U.S. ARMY AVIATION AND MISSILE LIFE CYCLE MANAGEMENT COMMAND

AVIATION AND MISSILE CORROSION PREVENTION AND CONTROL

Presented by:
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AMCOM Corrosion Program
Deputy Program Manager

AMCOM CORROSION PROGRAM OFFICE
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<th>b. ABSTRACT</th>
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Standard Form 298 (Rev. 8-98)  
Proscribed by ANSI Std Z39-18
“When Corrosion Wins The Mission Ends”
DoD Corrosion Organization

PDUSD
Acquisition, Technology, and Logistics
DoD Corrosion Executive

DUSD, Logistics and Material Readiness

Director, Defense Research and Engineering
DUSD, Science and Technology

Special Assistant for Corrosion Control and Oversight

DUSD, Installations and Environment

DUSD, A&T
Director, Defense Systems

IPT
DoD Corrosion Prevention and Control IPT

Policy and Requirements

Impact, Metrics and Sustainment

Facilities

Training and Doctrine

Specifications/Standards and Product Qualification

Science and Technology

Communication and Outreach

IPT member representatives

- OSD
- Joint Staff/J-4
- Army
- Navy
- Air Force

- Marine Corps
- Army Corps of Engineers
- Joint Council for Aging Aircraft
- National Aeronautics and Space Administration
- United States Coast Guard
AMCOM Corrosion Program

- *Corrosion*: The deterioration of a material or its properties due to a reaction of that material with its chemical environment.

- OSD Cost of Corrosion Methodology: Top Down and Bottom Up Approach

- OSD Study Results: AMCOM Corrosion Maintenance Cost for FY05 totaled $1.6 Billion.
**AMCOM Corrosion Program**

<table>
<thead>
<tr>
<th>Rank</th>
<th>LIN</th>
<th>Aviation or Missile</th>
<th>General Nomenclature</th>
<th>Maintenance cost ($ thousands)</th>
<th>Corrosion cost ($ thousands)</th>
<th>Corrosion Percentage</th>
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<tbody>
<tr>
<td>1</td>
<td>H30517</td>
<td>Aviation</td>
<td>HELICOPTER CARGO TRANSPORT: CH-47D</td>
<td>1,782,218</td>
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<td>2</td>
<td>K32293</td>
<td>Aviation</td>
<td>HELICOPTER UTILITY: UH-60A</td>
<td>1,706,795</td>
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<td>3</td>
<td>H32361</td>
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<td>4</td>
<td>H48918</td>
<td>Aviation</td>
<td>HELICOPTER ATTACK: AH-64D</td>
<td>859,836</td>
<td>171,449</td>
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<tr>
<td>5</td>
<td>A21633</td>
<td>Aviation</td>
<td>HELICOPTER AERIAL SCOUT: OH-58D</td>
<td>678,103</td>
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<td>6</td>
<td>ENGT-700</td>
<td>Aviation</td>
<td>T-700 ENGINE</td>
<td>170,816</td>
<td>57,385</td>
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<tr>
<td>7</td>
<td>P11779</td>
<td>Missile</td>
<td>PATRIOT: PAC-3 LAUNCHER STATION</td>
<td>150,307</td>
<td>46,372</td>
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<td>8</td>
<td>H31110</td>
<td>Aviation</td>
<td>HELICOPTER OBSERVATION: OH-58C</td>
<td>123,450</td>
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<td>9</td>
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<td>HELICOPTER ATTACK: AH-64A</td>
<td>195,257</td>
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<td>10</td>
<td>ENGT-701</td>
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<td>T-701 ENGINE</td>
<td>92,870</td>
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<td>11</td>
<td>ENGT-701D</td>
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<td>T-701D ENGINE</td>
<td>54,995</td>
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<td>12</td>
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<td>Aviation</td>
<td>HELICOPTER ATTACK: TOW MISSLE AH-1F</td>
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<td>13</td>
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<td>HELICOPTER UTILITY: UH-1V</td>
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<td>14</td>
<td>L45740</td>
<td>Missile</td>
<td>LAUNCHER TUBULAR GUIDED MISSILE: (TOW)</td>
<td>55,682</td>
<td>10,821</td>
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<td>ENGT-703</td>
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<td>16</td>
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<td>HELICOPTER UTILITY: UH-1H</td>
<td>26,908</td>
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<td>17</td>
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<td>Aviation</td>
<td>HELICOPTER CARGO: MH-47E</td>
<td>24,056</td>
<td>7,822</td>
<td>32.5%</td>
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<td>18</td>
<td>ENGT-701C</td>
<td>Aviation</td>
<td>T-701C ENGINE</td>
<td>19,922</td>
<td>7,516</td>
<td>37.7%</td>
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<td>19</td>
<td>ENGT-63</td>
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<td>T-63 ENGINE</td>
<td>21,443</td>
<td>6,840</td>
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<td>20</td>
<td>L44830</td>
<td>Missile</td>
<td>LAUNCHER: GUIDED MISSILE AIRCRAFT</td>
<td>41,876</td>
<td>6,425</td>
<td>15.3%</td>
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</tbody>
</table>
AMCOM Corrosion Program
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The AMCOM CPC WIPT charter states its purpose is to maintain “an aggressive CPC effort to reduce the maintenance burden on our Soldiers, enhance safety, increase readiness and reduce the drain on our critical funds.”

