Implementation of Rare Earth Primers and Pretreatments for Military Applications

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Report Documentation Page

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Chrome-Free Primer Success

- F-35 JSF Program – Lockheed, Northrop, BAE
  - F-15's, F-22's, Apache's, E3's, T-45 (3 weeks)

Photo Courtesy of: http://www.jsf.mil/gallery/

Total NC Systems Flying

- Spray Applied, Total Non-Cr Conversion Coating

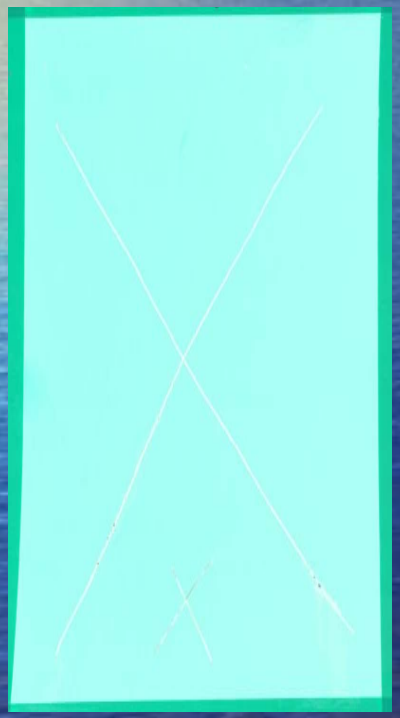
USAF
C-130

USAF F-15 Fleet

Royal Norwegian AF
Sea King Trial

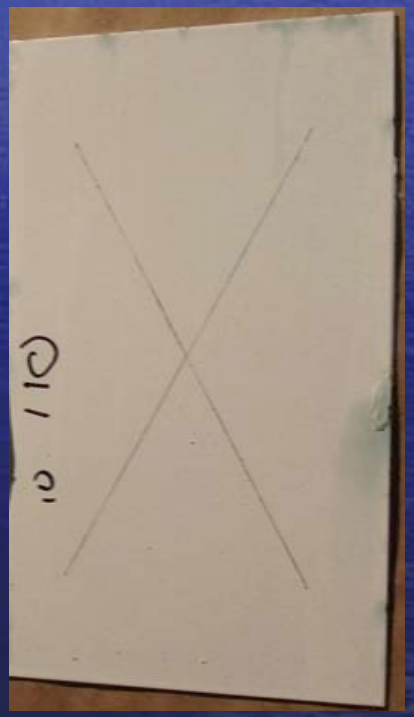
RE System Performance
Spirit's Data

- Performance of RECC Systems



RECC/093
2000 Hrs
Deft

RECC/093
1000+ Hrs
Spirit



RECC/NCP
2000 Hrs
Spirit

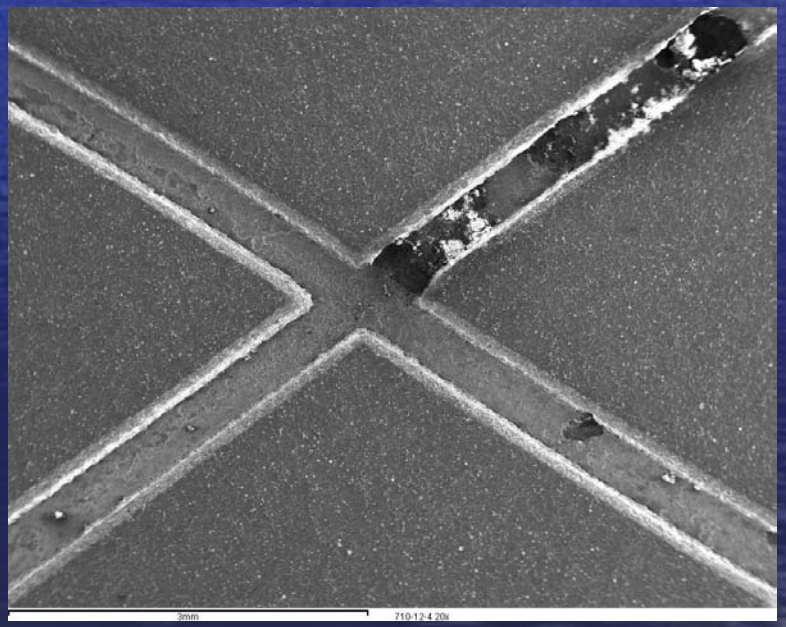
F-15 System Performance Battelle's Data

