- The Cost Of Corrosion Is Not Only Monetary
  - Increased Equipment Down Time
  - Reduced Readiness Levels
  - Reduction Or Loss Of Mission Capability
  - Potential Impact To The Warfighter
• PEO MS Participates In RDECOM Corrosion IPT With PEO/User Representatives And Corrosion Experts

• PEO MS Membership/Representation In The AMCOM Corrosion Prevention And Control (CPC) IPT

• PEO MS Project Offices, With The Support Of AMRDEC Corrosion Office, Are Working To Identify, Develop And Implement Technologies To Prevent And Minimize The Effects of Corrosion And The Resulting Maintenance Costs

• Where Feasible, Leverage Technologies And Funding From/Across Both Aviation And Missile Systems
Ongoing CPC Initiatives
- PATRIOT Cable Connector Boot -

- AMCOM Corrosion Program Office Worked With The LTPO To Develop A Dem/Val Of A Commercial Off The Shelf (COTS) Connector Boot Widely Used In Commercial Aviation Aircraft Electronic Cable Assemblies.

- Project Focus Was To Demonstrate The Technology In A Field Situation To Reduce/Eliminate Corrosion Of Cable Connectors And Validate Military Application Of The Technology.

Corrosive Effects of “Open Revetment” Storage

PATRIOT Missile Canisters
Dem/Val Project Initiated By AMCOM Corrosion Program Office To Cover Missile Canisters Stored In Open Revetment Munitions Storage Area.

- Missile Canisters Were Sustaining Severe Corrosion Damage.
- Desiccant Replacement Intervals Were As Frequent As Every 4 Weeks.

Demonstration Of 2 Commercial Off The Shelf (COTS) Materials - Into Its Second Year Employing An Improved Second Generation Cover Material

- Laminated Fabric/Material That Is Air Permeable, Waterproof; And Contains A Hydrophobic Polytetrafluoroethylene (Eptfe) Membrane.
- Waterproof Material, Containing A Moisture Absorbent Liner And A Vapor Corrosive Inhibitor.

Corrosivity Sensors Used In The Project Revealed The Rate Of Corrosion Under Both Covers To Be About The Same As In A Typical Indoor Office.

Desiccant Change Experience For Canisters Under Both Covers Has Been As Long As 6 Months (Because The Missiles Are Rotated Out Of Munitions Storage Every 6 Months).
Ongoing CPC Initiatives
- PATRIOT Canister Covers -

**PATRIOT Missile Canister Covers Project**

- Waterproof
- Corrosion Vapor Inhibitor
- Moisture Absorbent Liner

**Less Frequent Desiccant Changes**

With Cover  7 months & **counting**

Without Cover  5 to 8 Weeks

Mar 2009

2 Canister Cover, < $ 5 K ea

2 Canisters w/Missiles - $ 11+ M
Ongoing CPC Initiatives
- PATRIOT Radar Dehumidification -

• Dem/Val Project Initiated By AMCOM Corrosion Program Office To Dehumidify The Interior Of The PATRIOT Radar Sets In Highly Corrosive Locations.

• The Project Has Integrated A Commercial Off The Shelf DH Technology To Continuously Purge The Radar With Very Dry Air.

• Project Is In Its Second Year.

• Although Corrosivity Sensor Data Reflects Considerably Lower Corrosion Rates Inside The Radar As Compared To The Outside Ambient, Maintenance Records Will Be Analyzed At The End Of The Project To Determine Extent Of The Project’s DH Success.
Ongoing CPC Initiatives
- PATRIOT Radar Dehumidification -

Dehumidifying PATRIOT Radar Sets

$13K Dehumidification Unit
vs.
$38M PATRIOT Radar Set

Feb 2009
AMCOM Corrosion Program Office Develops Unit Level CPC Training Materials, Guide Books, SOPs And CD-ROMs.

Training Teams Are Periodically Sent World-wide To Train The War Fighters Who Are The First Line Of Defense In Combating Corrosion.

The Training Usually Consists Of A Half Day Of Classroom Refresher/Familiarization Training Followed By An Afternoon Of Hands-on Training Using The Latest CPC Technologies.
Ongoing CPC Initiatives
- Other Items -

- CPC Plans for PFRMS, CMDS, SLAMRAAM, and JLENS
- M299 Launcher CPC Plan/Redesign/Reset Support
- HELLFIRE Warhead Coating Evaluation
- HIMARS Corrosion Assessment and CPC Training
- MLRS Corrosion Assessment at Ft. Sill
Potential CPC Project Areas

• New Materials
• Protective Coatings
• Non-Destructive Inspection Techniques
• Sensors and Predictive Tools
  - Where Possible, Leverage Efforts Conducted under the Condition Based Maintenance (CBM) Program
  - Current CBM Efforts Include Health Monitoring Units (HMU) To Monitor Humidity, Temperature, etc., For Use In Determining Weapon System “Health”
The Acquisition Side of Corrosion Prevention and Control

• Ensure That PEO MS Acquisition Documentation Addresses CPC Requirements
  
  - Per DFAR/DODI 5000.02, CPC Plan Must Be Addressed In Acquisition Plan/Strategy Documentation

  - EXAMPLE:
      - Establishes JAMS Program Corrosion Prevention Advisory Team (CPAT) And Assigns Responsibilities
      - Provides Guidance On Establishing CPC Baseline Requirements
      - Assigns Corrosion Prevention Responsibilities
      - Establishes Contractor CPC Responsibilities
      - Other Guidance/Responsibilities
Path Forward

• Continue Coordination With AMRDEC Corrosion Office And AMCOM CPC IPT

• Ensure That PEO MS Systems Address CPC In Acquisition Documentation

• Leverage Technology And Lessons Learned Across The PEO MS Family Of Systems As Well As AMCOM/LCMC Organizations