

NAVSEA
STANDARD ITEM

FY-20

<u>ITEM NO:</u>	<u>009-124</u>
<u>DATE:</u>	<u>01 OCT 2018</u>
<u>CATEGORY:</u>	<u>II</u>

1. SCOPE:

1.1 Title: Thermal Spray Nonskid Application; accomplish

2. REFERENCES:

2.1 Standard Items

2.2 T9074-AA-GIB-010/1687, Thermal Spray Processes for Naval Ship Machinery and Nonskid Applications

2.3 Systems and Specifications - SSPC Painting Manual, Volume 2

2.4 ASTM F21, Standard Test Method for Hydrophobic Surface Films by the Atomizer Test

2.5 229 CFR 1915, Occupational Safety and Health Standards for Shipyard Employment, Subparts C and Z

2.6 NACE International Standards

2.7 ANSI/NACE SP0508, Methods of Validating Equivalence to ISO 8502-9 on Measurement of the Levels of Soluble Salts

2.8 ASTM D4285, Standard Test Method for Indicating Oil or Water in Compressed Air

2.9 ASME B46.1, Surface Texture (Surface Roughness, Waviness and Lay)

2.10 ASTM D4417, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel

2.11 ASTM D7127, Standard Test Method for Measurement of Surface Roughness of Abrasive Blast Cleaned Metal Surfaces Using a Portable Stylus Instrument

2.12 ISO 8502-3, Preparation of steel substrates before application of paints and related products - Tests for assessment of surface cleanliness - Part 3: Assessment of dust on steel surfaces prepared for painting (pressure-sensitive tape method)

2.13 ASTM D522, Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings

3. REQUIREMENTS:

3.1 Consider marine coatings, nonskid and abrasive blasting media to contain heavy metals (e.g., beryllium, cadmium, chromium, and lead), hexavalent chromium, crystalline silica, and/or other toxic or hazardous substances.

3.2 Maintain the following certifications for accomplishing Thermal Spray Nonskid (TSN) operations. Information for these certifications can be found at www.sspc.org and www.naceinstitute.org/Certification.

3.2.1 Organizations accomplishing thermal spray nonskid application **must** be certified in accordance with 2.2.

3.2.2 Thermal spray application personnel and the applicable procedure **must** be qualified as defined in 2.2.

3.2.3 Organizations accomplishing blasting operations (abrasive and waterjetting) and color topping application **must** be certified in accordance with 009-32 of 2.1.

3.2.4 Personnel accomplishing abrasive blasting, Ultra-High Pressure Waterjetting (UHP WJ), or preservation **must** be certified in accordance with 009-32 of 2.1.

3.2.5 Personnel qualifications for Low-Pressure Water Cleaning (LP WC) operations are as follows:

3.2.5.1 The contractor conducting LP WC operations to NACE/SSPC-SP WJ-4 on nonskid decks **must** be certified in accordance with SSPC-QP 1 of 2.3 or a NAVSEA-approved equivalent.

3.2.5.2 The onsite foreman **must** be certified in accordance with NAVSEA Basic Paint Inspector (NBPI) course, NACE International Coating Inspector Program (CIP) Level One or higher, or SSPC Protective Coating Inspector Program (PCI).

3.2.6 Coating inspectors **must** be certified in accordance with the NAVSEA Basic Paint Inspector (NBPI) course, NACE International Coating Inspector Program (CIP) Level One or higher, or SSPC Protective Coating Inspector Program (PCI) Level 2 or higher. The inspector **must** have passed the SSPC Thermal Spray Inspector Training course or NAVSEA-approved equivalent, and have a minimum of 6 months of thermal spray Quality Assurance (QA) experience.

3.3 Record and maintain in-process records on Appendix A and the QA Checklist Form Appendices One, 2, 3, 4, 5, 6, and 7 of 009-32 of 2.1.

