PRESERVATION PROCESS INSTRUCTION (PPI) for IMPRESSED CURRENT CATHODIC PROTECTION (ICCP) ANODE & DIELECTRIC SHIELD INSPECTION / REPAIR / REPLACE

to be used in conjunction with
CORE PPI 63101- 000 with a
Cleanliness Level of SSPC-SP-5 Surface Preparation

AGENCY		*DATE*
NAVSEA 05P23 Warrant Holder	**Approved by:**	1/28/08
NAVSEA 05P23 Director	**Approved by:**	1/28/08
CFFC (if required)	**Approved by:**	

1. SCOPE:

1.1 Inspection, Cleaning, Surface Preparation, Inspection, Repair or Replacement of Anodes and/or Dielectric Shield including Painting Requirements for Underwater Hull Cathodic Protection Areas.

NOTES: THIS PPI DOES NOT APPLY TO DIVER SERVICEABLE ANODES.
TECHNICAL REPRESENTATIVE *SHALL* BE PRESENT DURING THE ACCOMPLISHMENT OF THIS PPI.

1.2 If the PPI checkpoint criteria are met, the following table provides service life expectancy for the listed system.

Coating System Life Expectancy:

Specific Area	Surface Preparation Method	System	Life Expectancy
Anode Area	Cleanliness Level of SSPC-SP-5	Dielectric Capastic Shield	10+ years
Keel to Bottom of Boottop	Cleanliness Level of SSPC-SP-10	MIL-PRF-24647, Type I, Class 1, Application 3	12 years

2. REFERENCES: (REFER TO CORE PPI EXCEPT FOR THE FOLLOWING)

2.b. SSPC-PA 2, Measurement of Dry Coating Thickness with Magnetic Gages

2.c. MSDS and NAVSEA approved manufacturer's ASTM F 718 sheets, Shipbuilders and Marine Paints and Coating Product / Procedure Data Sheet for Coating System Being Applied.

Inner Shield ----------US Filter, Electrocatalytic, CapasticTM, Part No. 35524 100 mils min
Outer Shield ----------US Filter, Electrocatalytic, CapasticTM, Part No. 35524 22 mils min
Underwater Hull Anti-Corrosive/Anti-Fouling System MIL-PRF-24647**,** Type I, Class 1, Application 3

2.d. ASTM D 4417, Method C, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel

2.i. **ASTM** F22-02 Standard Test Method for Hydrophobic Surface Films by the Water-Break Test

3. APPENDICES: (REFER TO CORE PPI EXCEPT FOR APPENDICES, 5, 6, 7, 8, & 9)

4. REQUIREMENTS: (REFER TO CORE PPI EXCEPT FOR THE FOLLOWING)

4.3.5 IN-PROCESS INSPECTIONS: Inspections are to be completed in critical coated areas listed in NSTM 631, Section 11. The Responsible Government Representative certified coating inspector shall be given prior notice and shall perform an inspection of each coated area when the following checkpoints are reached: inspection, repair or replacement of anode & dielectric shield, pre-surface preparation, surface preparation, material / paint storage area, mixing, prime coat, between successive coat of paints, topcoat of paint applied and area ready for final inspection. The Responsible Government Representative is also required to examine all data maintained by the paint foremen concerning environmental conditions, surface cleanliness, surface profile, and paint thickness. Data shall be verified, depending on the checkpoint in question, including surface cleanliness, surface profile, dry film thickness and workmanship. Environmental data, such as temperatures, relative humidity and dew point need only be verified if the inspector is doubtful of the recorded values. Deficiencies in personnel training, certification, record maintenance, equipment maintenance or any matter that is not IAW good painting practice shall be recorded. The coating inspector shall verify the successful completion of each checkpoint and sign and date the applicable spaces on Appendix **5**.