- System Testing
  - Comparison of N.S.S. to Beach Exposure

15 Months - Daytona

F-15 System

3000 N.S.S.

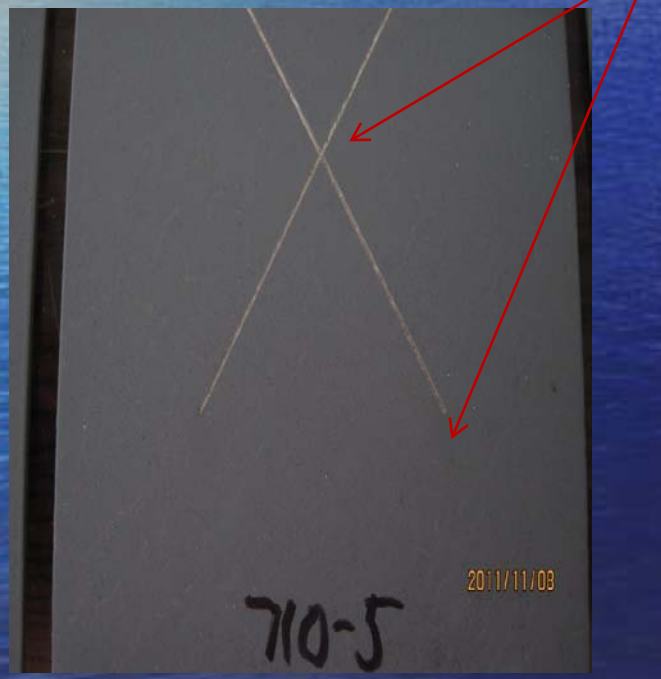


F-15 System

F-15 System Performance
Battelle's Data

- Comparison of NCr to RE Primer/APC – 15 Months Daytona

Visible Oxidation



Non Cr^{6+} System

No Visible Oxidation

F-15 System

F-15 System Performance
Lockheed's Data

- RECC 1015/3021/02GN093/99GY01

Exposed in 2008

- No Report of Change by LM During Exposure

Close-Up

Non-Cr System For F-15's

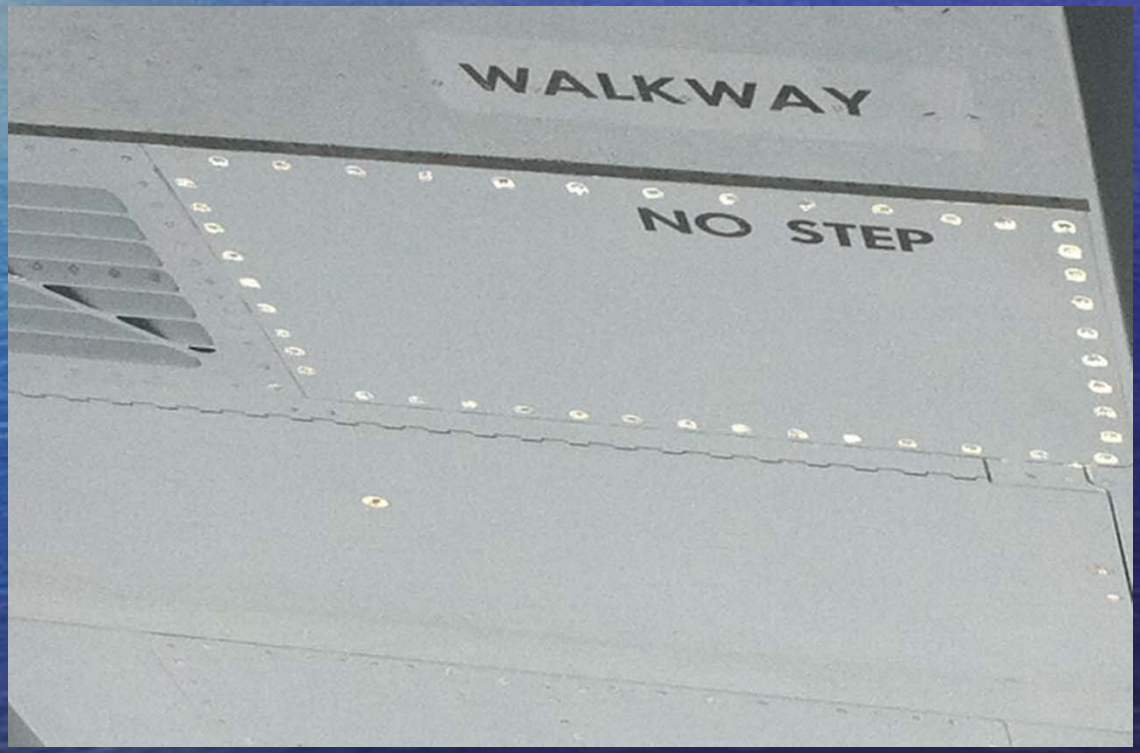
- Over 100 F-15's Treated
  - T.O. 1F -15A-23

Technical Information

RECC deposits darker in areas of unpassivated / exposed metal
(Areas of weakened passivation, rivets, abrasion, etc are conversion coated)
(Areas of previous passivation are reinforced for adhesion/max corrosion protection)

