Alternative Corrosion Control Methods for Inaccessible Void Spaces

NSRP SPC Panel Project Update

March 4, 2016

Alternative Corrosion Control Methods for Inaccessible Void Spaces

PROJECT TECHNICAL REPRESENTATIVE

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PROJECT LEAD

- Elzly Technology Corporation (Pete Ault, Norm Clayton, & Rich Gianforcaro)

INDUSTRY INVOLVEMENT

- GD-BIW (Pete Lockwood & Bob Cloutier)
- GD-NASSCO, HII-Ingalls Shipbuilding
- NAVSEA

Alternative Corrosion Control Methods for Inaccessible Void Spaces

SCOPE

- Compile application and performance data on the various alternatives that have been used for corrosion control of inaccessible void spaces
- Develop a shipbuilders guide for selecting appropriate alternative treatment methods
  - Include lessons learned on other programs
- Make recommendations for the Navy to consider in their requirements documents

Alternative Corrosion Control Methods for Inaccessible Void Spaces

DELIVERABLES

- Panel Project briefings
- Guide for Alternative Corrosion Control Methods for Inaccessible Void Spaces
- Project Test Report

Technical Guide for Inaccessible Void Coatings and Treatments

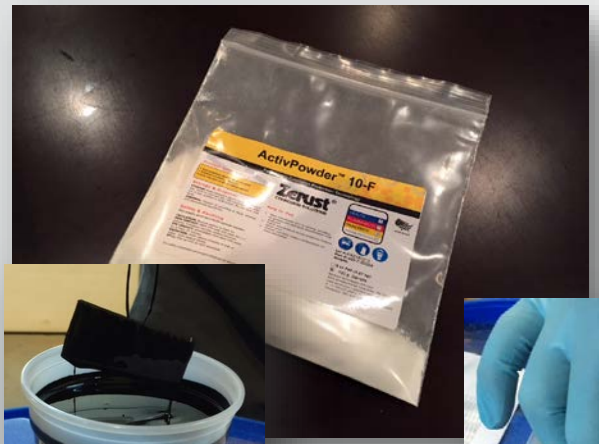
- Preservation Requirements and Desirable Properties
  - Performance
  - Design & Production
  - In-Service/Repair
  - Cost
- US Navy Implemented Treatments
- For Each Technology
  - Materials
  - Production Considerations
  - Design Considerations
  - Sustainability/Repair Considerations

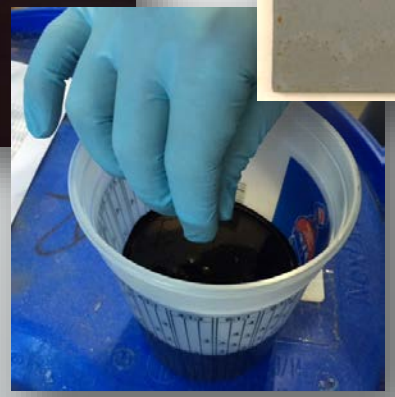
Technical Guide for Inaccessible Void Coatings and Treatments

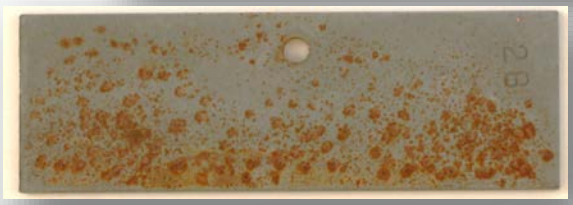
- Technologies Included
  - Preconstruction primer
  - Coatings meeting MIL-PRF-16173, Class 1, Grade 1
  - VCI meeting CID A-A-59441
  - Inerting with Nitrogen/Argon to an O2 concentration less than 8%

Performance Testing

- 4 Steel Conditions
- 6 Inaccessible Void Treatments
- 3 Environmental Conditions