4.4 RECORD KEEPING:

4.4.1 RECORD KEEPING DURING SURFACE PREPARATION / PAINT APPLICATION: A permanent record of environmental conditions, surface preparation and paint application operations shall be maintained. Data shall be entered on Appendices 1 - 5. The record shall include dates and times of surface preparations and painting operations, air temperatures, surface temperature, relative humidity, and dew point. Enter on Appendix 3 the abrasive blast media QPL, manufacturer, type and size of abrasive used (when used), along with the TESTEX PRESS-O-FILM tapes used to measure surface profile. All

appendices and data logger information shall be provided to the Contracting Regional Maintenance **Center** upon completion of the coating system installation. This information shall be retained for 3 years.

4.8 ENVIRONMENTAL CONDITION READINGS: Environmental information on Appendix 1 **from the core PPI** shall be manually measured and recorded every **4** hours. Environmental readings shall be posted at the job site at all times, and an updated copy provided to the coating inspector and the Responsible Government Representative at each checkpoint for review. At each **4**-hour recording period the readings shall be reviewed to determine if the environmental conditions are suitable for continued coating system installation. Additionally, a data logger shall be used to continuously monitor environmental conditions (air temperature, % relative humidity, and dew point) from 12 hours prior to, 48 hours after the application of a coat of paint IAW Ref. 2.c and NSTM 631, Sections 6, 7, and 8.

4.9 TEMPERATURES TO BE MAINTAINED FOR PAINT COATING SYSTEMS Immediately prior to application of each layer of the coating system substrate surface temperature shall be taken. Readings shall be taken in five randomly chosen locations on the layer within the space and the highest and lowest surface temperatures measured recorded in Appendix **1 from the core PPI.** Additionally, readings shall be taken in five randomly chosen locations on the layer within the space and the highest and lowest surface temperatures measured recorded prior to resuming application of a layer of the coating system when there has been a temporary work interruption. Application of the next layer of the coating system shall not commence (or recommence after a temporary work interruption) until all recorded surface temperature readings are within the required range as specified in Ref. 2.c and NSTM 631, Section 6.3. If any reading is outside of the required range, the contractor must take additional action to control the temperature in the space and return the surface temperature readings to within the required range. Additional readings shall be taken a minimum of hourly until the readings are returned to within the required range. If inconsistencies between the acceptable ambient and surface temperature ranges in Ref. 2.c and NSTM 631, Section 6.3 exist, the more stringent requirements shall be followed. If required ambient and surface temperatures are not provided or are unclear, contact responsible contracting authority for resolution.

5. <u>PRE-SURFACE PREPARATION</u>: (REFER TO CORE PPI EXCEPT FOR THE FOLLOWING)

NOTE: WHEN PREVIOUS FRESH WATER WASH-DOWN HAS NOT BEEN ACCOMPLISHED, COMPLETE STEP 5.3.

5.3 DEGREASE / FRESH WATER WASH DOWN: Prior to surface preparation by abrasive blasting and within 1 hour of ship on blocks, start the removal of all surface contaminants such as sea salts, grease and oil (hydrocarbons), loose rust; mud and marine growth with 3,000-PSI minimum at the nozzle fresh water wash down. If events prevent the start of the wash down within 1 hour of ship on blocks, ensure hull is kept wet until the wash down can be accomplished to prevent the marine growth from hardening. The wash down shall be followed by an adequate period of time to allow the surface to dry prior to surface preparation. SSPC-SP-1 requirements shall be met.

5.4.1 (Visual and Ultraviolet (UV) Light or Water-Break Test): Conduct a visual inspection to verify all surfaces within the scope of the project are free of hydrocarbons, and other contaminants such as sea salts, loose rust, mud, and marine growth, which could become imbedded in the surface to be prepared. Inspect surface using a UV light (approx. 60 Å) to detect hydrocarbons on the surface. The ultraviolet light will not allow the proper detection of hydrocarbons on the surface if the surface being inspected is exposed to day or artificial light. Therefore for proper UV light hydrocarbon detection, lights must be off for interior spaces, and the inspection must be conducted during darkness for surfaces exposed to sunlight. Take appropriate safety measures to prevent worker hazards in the darkened space. The Water-Break Test of Ref. 2.i may be used in lieu of Ultraviolet Light and must be used in mercury exclusion areas. When performing the Water-Break test on the non-dielectric shield areas, spray a mist of atomized distilled water on every 1 ft² of surface area for every 200 ft² of surface area to be tested. When performing the Water-Break test on the dielectric shield areas, spray a mist of atomized distilled water on a minimum of 5 areas within the dielectric shield area.

