



# 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 OFFICE



# Report Documentation Page

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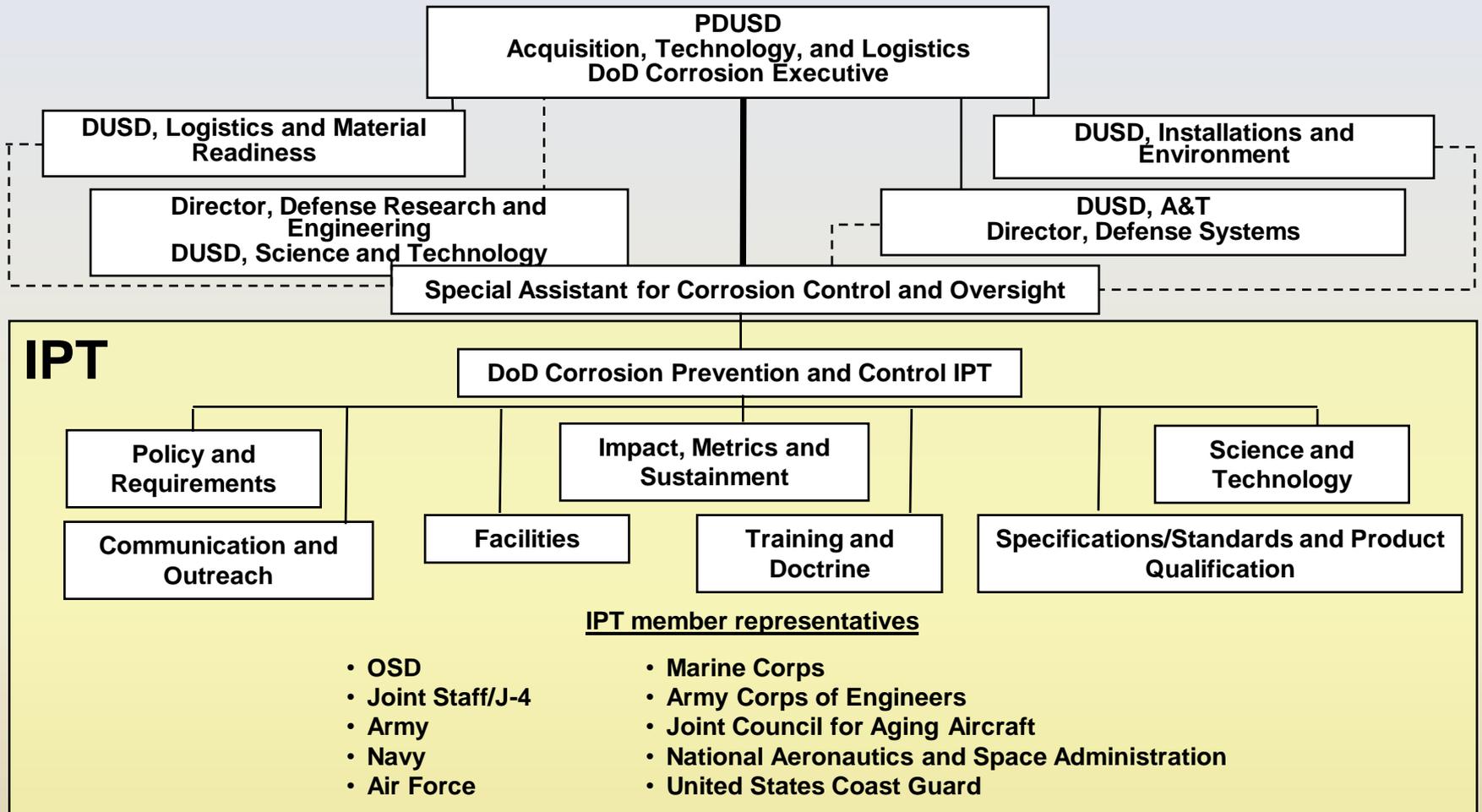