3.3.1 Submit one legible copy of QA appendices in hard copy or approved transferrable media of recorded in-process information on QA Checklist Form Appendices to the SUPERVISOR within 72 hours of completion of

preservation of each separate location listed in the invoking Work Item or task order.

3.3.2 QA Checklist Form Appendices of 2.1 are available at <http://www.nstcenter.biz>.

3.4 Submit one legible copy of the containment design 14 days before erecting the containment for approval by the SUPERVISOR.

3.5 Complete the water break test when required in accordance with 2.4 with the following modifications:

3.5.1 Use deionized or distilled water.

3.5.2 Use a hand-held demineralizer water bottle, not an atomizer, to place water droplets on the surface areas to be tested. Use a Hach® demineralizer bottle (product number 1429900) or equivalent.

3.5.3 Evaluate the surface for hydrocarbon contamination in accordance with 2.4. Dry the surface using a lint free cloth.

3.5.4 The "testing of processing environments" described in 2.4 does not apply.

3.6 For TSN, conduct Film Thickness (FT) measurements as follows:

3.6.1 A Type 2 gage in accordance with SSPC-PA 2 of 2.3 with a probe diameter of 0.20 inches or smaller, a sample diameter of 0.12 inches or smaller, and capable of measuring TSN FT from 25 to 250 mils **must** be used.

3.6.2 For FT measurements, one spot measurement is the average of 10 individual gage readings that are made along a 24 inch straight line perpendicular to the application direction. Do not place FT probe on atypical high spots or irregularities (e.g., spatter).

3.7 Clarification of terms:

3.7.1 The term tie-in area **must** be defined as the area where MIL-PRF-24667 nonskid is applied over edges of the TSN.

3.8 Product storage:

3.8.1 Store TSN wire in a dry place. The temperature **must** be maintained between 50 degrees Fahrenheit and 90 degrees Fahrenheit, or within the manufacturer's recommended storage temperature range with written authorization from the SUPERVISOR. Document the name of the thermal spray wire, manufacturer, batch/lot number, and date of expiration on 009-32 of 2.1, QA Checklist Form, Appendix 6. Record the batch/lot number for the thermal spray wire material in "Base Portion Batch No# (Part A)" section of 009-32 of 2.1, QA Checklist Form, Appendix 6.

3.8.2 Store and monitor liquid coatings in accordance with 009-32 of 2.1.

3.9 Do not use partial kits when using multiple component coatings that are to be applied to the TSN.

3.10 Install masking material appropriate for blasting and thermal spray activities, such as DeWAL Industries Inc. DW501 or equivalent material as approved by NAVSEA, for protection of equipment and items in work area not to be coated. Remove masking material upon completion of final coating.

3.10.1 Mask flight deck tie-downs, designated recessed flight deck lights, and other designated deck fittings that are not to be coated with the TSN using masking material.

3.11 Clean polyethylene shoe coverings **must** be worn when walking on prepared or coated surfaces. Shoe coverings **must** be selected that do not degrade and contaminate surfaces. Use of adhesive tape (e.g., duct tape) as shoe covering is prohibited.

3.12 Erect and maintain a containment structure and ventilation system over the designated work area in accordance with the design approved by the SUPERVISOR.

3.12.1 The containment **must** include a sub-containment enclosure, or spray equipment shrouding, within the overall containment. The enclosure **must** meet the dust mitigation requirements of 2.5. The enclosure, or spray equipment shrouding, **must** contain dust generated by the TSN process and capture dust in a bag house or other dust collection equipment as approved by the SUPERVISOR.

(V) (G) "CONTAINMENT AND VENTILATION INSTALLATION"

3.12.2 Verify installation of containment structure and operation of ventilation and dust collection systems in accordance with the design approved by the SUPERVISOR.

3.12.2.1 Containment and associated ventilation systems are to be in place and operational prior to start of any surface preparation operations and **must** remain in place and operational until cure to service of color topping.

