Cd Alternatives Workshop

Findings on Electrical Connectors and Fasteners
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**Performing Organization**
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Approved for public release; distribution unlimited

**Supplementary Notes**
Focused Workshop on Cadmium Plating Alternatives, August 30-31, 2011, Baltimore, MD. Sponsored by SERDP/ESTCP.
Connectors

- People have honed in on
  - Electroless Ni-PTFE – galvanic issues?
  - ZnNi – fails conductivity after corrosion (is this true for Zn16Ni?)
  - Pure Al (AlumiPlate) – incompatible with Sn and Ni?
- Electroless Ni-PTFE would be expected to be galvanically incompatible
  - Testing says otherwise, but no details available
  - Does PTFE “inert” the surface, change galvanic potential or galvanic current?
Connectors – DoD-specific requirements

- See briefings by Rich Misiaszek and Jeri Brunson
- Vessels (esp) and aircraft need back compatibility
- Connectors often maltreated (stood, climbed on)
- Ships: sailors handle connectors to check
  - Exposure to Cd and Cr$^{6+}$
Galvanic compatibility most important issue, especially for EN-PTFE

- Testing for all alt coatings, back compatibility with existing coating systems
- Testing should be whole system, including backplane

Beach testing (under way, Steve Brown)

- What additional tests needed?

Large test matrix planned by Jeri Brunson

- Input?

Other?
Fasteners

- OEMs implement clean alternatives, but Cd keeps coming back through parts bins
- Aircraft mostly Ti, CRES (match composites)
- Dip spin on BAE Systems MMPV – good but not universal
  - Called out by drawing (same for Rock Island FRS)
- Boeing “all but qual” Atotech ZnNi on fasteners
- TARDEC trying to get AlumiPlate onto vehicle systems
  - Could LHE ZnNi or AlumiPlate + non-Cr sealer be universal?
- DLA: New finishes need new NSNs
  - Can get an Interchangeable Number that provides products to a second “clean product” NSN when ordered on old NSN
  - Make sure specify as “Green” when create new NSN
Fasteners – DoD-specific requirements

- See briefing by Louie Tran
- Friction: Torque-tension, locking, run-on torque are most critical to avoid different torques
  - AlumiPlate requires DFL
  - ZnNi no DFL?
  - Dip spin no DFL
Fasteners - testing

Do we need any more fastener testing?

- We have 3 alts tested and ready
  - Dip spin for vehicles
  - LHE ZnNi for aircraft – universal?
  - AlumiPlate for vehicles, some aircraft – universal?

- Are we ready to implement/field test?

What more testing needed?