Quote by:
JAMES R. MYLES
Major General, USA
Commanding
AMCOM Corrosion Program

Army Corrosion Executive

AMC

AMCOM

TACOM

CECOM

CPO

WIPT

AMCOM CPC WIPT Stakeholders:

AMCOM G-3
PEO Aviation
PEO Missile & Space
IMMC
Acquisition Center
AMRDEC
Depots
AMCOM Corrosion Program

Goals:

- **Provide Immediate Near-Term Solutions & Implementation**
  - Aviation Weapon Systems
  - Missile Weapon Systems

- **Impact Corrosion Cost at High Corrosion Cost Locations**

- **Provide Corrosion Prevention Assistance & Guidance**
  - Acquisition: CPC Plans, Corrosion Prevention Action Teams
  - Sustainment: Reset/Preset, Soldier CPC Training/Corrosion Repair Kits, CBM+

- **Dem/Val New Corrosion Prevention Technologies**
AMCOM Corrosion Program

FOCUS AREAS

– ACQUISITION

– SUSTAINMENT

– R & D
AMCOM Corrosion Program

- ACQUISITION
  - CPC Planing
  - Corrosion Prevention Action Teams (CPAT)
  - Design For CPC Based Upon Lessons Leaned
  - Implement New Technologies
AMCOM Corrosion Program

\section*{SUSTAINMENT}

- Corrosion Maintenance / Procedures (TM, SOP, etc.)
- CPC Training
- Application of NDI methods
- CPC Sustainment Technology (Corrosion Repair Kits, DH, CPC’s, Covers, etc.)
- Implementation of Demonstrated CPC Technologies
AMCOM Corrosion Program Projects
AMCOM Corrosion Program

- PATRIOT Missile Connector Covers
- Radar System and Other Cable Connectors are Corroding
- Migrated Technology Used in Commercial Aviation Applications
AMCOM Corrosion Program

Corrosion Preventive Compounds (CPC)

- New Improved CPCs
- SOP/TM Implementation
- Included in Corrosion Repair Kits/Unit Training
AMCOM Corrosion Program

NDI / ENGINEERING SUPPORT

• QDR / CSI Analysis
• RDEC Taskers
• SBIR Evaluation
• OEM Interface
• Advance Technology Review and Development
• Responsive SOF/ASAM Inspection Procedure Development
AMCOM Corrosion Program

– Research and Development
  • TECHNOLOGIES DEM/VAL
    – Identification of New Technologies
    – Dem / Val of New Technologies
    – Data Collection / Analyses to Implement Proven Technologies

Examples: Corrosion Sensors for CBM+, Detergents, Soil/Water Analyses, Environmental Effects
AMCOM Corrosion Program
CORROSIVITY SENSORS

- Outdoor Locations

- Inside Locations (Radars, ICC, Covers, etc.)
AMCOM Corrosion Program

Aircraft & Missile Protective Covers

- Vapor Transfer Properties (Eliminates Condensation)
- Patented Corrosion Preventive Material
- Custom Fitted for Components
AMCOM Corrosion Program
Aviation Technical Supply
Dehumidification Project

Extremely Humid & Corrosive Environment;
Stores $17M Unique High Value Parts

The Solution . . .

A $92K Commercial Off The Shelf Dehumidification Unit
AMCOM Corrosion Program

Dehumidification
AMCOM Corrosion Program

Failure Analysis

Cd Plated Bolts- Hydrogen Embrittlement
AMCOM Corrosion Program

Failure Analysis

Diodes – Galvanic Corrosion
AMCOM Corrosion Program

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