5.4.2 (Structural): Verify all surfaces within the scope of the project are IAW paragraph 5.1.

6. <u>DIELECTRIC SHIELD/ANODE REQUIREMENTS</u>:

6.1 DRY FILM THICKNESS MEASUREMENTS: Accomplish IAW Ref 2.b, record measurements in Appendix 4.

6.2 RE-COAT PERIODS: Applicator will not exceed manufacturer's maximum re-coat periods IAW Ref. 2.c.

6.3 CURE OF DIELECTRIC SHIELD: The Capastic material should cure in about 6 hours. A minimum temperature of 50° F shall be maintained for proper curing. In cool weather, warming it prior to mixing

can accelerate curing of the material. Heat the cans for one hour in a water bath at 70°-80° F, or store in a warm area until ready to use. Curing can also be accelerated by applying heat to the hull. This can be done by heat lamps, electric radiant heaters, or by other means that will not burn the Capastic.

NOTE: HEATERS SHALL NOT UTILIZE FORCED AIR SO AS TO PRECLUDE BLOWING OIL OR GREASE ONTO THE SUBSTRATE.

6.3.1 The anode shall not be energized until the vessel is waterborne and the Capastic has cured for a period of at least 7 days from completion of dielectric shield and paint coating system application.

6.4 CHECKPOINT (Capastic Storage): Accomplish a visual inspection of Capastic storage facilities 24 hours prior to material being mixed to verify that the storage temperature complies within the minimum and maximum range allowed IAW Ref. 2.c. The material storage temperature shall be monitored and recorded once per shift for 24 hours prior to the material being used. Record measured temperatures in Appendix 1.

6.5 Per paragraph 4.8, **c**ontinuously monitor environmental conditions (air temperature, % relative humidity, and dew point) beginning 12 hours prior to coating installation and throughout coating installation until 48 hours after final coat installation to ensure they meet requirements as specified in paragraphs 4.8 and 4.9. A set of environmental data shall be taken a minimum of every 5 minutes. A data logger shall be used to monitor and record environmental data. The information the data logger contains shall be able to be printed out or downloaded. Use Coating-System Environment Recorder made by Veriteq Instruments, Inc., model no. KT-2000-NEI, (Veriteq web information: www.veriteq.com/navy) or equivalent NAVSEA approved data logger to obtain and record measurements. Manually obtained readings shall also be taken and recorded a minimum of every **4** hours per paragraph 4.8.

6.6 MIXING: Mix all Capastic material thoroughly in their individual container to disperse pigments and assure homogeneity. Combine and thoroughly mix epoxy components prior to use IAW Ref. 2.c.

6.6.1 CHECKPOINT (Mixing): Accomplish a visual inspection of Capastic material to verify proper mixing.

6.6.1.1 (Shelf Life): Verify shelf life of material has not expired. Record expiration date in Appendix 7.

6.6.1.2 (Temperature): Verify material is within the mixing temperature as specified IAW Ref. 2.c. Record temperatures in Appendix 1 **from the core PPI**.

6.6.1.3 (Mixing): Verify material is mixed thoroughly prior to use IAW Ref. 2.c. Record satisfactory completion in Appendix 5.

6.7 INSPECTION OF CATHODIC PROTECTION SYSTEM: Conduct a visual inspection of Dielectric Shields and Anodes to determine if repairs or replacement are required as specified in paragraphs 6.7.1 through 6.7.4. Document results in Appendix **9**. Upon completion of inspection, submit results (Appendix 10) to the SUPERVISOR within 24 hours of inspection for a determination of type of repairs / replacement.

NOTE: SOME DOCUMENTS REFER TO SHIELDS AS "INNER AND OUTER" AND OTHER DOCUMENTS REFER TO THEM AS PRIMARY AND SECONDARY. FOR CLARIFICATION PURPOSES, "PRIMARY SHIELD" IS IDENTIFIED AS "INNER SHIELD". "SECONDARY SHIELD" IS IDENTIFIED AS "OUTER SHIELD". SEE FIGURES A, B, AND C.

