



Partial Blast of Ultra High Solids Coatings on Navy Ships

NSRP SPC Panel Project Update

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Partial Blast of Ultra High Solids Coatings on Navy Ships

PROJECT TECHNICAL REPRESENTATIVE

- Bob Cloutier, GD-BIW

INDUSTRY INVOLVEMENT

- BAE Systems Southeast Shipyards, GD-NASSCO, GD-Electric Boat, HII-Newport News Shipbuilding, Main Industries, IMIA LLC, Marine Specialty Painting, MARCOM Services LLC, International Paint, Sherwin Williams, On Point Solutions

NAVY INVOLVEMENT

- NAVSEA 05, NAVSEA 04, Southeast RMC, SURFMEPP, SEA 21, Puget Sound Naval Shipyard, NSWC Philadelphia, Carrier Planning Activity

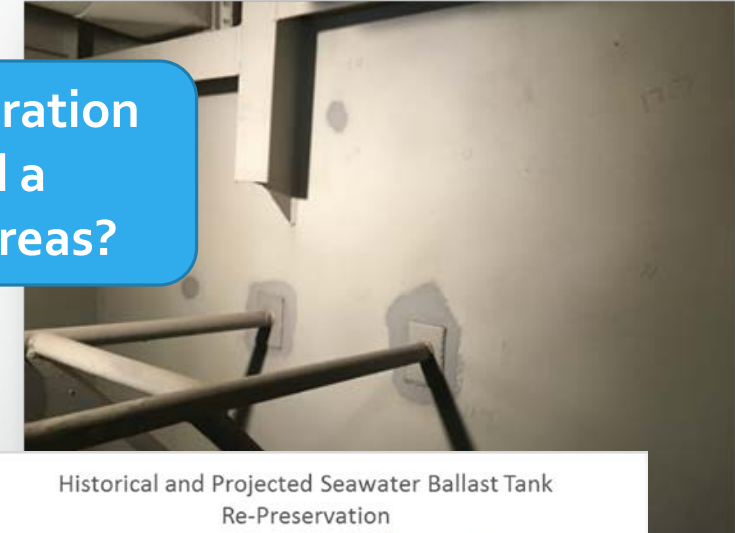
Partial Blast of Ultra High Solids Coatings on Navy Ships

SCOPE

- Continue institutionalization efforts to substitute a partial blast for a full blast during re-preservation of tanks and/or voids with ultra-high solids coatings on surface ships
 - Continue monthly working group telecom's
 - Perform additional demonstrations on active Navy Ships
 - Evaluate performance of documented partial blast areas
 - Perform cathodic disbondment testing of "partial blasted" test panels
 - Submit wording to SSRAC for NAVSEA Standard Item 009-32

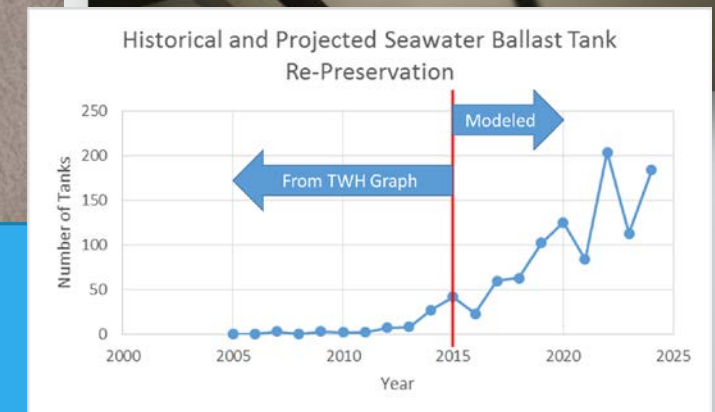
Why "Partial" Blast?

Why do we spend a disproportionate amount of surface preparation time removing paint from "difficult areas" and then spend a disproportionate amount of application time coating those areas?



Key Points

- 6.4:1 ROI with conservative assumptions
- 1.5 year payback after implementation
- Breakeven over 7 years if only 10% of tanks are candidates
- *Other applicable spaces exist and will improve ROI*



Implementation

- State of the practice
- SSRAC proposal
- Industry Standard
- Training Needs/Opportunities

Currently Three Navy “Partial Blast” Procedures

ALTERNATIVE PROCEDURE 1(A) – NAVY INDUSTRIAL BLAST CLEANING

- SSPC SP 14/NACE 8 Industrial Blast Cleaning EXCEPT that all corrosion shall be removed from all surfaces.
- Tightly adherent coating shall not remain on more than 5% of each unit area (3” by 3”).
- Limited access areas* are exempt from the 10% restriction except that they shall be subjected to the abrasive blast and on completion the remaining coating shall have a dull, coarse appearance rather than the glossy appearance of unblasted UHS surfaces.