# AMCOM Corrosion Program

*"When  
Corrosion Wins  
The Mission  
Ends"*



# DoD Corrosion Organization





# 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

Rank	LIN	Aviation or Missile	General Nomenclature	Maintenance cost (\$ thousands)	Corrosion cost (\$ thousands)	Corrosion Percentage
1	H30517	Aviation	HELICOPTER CARGO TRANSPORT: CH-47D	1,782,218	352,009	19.8%
2	K32293	Aviation	HELICOPTER UTILITY: UH-60A	1,706,795	335,336	19.6%
3	H32361	Aviation	HELICOPTER UTILITY: UH-60L	1,630,640	243,037	14.9%
4	H48918	Aviation	HELICOPTER ATTACK: AH-64D	859,836	171,449	19.9%
5	A21633	Aviation	HELICOPTER AERIAL SCOUT: OH-58D	678,103	127,199	18.8%
6	ENGT-700	Aviation	T-700 ENGINE	170,816	57,385	33.6%
7	P11779	Missile	PATRIOT: PAC-3 LAUNCHER STATION	150,307	46,372	30.9%
8	H31110	Aviation	HELICOPTER OBSERVATION: OH-58C	123,450	38,767	31.4%
9	H28647	Aviation	HELICOPTER ATTACK: AH-64A	195,257	37,025	19.0%
10	ENGT-701	Aviation	T-701 ENGINE	92,870	24,142	26.0%
11	ENGT-701D	Aviation	T-701D ENGINE	54,995	21,350	38.8%
12	H44644	Aviation	HELICOPTER ATTACK: TOW MISSILE AH-1F	44,147	17,400	39.4%
13	H31872	Aviation	HELICOPTER UTILITY: UH-1V	43,548	13,778	31.6%
14	L45740	Missile	LAUNCHER TUBULAR GUIDED MISSILE: (TOW)	55,682	10,821	19.4%
15	ENGT-703	Aviation	T-703 ENGINE	30,420	9,704	31.9%
16	K31795	Aviation	HELICOPTER UTILITY: UH-1H	26,908	9,318	34.6%
17	H46150	Aviation	HELICOPTER CARGO: MH-47E	24,056	7,822	32.5%
18	ENGT-701C	Aviation	T-701C ENGINE	19,922	7,516	37.7%
19	ENGT-63	Aviation	T-63 ENGINE	21,443	6,840	31.9%
20	L44830	Missile	LAUNCHER: GUIDED MISSILE AIRCRAFT	41,876	6,425	15.3%