6.7.1 Dielectric Shield Inspection (Repair Criteria):
Inspect the Inner and Outer shields to determine the percent of wear and tear, i.e. abrasion, cracks in shield, or areas in which the shield has come off the hull. See Figures A, B, and C.

6.7.1.1 Repair the Inner Shield when the total deteriorated shield surface area, following surface preparation of the deteriorated area, is from 0 to 2 %, and no single spot is greater than 1 ft^2.

6.7.1.2 Repair the Outer Shield when total deteriorated shield surface area, following surface preparation of the deteriorated area, is from 0 to 10 %, and no single spot is greater than 2 ft^2.

6.7.1.3 Repair the shields if there are any areas in which the Capastic has come off of the hull.

6.7.1.4 See Table 1 for a list of % damage to square area conversions.

Table 1 - Anode Dielectric Shields (Surface Ships)
% Damage → Square Feet of Area

Anode length	Shield	% Damage	Area (ft^2)
8 ft	Inner	2	2.0
	Outer	10	15.0
4 ft	Inner	2	1.5
	Outer	10	12.0
2 ft	Inner	2	1.0
	Outer	10	11.0

6.7.2 Dielectric Shield Inspection (Replacement Criteria):

6.7.2.1 Replace both the Inner and Outer Shields if the any of the criteria are exceeded from 6.7.1.

6.7.3 Anode Inspection (Repair Criteria):

Inspect the Anodes for the following:

6.7.3.1 Repair when any paint is found on anode surface. (Repairs are specified in para. 6.8.3.1)

6.7.3.2 Repair when any marine growth is found on anode surface. (Repairs are specified in para. 6.8.3.2)

6.7.3.3 Repair if any epoxy paste in bolthole counterbores is found missing. (Repairs are specified in para. 6.8.3.3)

6.7.3.4 Repair if there are any missing or loose fasteners. (Repairs are specified in para. 6.8.3.4)

6.7.4 Anode Inspection (Replacement Criteria):

Inspect the Anodes for the following:

6.7.4.1 Replace anode when loose or damaged Insulators are found.

6.7.4.2 Replace anode if any of the anode elements are damaged, including damage to the platinum coating on the anode surface.

6.7.4.3 Replace anode if it fails electrical checks for shorts or grounds IAW manufacturer's specifications.
a) For previously existing anodes, the resistance measurement between ground and any lead should be 1000 ohms.

NOTE: NEW ANODES RESISTANCE MEASUREMENT BETWEEN GROUND AND ANY CABLE LEAD SHOULD BE AT LEAST 1 MEGOHM.

WARNING: DO NOT ATTEMPT TO MEGGER ANY LEAD ELECTRICALLY CONNECTED TO THE ICCP POWER SUPPLY. DISCONNECT ELECTRICAL LEADS FROM THE POWER SUPPLY VICE ISOLATING BY OPENING BREAKER OR REMOVING FUSES. THIS IS REQUIRED SINCE MEGGERING HAS CAUSED ELECTRICAL CURRENT TO JUMP THE GAP OF THE OPEN BREAKER / REMOVED FUSES.

6.8 REPAIR/REPLACEMENT PROCEDURES CATHODIC PROTECTION SYSTEM:
Conduct repair/replacement of Dielectric Shields and/or Anodes in accordance with procedures in paragraphs 6.8.1 through 6.8.4.

6.8.1 Dielectric Shield Repair Procedure (Anode in place):

CAUTION: DO NOT PERFORM WET OR DRY ABRASIVE BLASTING OF PAINT ON THE HULL ANODES. SANDBLASTING WILL REMOVE THE PLATINUM FROM THE ANODE WIRES. PAINTING WILL RENDER THE ANODES INEFFECTIVE. DURING THE DRY-DOCKING PERIOD, THE ANODE (S) SHOULD BE MASKED OFF WITH PLYWOOD OR HEAVY CARDBOARD TO PREVENT DAMAGE FROM MECHANICAL CLEANING AND PAINTING. REMOVE THE MASKING PRIOR TO UNDOCKING THE VESSEL.