(V) "VERIFY CONTAINMENT AND ENCLOSURE RE-INSTALLATION"

3.12.3 Move and re-install containment and enclosure to additional work areas.

(V) "ENVIRONMENTAL READINGS"

3.13 Measure ambient and substrate surface temperatures, relative humidity, and dew point inside the containment and within close proximity to the enclosure. These data **must** be collected and recorded from the beginning of abrasive blasting through cure to service of the color topping.

3.13.1 Environmental readings **must** be measured and recorded at a minimum of once per hour with a data logger. Measure and record a manual reading once every 24 hours and at every (G)-point with a separate calibrated device independent of the data logger to confirm data logger readings. These manual readings **must** be documented on 009-32 of 2.1, QA Checklist Form, Appendix 1.

3.13.2 Apply TSN coating system under the following conditions: the ambient air temperature within the containment **must** be maintained between 55 degrees Fahrenheit and 90 degrees Fahrenheit; the deck temperature **must** be a minimum of 50 degrees Fahrenheit during coating system application and cure of the color topping and Visual Landing Aid (VLA) marking coatings. The maximum relative humidity within the containment **must** be 70 percent. The deck temperature **must** be a minimum of 5 degrees Fahrenheit above the dew point.

3.13.3 For the color topping, measure and record the environmental readings from prior to application of the coatings until 48 hours of creditable cure time as defined in 009-32 of 2.1. For coatings that fully cure to service in less than 48 hours, as defined on their NAVSEA-reviewed ASTM F718 data sheets, environmental readings for the final coat **must** be measured and recorded until the coating's cure to service time is reached.

3.14 Remove existing deck coating in the TSN application area within the containment using vacuum, self-contained UHP WJ equipment.

3.14.1 Waterjet an additional 12 to 18 inches on each side of the intended TSN area to allow for a tie-in area.

(V) "PRIMARY SURFACE PREPARATION"

3.14.2 Verify primary surface preparation is in accordance with Table One, NACE/SSPC-SP WJ-2/L of 2.3 and 2.6. Document primary surface preparation on 009-32 of 2.1, QA Checklist Form, Appendix 2.

(I) (G) "CONDUCTIVITY MEASUREMENT"

3.14.3 Accomplish surface conductivity measurements on the prepared deck. One reading **must** be taken for the first 200 square feet. Additional readings **must** be taken for every additional 400 square feet or less. Conductivity measurements **must** not exceed 30 micro-siemens/cm. Conductivity samples **must** be collected using a product that meets the requirements of 2.7. Document on 009-32 of 2.1, QA Checklist Form, Appendix 4. Accomplish surface conductivity measurement within 8 hours prior to abrasive blasting.

3.14.3.1 Clean areas where conductivity exceeds requirements using LP WC equipment with potable water to NACE/SSPC-SP WJ-4 of 2.3 and 2.6. Dry the affected areas and remove any standing water. Accomplish surface conductivity measurements on affected areas in accordance with 3.14.3.

(I) (G) "CLEANLINESS PRIOR TO ABRASIVE BLASTING"

3.14.4 Accomplish degreasing/cleaning prior to surface preparation to ensure that the surface is free of contaminants in accordance with SSPC-SP 1 of 2.3.

3.14.4.1 Accomplish a visual water break test on the cleaned surface in accordance with paragraph 3.5. One water break test **must** be accomplished on every 200 square feet of the waterjet cleaned surface. In addition, water break tests **must** be accomplished on stained or discolored areas that visually indicate hydrocarbon contamination. Accomplish degreasing/cleaning efforts until the surface is free of hydrophobic contaminants as evident by water droplets spreading immediately to form a thin, continuous uniform water film. Document surface cleanliness on 009-32 of 2.1, QA Checklist Form, Appendix 2 and document the water break test results in the "COMMENTS" section.