# AMCOM Corrosion Program

# CORROSION ISSUES



# AMCOM Corrosion Program





# AMCOM Corrosion Program





# AMCOM Corrosion Program





# AMCOM Corrosion Program





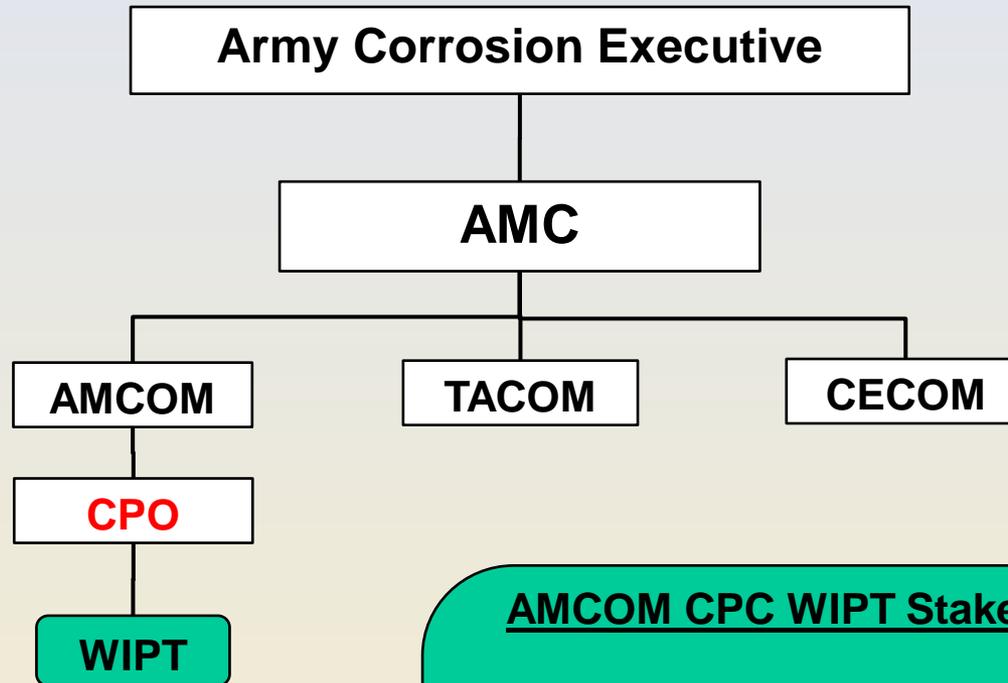
# AMCOM Corrosion Program

**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



## 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 Learned**
  - **Implement New Technologies**



# AMCOM Corrosion Program

## ■ 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



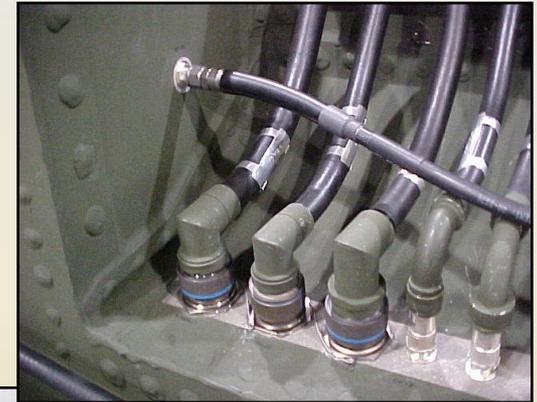
# AMCOM Corrosion Program Projects





# AMCOM Corrosion Program

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

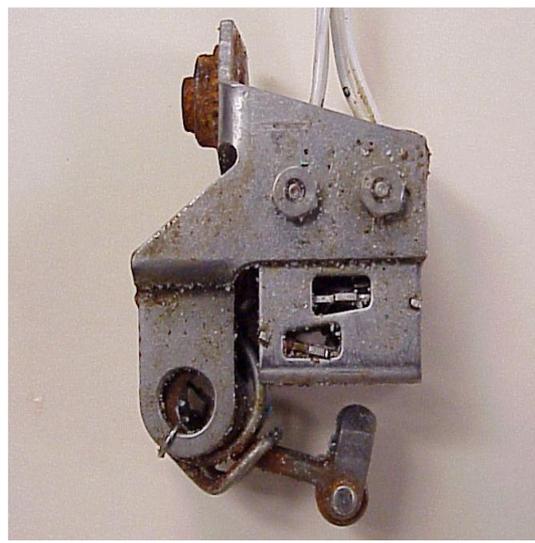




# AMCOM Corrosion Program

## Corrosion Preventive Compounds (CPC)

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



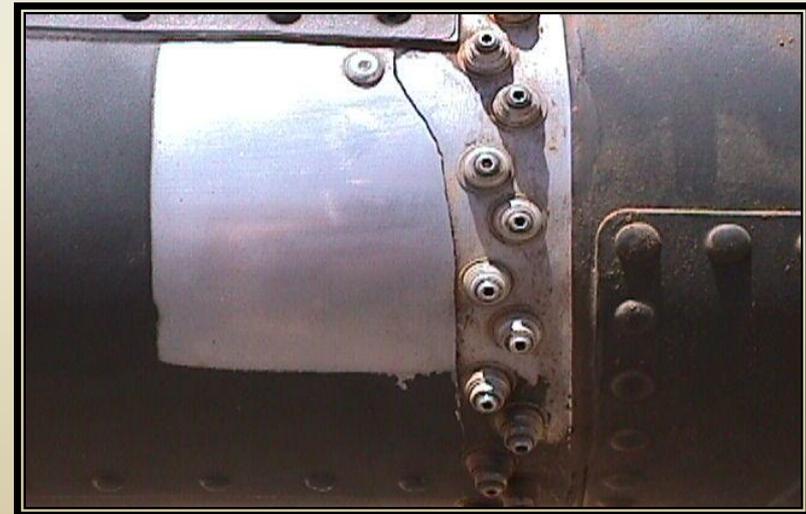
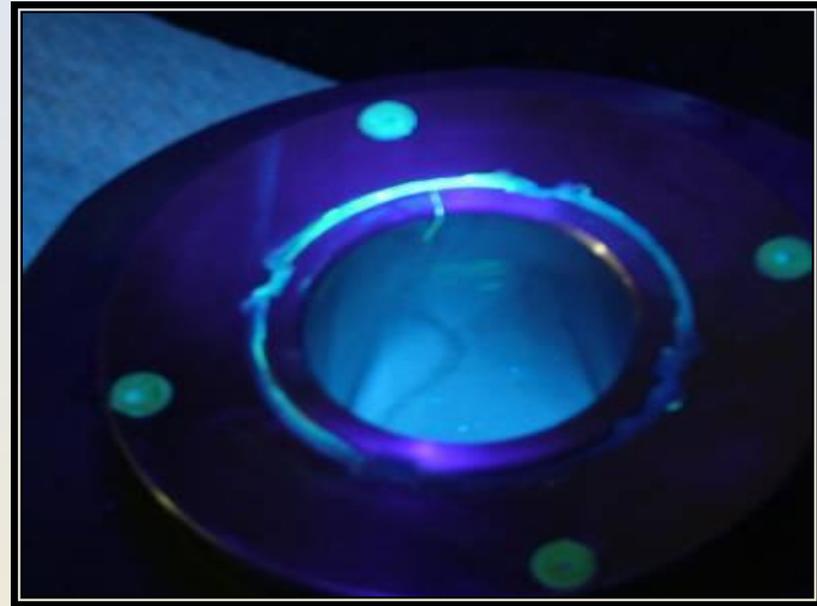


# AMCOM Corrosion Program



## 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

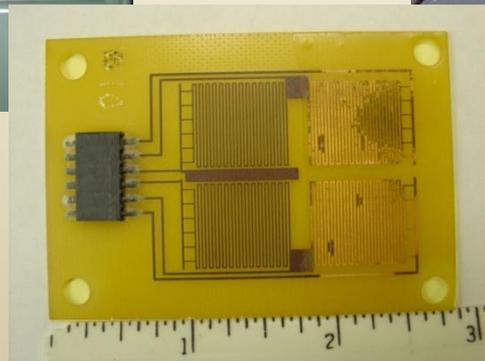
***Examples: Corrosion Sensors for CBM+, Detergents, Soil/Water Analyses, Environmental Effects***