6.8.1.1 The following instructions are used when abrasive blasting of the shield(s) is required.

a) Mask Anode surfaces with heavy cardboard or plywood.

NOTE: THE OUTER EDGE OF THE AREA TO BE BLASTED *SHALL* BE SHIELDED TO LIMIT THE BLASTING TO ONLY THE DAMAGED AREA.

b) Abrasive blast the damaged area to bare metal IAW surface preparation method SSPC-SP-5 (White Metal Blast Cleaning) and the direction given in paragraph 7.

NOTE: CARE *SHALL* BE TAKEN NOT TO DAMAGE ANODE CASE EDGES DURING BLASTING PROCESS OF SHIELD. POWER OR HAND TOOLS SHALL BE USED IN PREPARING ANODE

CASE.

c) Areas of undamaged Capastic shall be roughened and feathered into the bare metal areas to provide a profile for adhesion of the new Capastic. Feather edges for at least 1 inch around the perimeter of the failed area using power or hand tools. To prevent fracturing of shield, do not feather using abrasive blasting.
d) Mix the Capastic material IAW manufacturer's instructions, Ref. 2.c.
e) For bare metal areas, apply the Capastic to the hull using a broad blade putty knife or trowel. Apply Capastic in the Inner Shield at a minimum thickness of 100 mils and the Outer Shield area at a minimum thickness of 22 mils. It should be faired in and made smooth from the anode for a distance of at least 6 inches to minimize hull turbulence.
f) For thin areas, apply a second coat after the area has fully cured and been sanded and roughened.
g) After the Capastic has cured, any rough areas shall be smoothed by sanding.
h) The anode shall remain covered with heavy cardboard or plywood to prevent damage or contamination by the ship's underwater hull coating system until just before undocking.
i) Overcoating of the Capastic with the first coat of the underwater hull anticorrosive coating system shall be accomplished while the Capastic is still tacky to the touch.
j) If Capastic has cured beyond the tacky stage, abrade to deglaze and roughen the surface. Do not abrasive blast, since there is potential of damaging the Capastic.

6.8.1.2 CHECKPOINT (Shield Repair): Verify proper application of Dielectric Shield.

6.8.1.2.1 (Dry Film Thickness): Accomplish dry film thickness measurements IAW Ref. 2.b.

6.8.1.2.2 (Capastic Smoothed): Conduct visual inspection to ensure shield is smooth.

6.8.1.2.3 All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At the rescheduled checkpoint, QA shall document satisfactory corrective actions taken to correct discrepancy.

6.8.1.2.4 In order to pass the checkpoint, Appendices 1 **from the core PPI**, and Appendices 5, 6, and **7** shall be up to date and submitted to QA. QA shall sign in the appropriate areas on Appendix 5.

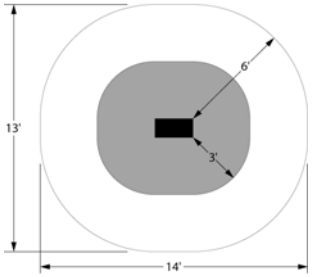
6.8.1.3 Proceed to paragraph 8 and complete procedures to overcoat dielectric shield with underwater hull anticorrosive and antifouling coating systems.

6.8.2 Dielectric Shield Replacement Procedure (Anode in place):

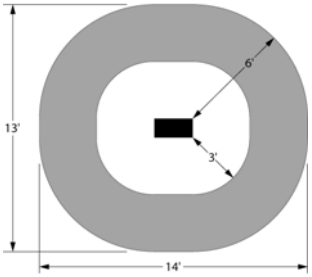
a) Mask Anode surfaces with heavy cardboard or plywood.
b) Abrasive blast the entire dielectric shield area to bare metal IAW surface preparation method SSPC-SP-5 (White Metal Blast Cleaning) and the direction given in paragraph 7.