3.15 Prepare surfaces to be coated with TSN in accordance with Table One, SSPC-SP 5/NACE 1 of 2.3 and 2.6.

3.15.1 Blast media **must** conform to SSPC-AB 1 of 2.3 and be a blend of 50 percent 16-mesh grit aluminum oxide and 50 percent 24-mesh grit aluminum oxide. Submit one legible copy, in hard copy or approved transferrable media, of the blast media conformance data package to the SUPERVISOR prior to blasting.

3.15.2 Initiate abrasive blasting within 10 hours of accomplishing UHP WJ in accordance with 3.14.2. When surface profile is not established within 10 hours the surface cleanliness **must** be verified in accordance with 3.14.2, 3.14.3 and 3.14.4.

3.15.3 Recycling or re-use of the abrasive is prohibited.

(V) "VERIFY COMPRESSED AIR QUALITY"

3.15.4 Abrasive media **must** be recovered with a vacuum. Remaining abrasive and dust in TSN application area **must** be blown down with clean, dry air to a localized area and vacuumed again for complete removal. The air **must** be free of water and oil in accordance with 2.8.

(I) (G) "SECONDARY SURFACE PREPARATION"

3.15.5 Verify secondary surface preparation is in accordance with Table One including the welds. Document secondary surface preparation on 009-32 of 2.1, QA Checklist Form, Appendix 3.

(I) (G) "SURFACE PROFILE"

3.15.6 Measure surface texture as defined in 2.9, using Root Mean Square Slope (RΔq), and measure surface profile as defined in 2.10. Document the profile data on QA Checklist Form, Appendix A.

3.15.6.1 Take one RΔq measurement every 400 square feet in accordance with 2.11. One RΔq measurement is defined as the mean of 5 individual readings. The measured RΔq **must** be 0.45 or greater.

3.15.6.2 Take one profile measurement every 200 square feet using Method B of 2.10. One profile measurement is defined as the mean of 10 individual gage readings. The 10 individual gage readings and the mean **must** be documented. The profile **must** be between 4.0 and 10.0 mils. Profile **must** not be measured within one inch of any weld.

(I) (G) "DUST TEST"

3.15.7 Accomplish a surface cleanliness inspection for dust and document on 009-32 of 2.1, QA Checklist Form, Appendix 5. Surface dust **must** be a maximum of Rating 2, Class 2, of 2.12. Three individual readings **must** be taken for every 400 square feet. Individual tape samples **must** be retained and applied to the back of the 009-32 of 2.1, QA Checklist Form, Appendix 5 and labeled with the date, time, and work area or zone.

3.16 Accomplish thermal spray application in accordance with Table One.

3.16.1 Initiate TSN coating application within 10 hours of the completion of abrasive blasting in accordance with 3.15. When TSN application is not initiated within 10 hours, the surface cleanliness **must** be verified in accordance with 3.15.5, 3.15.6, and 3.15.7.

(V) "VERIFY SECONDARY SURFACE PREPARATION PRIOR TO TSN APPLICATION"

3.16.2 Verify just prior to TSN application that the surface still satisfies requirements in Table One, Column B.

3.16.3 Prepare witness coupons in accordance with the following:

3.16.3.1 Prepare witness coupons within 3 hours of initiating TSN application during each work shift.

3.16.3.2 Witness coupons **must** consist of 3 cold-rolled steel test coupons of dimensions 2 inches by 8 inches by 0.0625 inches or as approved by NAVSEA. Clean each coupon using the same cleaning procedures used on the deck to satisfy the cleaning requirements of 3.15.5. Abrasive blast each coupon using the same abrasive blasting procedures used on the deck to satisfy the surface preparation requirements of 3.15.5 and 3.15.6. Take and record one surface profile measurement in accordance with Method B of 2.10 on each witness coupon. Record the profile for each witness coupon in QA Checklist, Form Appendix A.

3.16.3.3 Secure the witness coupons to masked tie-downs within the first application area of the work shift such that the panels do not move during thermal spray application. Space the test panels uniformly across the application area. The panels **must** remain in place during the application of the first layer of TSN to the deck so that the test coupons are coated simultaneously with the coating of the deck.