# 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

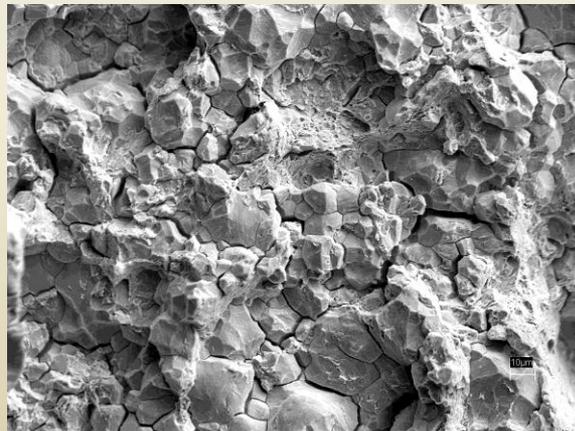


## Dehumidification



# AMCOM Corrosion Program

## Failure Analysis



**Cd Plated Bolts- Hydrogen Embrittlement**



# AMCOM Corrosion Program

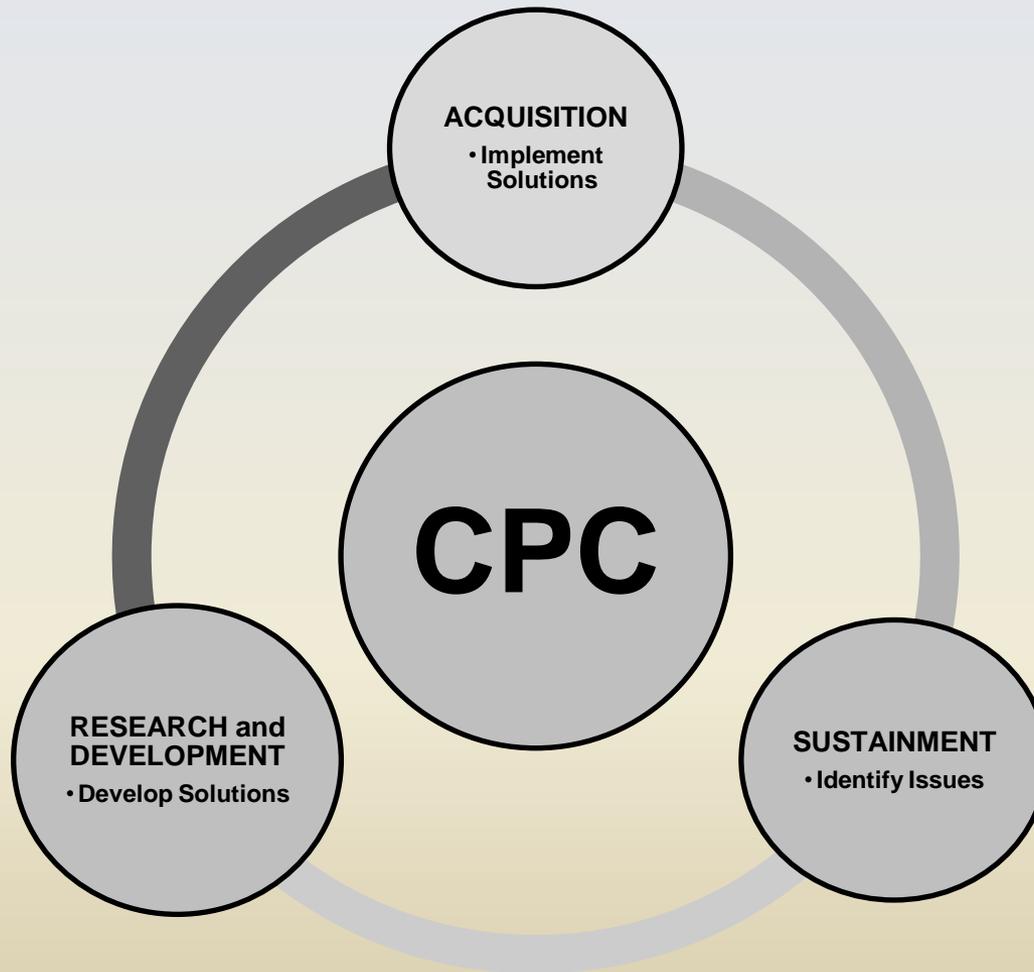
## Failure Analysis



**Diodes – Galvanic Corrosion**



# AMCOM Corrosion Program





# AMCOM Corrosion Program

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