NOTE: CARE *SHALL* BE TAKEN NOT TO DAMAGE ANODE CASE EDGES DURING BLASTING PROCESS OF SHIELD. POWER OR HAND TOOLS SHALL BE USED IN PREPARING ANODE CASE.

c) Mix the Capastic material IAW manufacturer's instructions Ref. 2.c.
d) Apply Capastic to the Inner Shield area at a minimum thickness of 100 mils and the Outer Shield area at a minimum thickness of 22 mils as shown in figures A, B, and C. The Capastic shall be faired in and made smooth from the anode for a distance of at least 6 inches to minimize hull turbulence. The Inner and the Outer Shields shall be applied consecutively.
e) For thin areas a second coat shall be applied after the area has fully cured and been sanded.
f) After the Capastic has cured, any rough areas shall be smoothed by sanding.
g) The anode shall remain covered with heavy cardboard or plywood to prevent damage or contamination by the ship's underwater hull coating system until just before undocking.
h) Overcoating of the Capastic with the first coat of the underwater hull anticorrosive coating system shall be accomplished while the Capastic is still tacky to the touch.
i) If Capastic has cured beyond the tacky stage, abrade to deglaze and roughen the surface. Do not abrasive blast, since there is potential of damaging the Capastic.

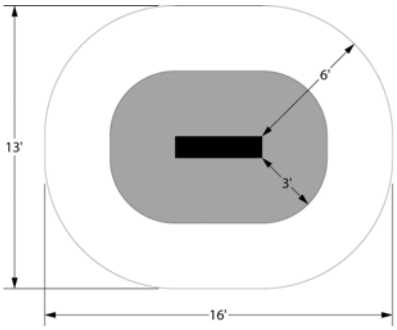


INNER SHIELD
Sandblast 13' x 14' area of hull to white metal.
Apply about 5 gallons of Capastic to shaded area.
Inner shield thickness will be 100 mils minimum.

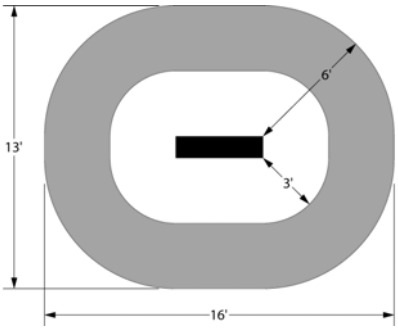


OUTER SHIELD
Apply about 4 gallons of Capastic to shaded area.
Outer shield thickness will be 22 mils minimum.

Figure A, Dielectric Shield for 2-Foot Anode

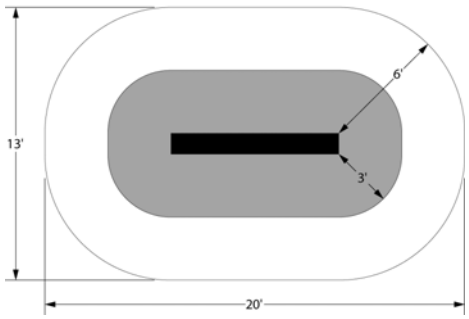


INNER SHIELD
Sandblast 13' x 16' area of hull to white metal.
Apply about 7 gallons of Capastic to shaded area.
Inner shield thickness will be 100 mils minimum.

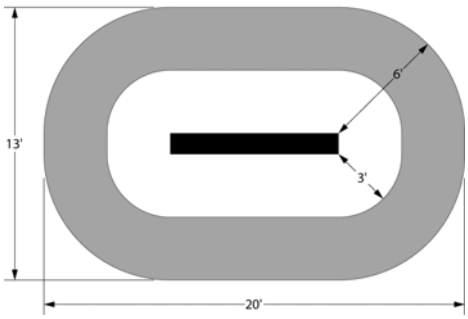


OUTER SHIELD
Apply about 4 gallons of Capastic to shaded area.
Outer shield thickness will be 22 mils minimum.

Figure B, Dielectric Shield for 4-Foot Anode



INNER SHIELD
Sandblast 13' x 20' area of hull to white metal.
Apply about 9 gallons of Capastic to shaded area.
Inner shield thickness will be 100 mils minimum.