3.16.4 Accomplish TSN application to designated deck areas using the qualified procedure of 2.2.

3.16.4.1 Accomplish the requirements of 3.13.2 for environmental readings.

(I) (G) "THERMAL SPRAY APPLICATION MACHINE SETTINGS"

3.16.4.2 Verify thermal spray machine settings and spray parameters are in accordance with the qualified procedure of 2.2 at the start of each work shift.

3.16.4.3 Apply the TSN coating 6 to 12 inches beyond the designated TSN application area to facilitate the tie-in area to the surrounding MIL-PRF-24667 nonskid coating system.

3.16.4.4 Apply TSN to within 2 to 3 inches of deck fittings and protrusions. Apply TSN 24 to 36 inches from coamings and deck edges.

3.16.4.5 Overlap TSN between work zones in accordance with qualified procedure of 2.2.

3.16.4.6 Document start and end time for the application of each layer of thermal spray in 009-32 of 2.1, QA Checklist Form, Appendix 6.

(I) (G) "MANDREL BEND WITNESS COUPONS"

3.16.5 Test the 3 witness coupons immediately following the application of the first layer of TSN after allowed to cool to below 120 degrees Fahrenheit (surface temperature). Take 3 FT gage readings in accordance with 3.6 on each panel. Record each measurement in QA Checklist Form, Appendix A. Accomplish Test Method B - Cylindrical Mandrel Test of 2.13 on each panel. The mandrel rod diameter **must** be 2.25 inches. The coupon **must** be bent to 180 degrees and visually inspected without magnification for spalling, flaking or delamination in accordance with Attachment A. Any spalling, flaking, or delamination of the coating on any one of the 3 witness coupon **must** constitute a mandrel bend test failure. Cracking without spalling, flaking or delamination is acceptable. Flaking within 0.125 inches from the panel edges is acceptable. Record the mandrel test results in QA Checklist Form, Appendix A. The panels **must** be labeled regarding the date, time, and location and **must** be provided to the SUPERVISOR within 24 hours.

3.16.5.1 Notify the SUPERVISOR of any mandrel bend test failure. A mandrel bend test failure **must** require removal of TSN applied to the work zone during that work shift via abrasive blasting in accordance with 3.15. The TSN first layer **must** be re-applied in accordance with 3.16 with a new set of 3 witness coupons.

(V) "THERMAL SPRAY VISUAL INSPECTION"

3.16.6 Accomplish a visual inspection of each layer of the TSN system. There **must** be no blistering, delamination, spalling, or cracking of the TSN coating. The nonskid surface **must** be visually free of drips, beads, and spatter greater than one square inch in area. When determining FT conformance to the qualified procedure of 2.2 in the overlap area, the

coating FT **must** be in accordance with the requirements in the qualified procedure. Document inspection on QA Checklist Form, Appendix A.

3.16.6.1 Repair blistering, delamination, spalling, or cracking of the TSN coating using hand TSN application in accordance with 2.2. Cumulative hand TSN application area **must** not exceed a total of 5 square feet in each 150 square foot area. Blistering, delamination, spalling, or cracking of the TSN coating in excess of 5 square feet within each 150 square foot area **must** require complete removal and reapplication of TSN in the 150 square foot area.

3.16.6.2 Accomplish the requirements of SSPC-SP 1 of 2.3 on an existing TSN deck coatings and 12 to 18 inches on each side of the TSN repair zone as approved by the SUPERVISOR.

(I) (G) "FT MEASUREMENTS"

3.16.7 Accomplish FT measurements on the TSN only after the deck has cooled to less than 120 degrees Fahrenheit.

3.16.7.1 Record the 3 witness coupon FT measurements from 3.16.5 in 009-32 of 2.1, QA Checklist Form, Appendix 7. The panel FT measurements document the FT for the first layer of thermal spray.