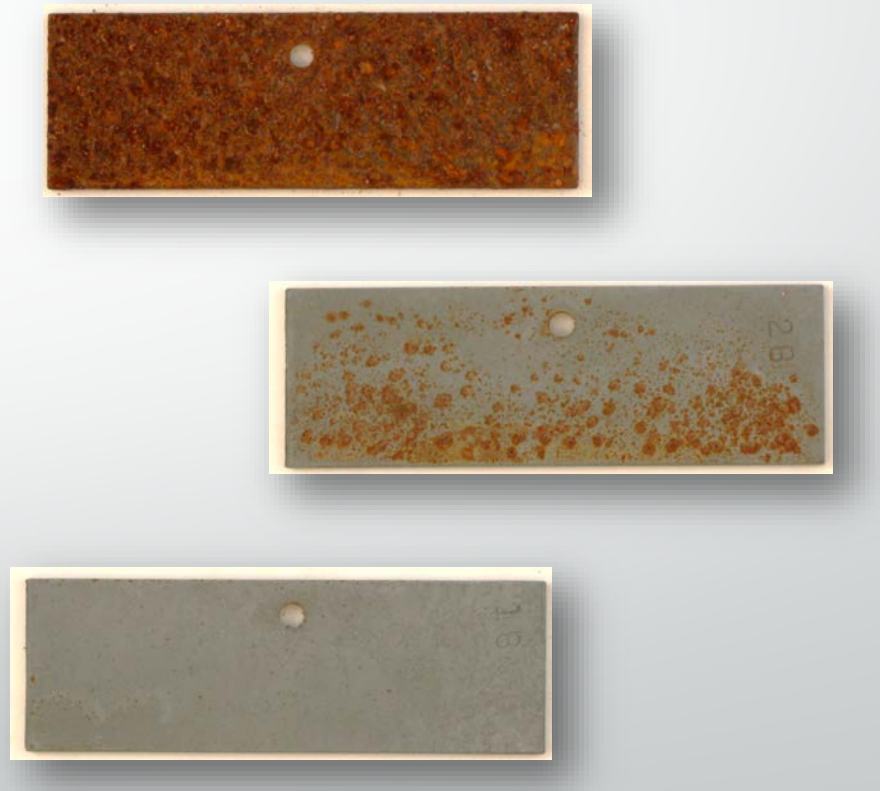






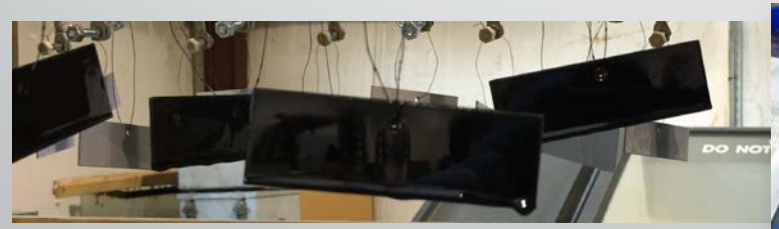
Initial Steel Conditions

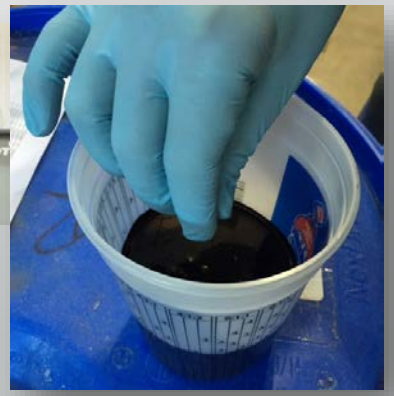
- Solvent Wiped Abrasive Blasted 2-3 mils
- Abrasive Blasted 2-3 mils pre-rusted
  - 1 week exterior exposure with seawater spray
- Preconstruction Primer
- Preconstruction Primer pre-rusted
  - 1 week exterior exposure with seawater spray



