The Use of Ion Vapor Deposited (IVD) Aluminum for the Space Shuttle Solid Rocket Booster

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- Agenda
- Background
- Objectives
- Recommendations
The Use of Ion Vapor Deposited (IVD) Aluminum for the Space Shuttle Solid Rocket Booster

• Background

• IR&D Development of IVD Aluminum

• GSE Lifting Hardware Coated with IVD

• MSFC Approval for IVD Drogue Ratchet

• USA M&P Proposal to IVD Other Flight Items
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SCHEMATIC OF AN ION VAPOR DEPOSITION SYSTEM

- Vacuum Chamber
- Substrate Holder Cathode
- Negative Glow
- Movable Boat Rack
- Aluminum Evaporators
- Wire Feeders
- High Voltage Supply
- Evaporator Power Supply
- Ground

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PRODUCTION ION VAPOR DEPOSITION SYSTEM
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IVD Coated Drogue Ratchets
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Cadmium Coated Drogue Ratchet
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KSC Beach Exposure Corrosion Test Site
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KSC Beach Exposure IVD Ratchet Start
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KSC Beach Exposure After 8 Months
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KSC Seawater Immersion Facility
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Seawater After 5 Months Immersion
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Seawater 5 Months Immersion Cleaned
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Solid Rocket Booster Retrieval
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Solid Rocket Booster Frustum Retrieval
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Cadmium Plated Ratchet After Retrieval

STS-111 BI 113 R.H.
WO# 02-160-13D-12
RATCHET #4
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- Objectives
  - Completed 48 Sets of IVD Coated Drogue Ratchets
  - Continue Coating GSE Hardware with IVD
  - USA M&P Proposal to IVD Other Flight Items
  - Perform Cost / Benefit Analysis IVD Applications
  - ECP for Approved on Selected Flight Items
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- **Recommendations**
  - Continue Coating GSE Hardware with IVD
  - Consider Use Of IVD For Other Flight Items
    - Including Application To TPS Hardware
  - Promote “Wash-Dry-Fly” Concept
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