OUTER SHIELD
Apply about 4 gallons of Capastic to shaded area.
Outer shield thickness will be 22 mils minimum.

Figure C, Dielectric Shield for 8-Foot Anode

6.8.2.1 CHECKPOINT (Shield Replacement): Verify Dielectric Shield is applied properly.

6.8.2.1.1 (Dry Film Thickness): Accomplish dry film thickness measurements IAW Ref. 2.b.

6.8.2.1.2 (Capastic Smoothed): Conduct visual inspection to ensure shield is smooth.

6.8.2.1.3 All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, QA will document satisfactory corrective actions taken to correct discrepancy.

6.8.2.1.4 In order to pass the checkpoint, Appendix 1 **from the core PPI**, and Appendices 5, 6, and **7** shall be up to date and submitted to QA. QA shall sign in the appropriate areas on Appendix 5.

6.8.2.2 Proceed to paragraph 8 and complete procedures to overcoat dielectric shield with underwater hull anticorrosive and antifouling coating systems.

6.8.3 Anode Repair Procedures:

6.8.3.1 Painted Surfaces:
a) Remove paint using paint solvent followed by fresh water wash.
b) Remove paint without damaging the platinum overlay of the anode.

6.8.3.2 Marine Growth:
a) Remove Marine Growth by scrubbing with a soft bristle brush.

6.8.3.3 Bolthole counterbores missing epoxy paste:
a) Remove loose and damaged Capastic, and all foreign matter.
b) Clean surface of plastic case using Emory / sandpaper to attain fresh surface.
c) Surfaces shall be clean including inside edge of the counterbore.
d) Ensure surfaces are free of grease, oil and all contaminants IAW SSPC-SP-1.
e) Mix Capastic IAW manufacturer's instructions, Ref. 2.c.
f) Fill the counterbores in the plastic holder with Capastic.

6.8.3.4 Loose and missing fasteners:
a) Replace missing fasteners.
b) Tighten fasteners to the proper torque IAW manufacturer's instructions; approximately 10 foot-pounds for Navy Standard Anodes.
c) Replace Capastic in bolthole counterbores IAW 6.8.3.3.

6.8.4 Anode Replacement Procedure:

6.8.4.1 Anode Removal
a) Inside the hull of the vessel disconnect anode electrically and mechanically as applicable.
   1) Remove connection box cover, nut, lock washer, cable terminal lug, brass washer, nut, two insulating washers, and brass packing nut.
   2) Remove female prong assembly from gland.
   3) Remove truarc ring.
   4) Loosen packing nut (this relieves pressure on Teflon packing and anode stem).
b) Remove entire dielectric shield to bare metal IAW surface preparation method SSPC-SP-5 (White Metal Blast Cleaning) in accordance with procedures in paragraph 7 to surface area as shown in figures A, B, and C.
c) Remove epoxy paste around counterbored areas around the nuts.
d) Remove fastening nuts and washers.
e) Remove Anode.
f) Remove Neoprene Mat (if applicable).
g) Cover/plug hull penetration to prevent contamination of interior spaces.
h) Cover studs to prevent damage.
i) Prepare area where anode was attached to bare metal IAW surface preparation method SSPC-SP-5 and the direction given in paragraph 7.