ALTERNATIVE PROCEDURE 1(B) – NAVY SPOT AND SWEEP BLAST CLEANING

- SSPC SP 7/NACE 4 Brush-Off Blast Cleaning with Spot blasting on areas per SSPC SP/10/ NACE 2 Near White Blast Cleaning.
- Remove as much of the underlying coating as is practical without the excessive effort
- In areas where the coating is difficult to remove because of adhesion, ensure the edges are well feathered with the blast procedure
- Small islands of existing paint should not be left within an area blasted to SP-10

SUBMARINE MAINTENANCE STANDARD 6310-081-015, ATTACHMENT 18

- All retained paint must have no visible cracks, blisters, delamination, or other defects after the blasting;
- All retained paint must have no visible gloss and must have no residual corrosion staining;
- All bordering areas of retained paint must be feathered by the blasting process into the adjacent areas of bare steel to create as smooth a transition as practical;
- All remaining areas not subjected to the localized allowance must be completely blasted to near white bare metal and must meet SSPC-SP 10 cleanliness requirements; and
- The cumulative area of retained paint is less than 5 percent, higher levels may be accepted subject to proper adjudication.

SSRAC Proposal

- Proposal included a 4-page "Attachment D" to the NSI which was substantially the same as the demonstration document
- Not adopted
 - Some discussion of the merits
 - The length and lack of industry standard was primary concern

NAVSEA Standard Specification for
Ship Repair and Alteration Committee (SSRAC)
2017 SSRAC Meeting

Submitted by: Pete Ault	Activity: NSRP	Date:
TYPE OF PROPOSED CHANGE:		Administrative <input type="checkbox"/> Technical <input checked="" type="checkbox"/>
Standard Item <input checked="" type="checkbox"/> 009-32	Title: Cleaning and Painting Requirements; accomplish	
Para: Attachment D	Page: NEW	
SWT <input type="checkbox"/>	Title:	

Attachment D

Process for Partial Blast of Ultra High Solids Coatings

1. The use of this Partial Blast process shall only apply to areas coated with "single coat" products meeting the requirements of MIL-PRF-14634, Type TYPE VII, CLASS s/18. The partial blast process is performed to accomplish an abrasive blast of a tank or surface that allows a percentage of remaining serviceable single coat coating to remain. After surface preparation, single coat is applied to all surfaces. Two procedures are provided:

- (a) NAVY INDUSTRIAL BLAST CLEANING. All corrosion product and a majority of the coating is removed. Abrasive blast the entire tank or area as though the desired result is per SSPC SP 10/NACE 2 Industrial Blast Cleaning EXCEPT that tightly adherent coating is allowed to remain as long as the criteria in Procedure 1(A) of this attachment are met.
- (b) NAVY SPOT AND SWEEP BLAST CLEANING. Distinct areas will be blasted to near white metal and the remaining sound coating is brush blasted. Abrasive blast the entire tank or area as though the desired result is per SSPC SP 7/NACE 4 Brush-Off Blast Cleaning EXCEPT that all corrosion shall be removed from all surfaces with Spot blasting on areas per SSPC SP 10/NACE 2 Near White Blast Cleaning

2. The contractor shall inspect the tank or surface to verify that the existing coating is in a condition suitable for the partial blast demonstration. Substantial portions of the surfaces shall have intact coating. Based on the inspection, the contractor shall determine whether ALTERNATIVE PROCEDURE 1(A) or ALTERNATIVE PROCEDURE 1(B) is appropriate for the condition of the tank.

ALTERNATIVE PROCEDURE 1(A) - NAVY INDUSTRIAL BLAST CLEANING.