Inaccessible Void Treatments Tested

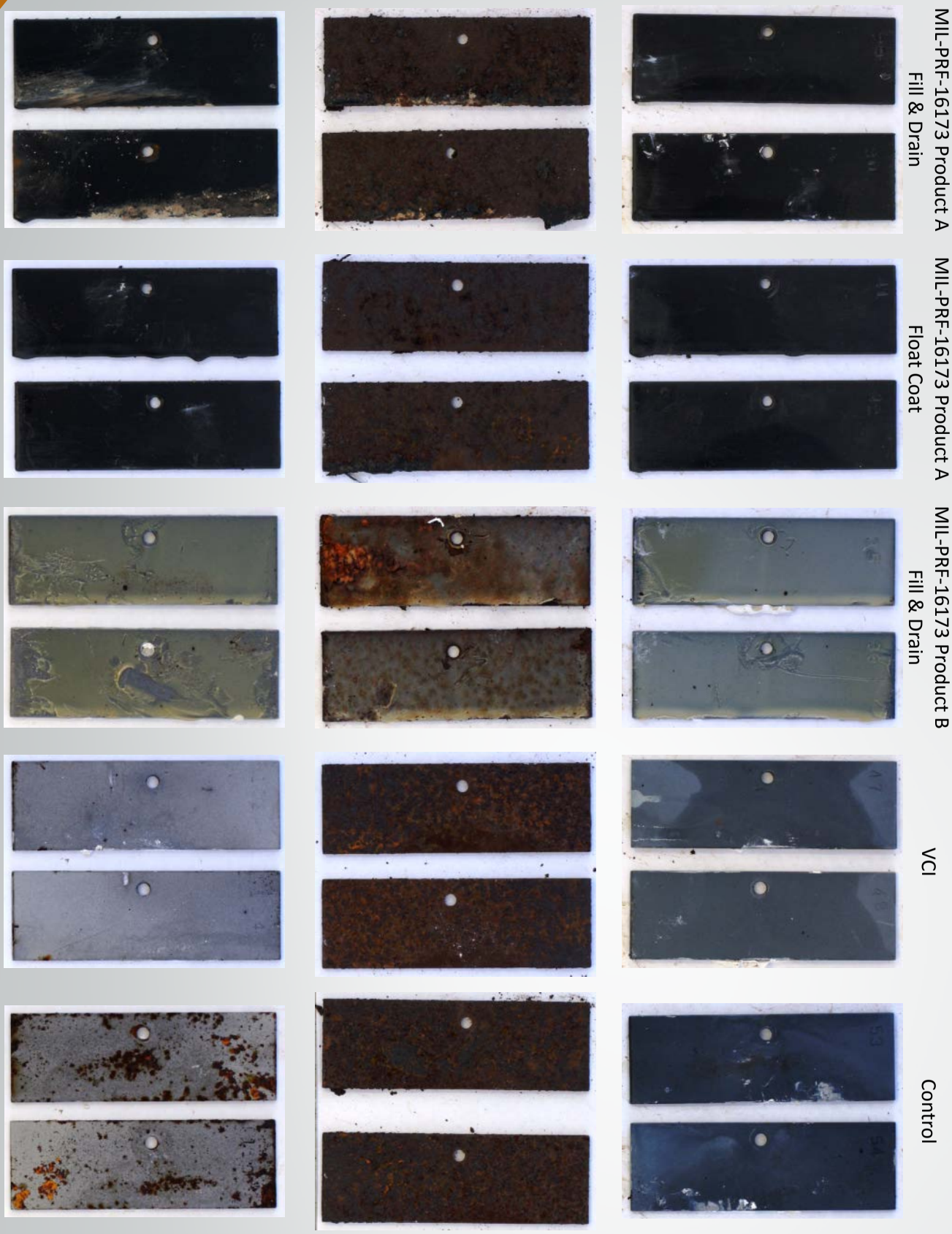
- None
- VCI
- Inert Gas
- MIL-PRF-16173, Class 1, Grade 1 Float Coat
- MIL-PRF-16173, Class 1, Grade 1 Fill & Drain (2 Products)





Environmental Conditions Tested

- Immersion
- Atmospheric
- Atmospheric (With Condensation)



Condition after 6 months in condensing Environment

Implementation Opportunities

- VCI & Inerting demonstrations
- New Construction Documentation
  - Ship specifications sections 114, 562, 631
  - Naval Combatant Design Specifications (NCDS): 114, 562, 631
- Overhaul/Repair- In Service Documentation
  - NAVSEA S0600-AA-PRO-160, Underwater ship husbandry manual
  - General Specifications for Overhaul (GSO): 114, 562, 631
  - NSTM 631
  - NAVSEA Standard Items

Path Forward

- Distribute DRAFT Guideline for comment – March 5, 2016
- Evaluate test coupons & prepare test report – through April, 2016
- Demonstrations – TBD
- Deliver Final Report – June, 2016

Questions?