3.16.7.2 Take deck FT measurements on final TSN system in accordance with 3.6. Five spot measurements as defined in 3.6.2 **must** be taken every 200 square feet. The measurements **must** be recorded in 009-32 of 2.1, QA Checklist Form, Appendix 7.

3.16.7.3 Evaluate areas of low FT identified in 3.16.7.2 by taking one FT reading at 3 inch intervals in 8 equally spaced directions radiating outward from the initial low FT reading as shown in Attachment B, until 2 consecutive conforming FT readings are achieved or until no additional measurements are possible. Record FT measurements and submit a sketch defining the areas of low FT in hard copy, or approved transferrable media, to the SUPERVISOR.

3.16.7.4 Accomplish the requirements of 3.16.6 and apply additional TSN in areas of low FT to meet the FT requirements of the qualified procedure of 2.2.

3.16.7.5 TSN areas with a FT greater than 250 mils **must** be abrasively blasted to bare steel in accordance with 3.15. The TSN first layer **must** be re-applied in accordance with 3.16.4. Drips, beads, and spatter with FT greater than 250 mils and smaller than one square inch in area are to be retained.

3.17 Accomplish cleaning of TSN in accordance with Table One following the completion of TSN application and prior to application of color topping coatings or VLA markings.

3.17.1 Sweep TSN area with a stainless steel wire or a stiff nylon bristle brush/broom to remove thermal spray dust and fragile nonskid peaks.

Blow down swept area with clean dry air and vacuum up loose particles. After cleaning, there **must** be no visible dust, broom bristles, or other foreign matter on the deck.

(I) (G) "TSN CLEANLINESS"

3.17.2 Accomplish a visual cleanliness inspection without magnification, for complete removal of surface contamination. Secure the cleaned area from traffic (e.g., personnel and equipment) and allow drying for a minimum of 12 hours at a maximum relative humidity of 70 percent and minimum deck temperature of 50 degrees Fahrenheit.

3.17.3 Verify TSN surface is free of contaminants in accordance with SSPC-SP 1, paragraph 2.1, of 2.3. Accomplish water-break tests on any discoloration or spots that visually indicate hydrocarbon contamination. Accomplish degreasing/cleaning efforts until the surface is free of hydrophobic contaminants as evident by water droplets spreading immediately to form a thin, continuous uniform water film. Document inspection result in 009-32 of 2.1, QA Checklist Form, Appendix 2 as specified in 3.14.4.1.

3.18 Apply color topping and VLA markings in accordance with Table One.

3.18.1 Accomplish thermal spray color topping application within 24 hours of completing thermal spray application and cleaning in accordance with 3.16.1.

3.18.1.1 Clean TSN surfaces that are not color topped within 24 hours using potable water and LP WC equipment to NACE/SSPC-SP WJ-4 of 2.3 and 2.6. Operate the LP WC equipment with potable water at 2,500 to 3,000 PSI. The LP WC equipment **must** include a rotating or reciprocating high pressure bar fitted with LP WC nozzles and a vacuum water and debris collection system. The nozzle type, such as fan or jet, and nozzle angles **must** be configured to provide the necessary cleaning pattern while not causing visible etching, patterns, or other damage on the TSN. The vacuum system **must** be configured to remove debris and water from the deck rapidly enough to prevent the formation of puddles on the TSN.

3.18.2 Accomplish the requirements of 3.15.3 for environmental readings.

3.18.3 Mask outermost 6 to 12 inches of TSN in areas where overcoating with MIL-PRF-24667 nonskid is required. Mask deck tie-down fittings extending 1 to 2 inches onto TSN.