3. For PROCEDURE 1(A), The contractor shall accomplish the following:

- (a) Prior to any abrasive blast for preservation, clean tank or area to SSPC-SP 1.
- (b) Abrasive blast the entire tank or area as though the desired result is per SSPC-SP 10/NACE 2 Near White Metal Blast Cleaning EXCEPT that tightly adherent coating is allowed to remain as long as the criteria in this section are met.
 - (i) All retained paint must have no visible cracks, blisters, delamination, or other defects after the blasting.
 - (ii) All retained paint must have no visible gloss and must have no residual corrosion staining.
 - (iii) All bordering areas of retained paint must be feathered by the blasting process into the adjacent areas of bare steel to create as smooth a transition as practical.
 - (iv) All remaining areas not subjected to the localized allowance must be completely blasted to near white bare metal and must meet SSPC-SP 10 cleanliness requirements.
 - (v) Tightly adherent paint is defined as having sufficient adhesion so that it cannot be lifted as a layer by inserting the blade of a dull putty knife under it. The edges of existing tightly adherent paint must be feathered so that sharp edges of retained coating do not exist.
 - (vi) The cumulative area of retained paint shall not exceed 5 percent.
- (d) No changes are to be made to equipment requirements, material usage, OSHA requirements, Environmental requirements, and QA checkpoints and procedures.
- (e) All corrosion products shall be removed.

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suggest that the schedule for

Approaches to an Industry Standard

- The proposed procedure is essentially an adaptation to SP-10 or SP-14
 - Could work with SSPC/NACE to modify the current standards
 - Could have a “Navy appendix” to the current standards (e.g., AB-1)
- “Partial Blast” can apply to dry abrasive blast, wet abrasive blast and waterjetting
 - Current NSI 009-32, Attachment C describes a “spot and sweep” process
 - Could develop a new SSPC “spot and sweep” standard for all types of media

Training Needs/Opportunities

- Implementation can be facilitated with training
 - Integrate into NBPI/Coating Inspector Training?
 - Integrate into C7?

The SP-10 area beyond edge of corrosion suggests the area is more likely to pass the dull putty knife test.



Along these edges coating fails the dull putty knife test.



NOTE: Both cases are also unacceptable because the corroded area has not been properly treated.

Streaking through the coating may be indicative of incomplete sweep blasting; such streaks should be blended in/feathered

Sweep blasted (if sweep blasted) or discolored area



Paint failing dull putty knife test (note lifting)



Paint passing dull putty knife test (note scratches)



Demonstration Opportunities

- DDG-82 (LASSEN) will have partial blast as an option item in the work package
- Two opportunities fell through
 - LPD-17 Fwd Peak Tank ultimately considered to risky considering the remainder of the work package
 - Lost visibility of a DDG Chain Locker opportunity
- Working with various parties to identify another opportunity

Performance Confirmation Opportunities

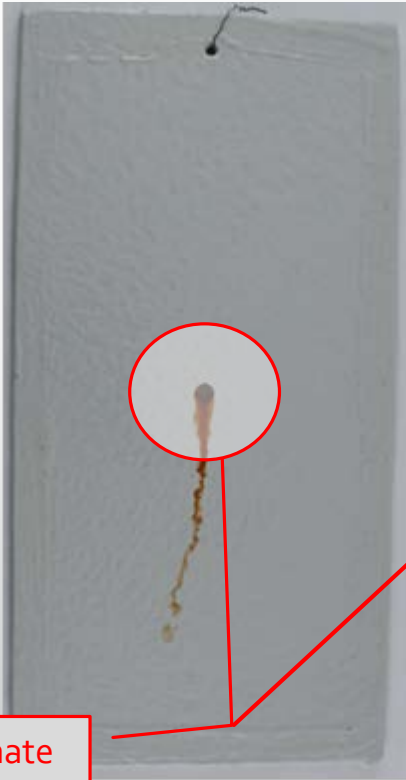
- NEW YORK (LPD-21) Well Deck Overhead (~1 year old)
 - Will begin to plan inspection this quarter
- KEARSARGE (LHD-3) Well Deck Overhead (~6 years old)
 - Cannot distinguish swept vs SP-10 areas
- Spaces blasted as part of CWP-356 demonstration
 - No additional data available
- Other data or opportunities being sought!

Cathodic Disbondment Test

- Two Single Coatings
 - Aged three months
 - Immersed in 10% NaCl solution
 - Non-immersed
 - All will be tested
 - Freshly Applied
- Sweep blast and



test patterns



Approximate SP-10 Area

Project Status

- Will request a 6-month No Cost Extension
 - Cathodic Disbondment test will likely extend beyond December
 - Demonstration before the end of the year is unlikely
 - Any standards direction with SSPC would be best resolved at the Annual meeting in January



Questions?