Benefits of Deft NC System

- Rivet Rash on Singapore F-15
  - Current Cr System



Benefits of Rare Earth NC System

- No Erosion on Inlet/Rivet Rash Resolved
  - NOANG

C-130 Applications

- Second of Three USAF C-130's

Photo Courtesy of Eric Morris

Deft RECC Application

- C-130 Robins AFB

Northrop Grumman Evaluation

Candidate 2 – 1001, 3030XD, 3050X

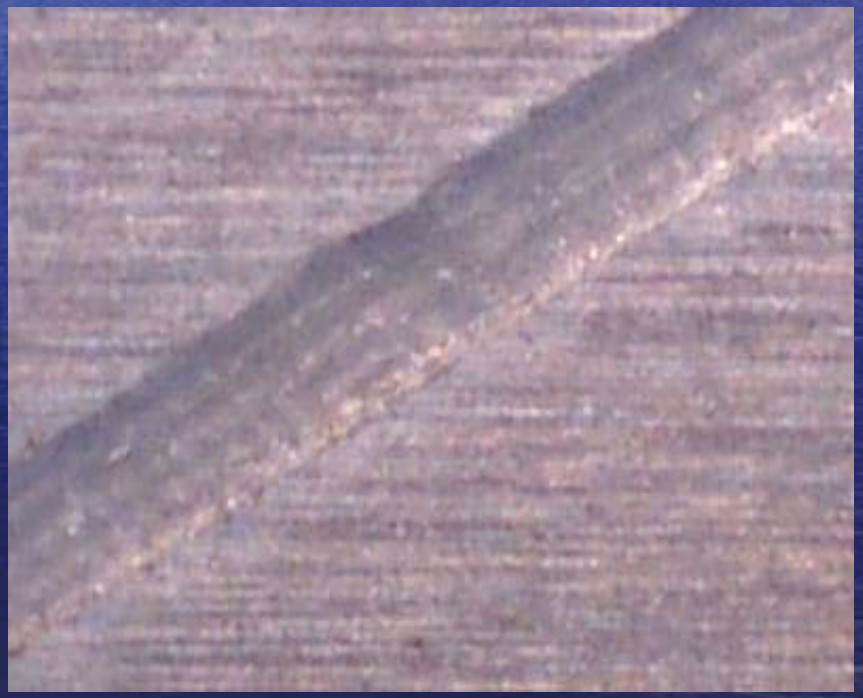
14 Days NSS

Bare Al 2024-T3

Optical Microscope Characterization

- Self-Healing Characteristics – After 4 Days S.S.
  - CeCC Al 2024-T3 At 50 X Magnification

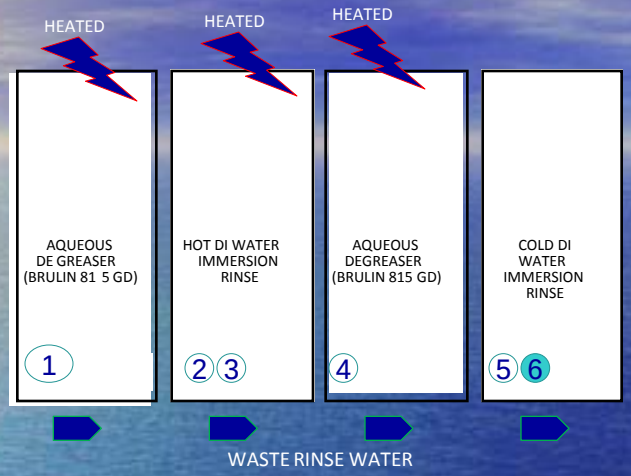
Barrier Coating/No Healing

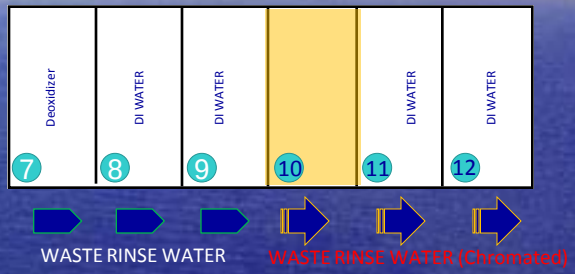


Barrier and Self-Healing

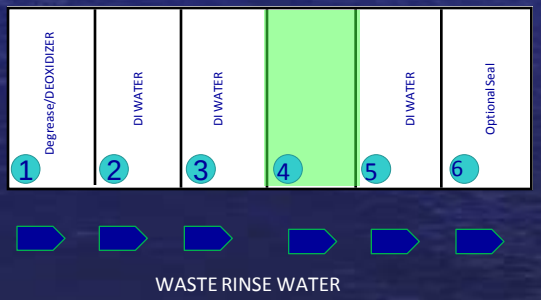
Non-Chrome Conversion Coating Process

Typical Immersion Conversion Coating Process





Deft Immersion Conversion Coating Process



BENEFITS

- Eliminate HEATED Aqueous Cleaning Tank, Support GhG initiative.
- Reduce the number of Tanks, reducing cycle time and waste rinse water.
- Eliminate the use of CHROMATED conversion coating. Reduce chrome WASTE.
- Safer Working Environment.

Deft Clean 4000 Performance

- Deft Clean 4K brightens ferrous and non-ferrous parts

Future Direction

- New NC System
  - Spray Applied Bare 2024 / 02-Type / Deft APC

Performance-Bottom Line

- Active Duty Environment
  - 200-400 F
  - Mach 2+

Photos Courtesy of Google

images