3.18.4 Inspect the location and color of required VLA markings in accordance with 009-32 of 2.1, Naval Air Warfare Center Aircraft Division (NAWCAD) Class Guidance Drawings, Air Capable Ship Aviation Facilities Bulletin, Amphibious Assault Ship Aviation Facilities Bulletin, Shipboard Aviation Resume (NAECENG-7576), VLA General Service Bulletin No. 8 (latest revision) or by contacting the local NAWC (CAFSU/ASIR) Field Office. VLA markings are not to be applied over deck gray color topping. Overlap of VLA marking colors onto deck gray **must** not exceed 0.5 inch.

3.18.5 Mix and apply NAVSEA-approved TSN color topping in accordance with the product's NAVSEA-reviewed ASTM F718 data sheet or as approved by NAVSEA.

3.18.5.1 Apply TSN dark gray color topping to the entire TSN area except for the areas to receive VLA marking colors and to 6 to 12 inches of TSN at the outer edge of the area that will be overcoated with MIL-PRF-24667 nonskid.

3.18.5.2 Prepare companion panels to verify the Wet Film Thickness (WFT) of the TSN color topping. Companion panels **must** be metallic and abraded with 80 grit sand paper. Companion panels **must** be free of oils/greases prior to coating application.

3.18.5.3 Secure 5 companion panels to the deck in areas adjacent to where the dark gray color topping will be applied such that the panels do not move during color top application. The panels **must** remain in place during the color top application so that the panels are coated simultaneously with the coating of the deck.

(V) "WFT MEASUREMENTS - COLOR TOPPING"

3.18.5.4 Accomplish in-process WFT measurements on color topped companion panels immediately after they have been coated. One WFT measurement per companion panel is required. WFT measurements **must** comply with Table One. Record the WFT readings on 009-32 of 2.1, QA Checklist Form, Appendix 7a.

3.18.5.5 Apply TSN VLA marking colors to areas defined in 3.19.4 after the dark gray color topping has cured to support foot traffic in accordance with the product's NAVSEA-reviewed ASTM F718 data sheet or as approved by NAVSEA. Apply VLA marking colors using a slit foam roller or other application equipment defined in the product's NAVSEA-reviewed ASTM F718 data sheet or as approved by NAVSEA.

3.18.6 Cure time of each coat **must** be in accordance with the NAVSEA-reviewed ASTM F718 or as approved by NAVSEA.

(I) (G) "COLOR TOPPING HOLIDAY INSPECTION"

3.18.7 Verify color topping coverage.

3.19 Accomplish MIL-PRF-24667 nonskid system application to tie in areas, deck tie-down fittings, areas around recessed flight deck lights, and to areas around other designated deck fittings in accordance with 009-32 of 2.1.

3.19.1 Apply MIL-PRF-24667 nonskid system in accordance with 009-32 of 2.1, table and line citation in the Work Item or task order, for the tie-in areas. The MIL-PRF-24667 nonskid system **must** overlap onto the newly applied TSN up to the edge of the TSN color topping. Overlap of MIL-PRF-24667 nonskid system onto TSN color topping **must** not exceed 0.5 inch.

3.19.2 Accomplish coating of deck tie-down fittings, areas around recessed flight deck lights, and other designated deck fittings in accordance with 009-32 of 2.1. The coating **must** overlap onto surrounding TSN up to the edge of the TSN color topping. Overlap of the coatings onto TSN color topping **must** not exceed 0.5 inch.

4. NOTES:

4.1 To reduce the risk of TSN shrinkage stress creating in-service cracks, avoid positioning the robotic TSN installation system such that the point at which the short axis of the thermal spray machine reverses direction (i.e. the position where the thermal spray heads stop moving in one direction and then move back in the other direction) is over a deck weld.

4.2 Orient enclosure parallel to ship's main axis. Orient the long axis of the thermal spray machine inside the enclosure parallel to the ship's main axis.

