Partial Blast of Ultra High Solids Coated Tanks

NSRP SPC Panel Project Update

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Partial Blast of Ultra High Solids Coated Tanks

PROJECT TECHNICAL REPRESENTATIVE

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PROJECT LEAD

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INDUSTRY INVOLVEMENT

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Partial Blast of Ultra High Solids Coated Tanks

SCOPE

- Quantify the risks and benefits of substituting a partial blast for a full blast during re-preservation of tanks and/or voids with ultra-high solids coatings on surface ships
- Demonstrate the concept on an active Navy ship
- Determine if such a process can effectively be implemented for surface ships and quantify the potential cost savings versus current Navy practice
- Propose wording for NAVSEA Standard Item 009-32

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DELIVERABLES

- Panel Project briefings
- Status and demonstration reports
- Final Report containing:
  - Recommended language for NSI 009-32
  - Guidance for determining when the approach is suitable

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- Task 1 – Background Review (CWP 356 & Other)
  - Teleconference – Jan/Feb 2015
  - Literature Review – 1st Q 2015
- Task 2 – Test Tank Demonstration
  - Demonstration completed in late spring/early summer
- Task 3 – Ship Repair Demonstration
  - Engage Navy ASAP – Demonstration TBD based on Navy feedback
- Task 4 – Implementation and Reporting
  - Draft process instruction – March 2015
  - Draft SSRAC Proposal – Fall 2015 (depends on SSRAC schedule)
  - Draft Final Report – December 2015
  - Panel Briefings – as required

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CRITICAL ITEMS

- Need Navy engagement for demonstration
- Inspection criteria will be a challenge
  - Dull putty knife, coating thicknesses
- NAVSEA will want Risk/Reward to be addressed
  - How does a planner determine when this is suitable?

CWP-456 Project Review

PHNSY Demonstration

- APR 2009
  - As found condition – 3-10% general corrosion and coating delamination, 22 mils avg DFT
  - After surface prep – Sweep blasted appearance
  - APR2013 CCIMS Inspection – 0.1-0.3% general corrosion and coating delamination

PSNSY Demonstration

- DEC 2010 – APR 2011
  - As found condition – 0.5% general corrosion and 0.1% coating delamination, thin areas noted (~14 mils DFT)
  - After surface prep – Squared off SP-10 areas; 30-70% tightly adherent coating remained
  - Poor cost performance, perhaps due to unrelated productivity issues

Key Issues

- Cost savings impacted by:
  - Allowing blaster to use judgment (requires experience)
  - Eliminating need for re-work after inspection (if in doubt, remove it)
  - Develop clear inspection criteria & train inspectors
- Remove as much of the underlying coating as is practical … ensure the edges are well feathered with the blast procedure and move on.

Surface Preparation
Concept Based on CWP Effort

- Prior to abrasive blasting for preservation, clean tank or area to SSPC SP 1.
- Abrasive blast the entire tank or area as though the desired result is per SSPC SP 10/NACE 2 near white metal.
  - Remove as much of the underlying coating as is practical without the excessive cost of complete removal in areas where the underlying coating is tightly adhering and very difficult to remove. In areas where the coating is difficult to remove because of adhesion, ensure the edges are well feathered with the blast procedure and move on.
  - No changes are to be made to equipment requirements, material usage, OSHA/Environmental requirements, and QA checkpoints and procedures.
  - The only acceptable conditions that may remain are bare metal steel blasted to SSPC SP 10/NACE 2 near white metal, and tightly adhering paint with a tightly adhering edge as per SSPC SP 7/NACE 3 brush off blast cleaning.
  - All rust and mill scales must be removed.

Surface Prep QA

Concept Based on CWP Effort

For areas where all paint has been removed:

- Areas where all paint has been removed shall be abrasive blasted to SSPC SP 10/NACE 2 near white metal.
- The surface profile of the metal surface shall be measured where all the coating has been removed in accordance with Standard item 009-32.
- No surface profile gauge reading is required where the profile gauge cannot sit on an entirely bare metal surface due to the presence of a pattern of tightly adhering coating.

For areas where tightly adherent paint remains:

- Verify that tightly adherent coating cannot be removed by lifting with a dull putty knife after abrasive blasting.
- All areas of remaining coating must show visible evidence of abrasive blasting to provide a good mechanical bond for the new paint. The surface profile of the remaining intact, tightly adhering coating shall be visually verified that the coating has a dull, coarse appearance rather than the glossy appearance of an un-blasted UHS coated surface, and have no residual staining.

The instruction does not make any change to the QA checkpoint or procedures required by NSI 009-32, however soluble salt & dust are not specifically discussed, though the procedure implies they would only be checked on metal surfaces.

Coating Application
Concept Based on CWP Effort

- For areas where tightly adherent paint remains:
  - Perform DFT readings in areas with remaining coatings to determine the areas where high DFT readings may be recorded after over-coating, so that the DFT requirements can be adjusted. There is no minimum required number of locations where readings should be taken, as the remaining coating conditions may be inconsistent; however, an adequate number of readings should be taken to characterize areas of remaining coating. Bound the area and record the location. Do not record readings for small, isolated, or difficult to access areas.
- Apply the Single Coat UHS coating in places where the previous UHS coat of paint has been removed. In areas that have remaining paint in place after abrasive blasting, apply a thin coat (approximately 10 mils if possible) of the Single Coat UHS paint. Attempt to avoid excessive coating thickness in areas of remaining paint.
  - When inspecting the painted surface to the requirements of Standard item 009-32, DFT requirements are for areas where the previous coating was removed.

In areas where the coating has not been removed and DFT's exceed requirements contact engineering for technical resolution.

Demonstration Status

- Drafted concept to share with local Navy representatives as first step to identify opportunities for ship demonstrations
  - BAE Southeast Shipyards
  - HII-NNSB
  - Other interest?
- Planning for early summer demonstration at GD-NASSCO

Questions?