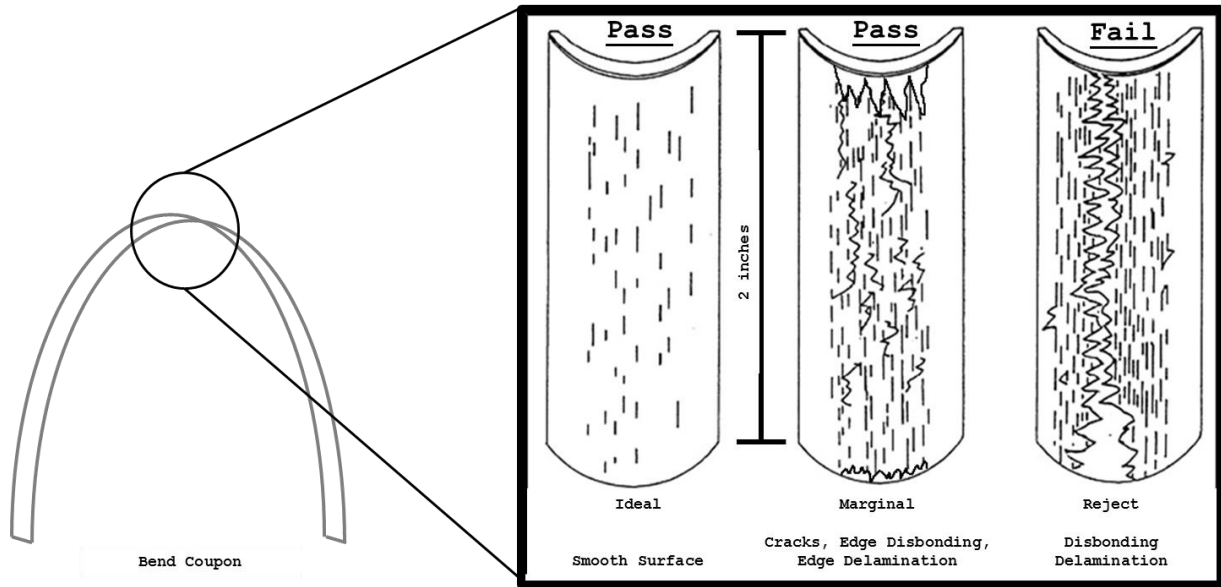
Table One: Surface Preparation and Coating System

TABLE ONE STEEL SURFACES	LINE	A PRIMARY SURFACE PREPARATION	B SECONDARY SURFACE PREPARATION	C TSN FIRST LAYER	D TSN SECOND LAYER	E SURFACE CLEANING	F TSN COLOR TOPPING	G VIA MARKING
FLIGHT DECKS	1	WATERJET TO NACE/SSPC- SP WJ-2/L	WHITE METAL BLAST TO NACE 1/SSPC- SP 5, 4-10 MIL PROFILE	MIL-PRF- 32577 IN ACCORDANCE WITH 2.2, 25 MIL FT MINIMUM	MIL-PRF- 32577 IN ACCORDANCE WITH 2.2, 40 MIL TOTAL FT MINIMUM	BRUSH/BROOM OR WATER CLEANING IN ACCORDANCE WITH 3.17	FIRST COAT DECK GRAY 2-3 MILS WFT IF REQUIRED FOR HIDING, ONE ADDITIONAL COAT SHALL BE APPLIED	FIRST COAT 2-3 MILS WFT IF REQUIRED FOR HIDING, ONE ADDITIONAL COAT SHALL BE APPLIED

QA Checklist Form Appendix A:
Thermal Spray

Surface Preparation Method:				
Date	Area/Location	Daily Cumulative Area of Blasted Surface (square feet)	Method B Height (mils)	Stylus RΔq
Mandrel Bend Tests				
Date	Area/Location	Number of Coupons Tested	Coupon Serial Numbers	Pass/ Fail
<input type="checkbox"/> Thermal Spray Initial Visual Inspection				
<input type="checkbox"/> Thermal Spray Nonskid Cleanliness Check Visual Inspection				
Signature: _____				

Attachment A:
Mandrel Bend Test Pass/Fail Coupons



Attachment B: Verification of Low Film Thickness Areas