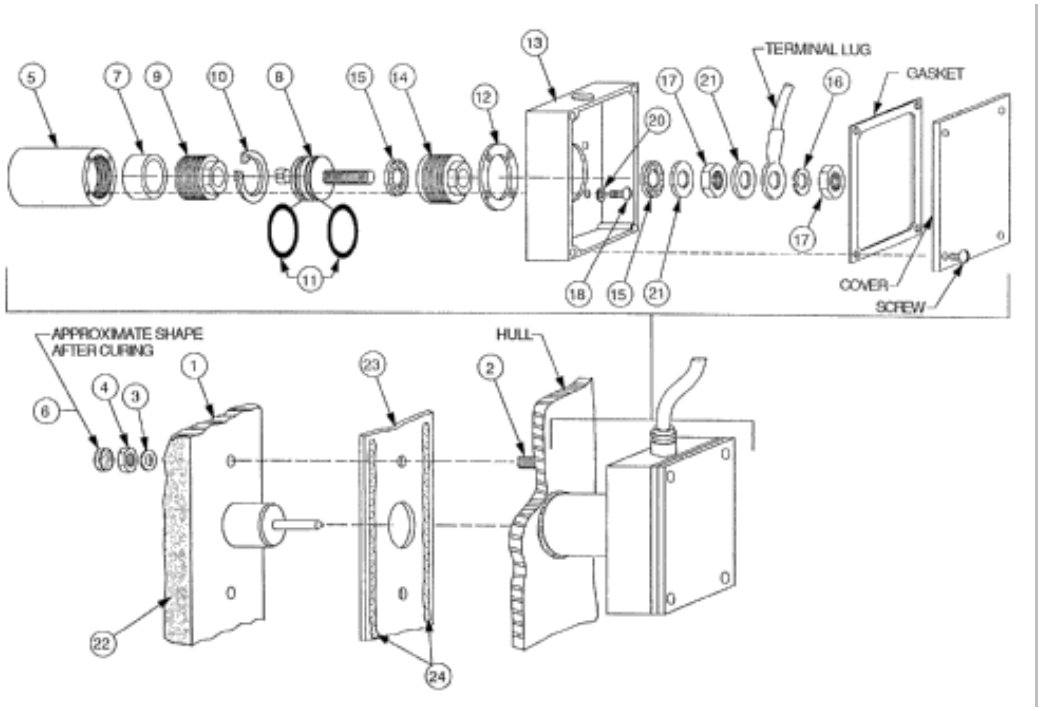


Figure D, Non-Submerged Navy Standard Anode Assembly

Table 2- Hull Anode 36460-001 Replacements Parts List

Item	Quantity	Description	Part Number
1	1	Anode Assembly	36472
2	16	Stud-weld w/ceramic collar	31811
3	16	Washer, plain 3/8" LT Series	53639
4	16	Nut, hex jam 3/8-24 UNF-2B	53638
5	1	Body, gland	35697
6	1	Paste epoxy, kit	37020
7	1	Packing, Teflon	31737
8	1	Prong Assembly, female	31765
9	1	Nut, packing 2"-12 UN-2A	31817
10	1	Ring, Truarc	31806
11	2	O-ring	31832
12	1	Gasket, gland	31802
13	1	Box, connection	31834
14	1	Nut, pacing 2-1/4-16 UN-2A	31816
15	2	Washer, insulating	31810
16	1	Washer, split lock 3/8"	37796-7-3
17	2	Nut, hex 3/8-24 UNF-2B LT series	37791-23-1
18	4	Screw, Fil. Head #10-32 UNF-2A x 5/8"	37808-64-4
19	-	Not Used	
20	4	Washer, split 1/4"	37795-5-4
21	2	Washer, plain lock 3/8"	37795-7-1
22	4	Capastic (3/4 gal per kit)	35524
23	1	Mat, neoprene (If Applicable)	36474
24	2	Rubber, silicone (tube) (If Applicable)	36289

6.8.4.2 Anode Replacement (Diver Serviceable Anode)
Follow manufacturer's procedures to replace diver serviceable anode.

6.8.4.3 Anode Replacement (Navy Standard Anodes #36470-2 and 36460-2)

a) Place the anode onto the hull so that the hub and pin project into the stuffing tube and packing. Place washer and nut on the studs and tighten the anode assembly onto the hull. Tighten the nuts at the center first, using only moderate torque. Continue to tighten all nuts evenly, waiting several minutes between successive tightening. Tighten all nuts to approximately 10 foot-pounds
b) Apply the dielectric shield IAW 6.8.2

6.8.4.4 Inside the ship complete the mechanical assembly and electrical connections, as applicable.
a) Tighten packing nut until the Teflon packing is compressed. Retighten at intervals until all cold flow of the Teflon has ceased.
b) Install truarc ring.
c) Lubricate O-rings and entire female prong assembly with silicone grease (A-A-59173, Type I).
d) Install female prong assembly, and packing nut. Tighten packing nut to hold the female prong assembly securely.
e) Install two insulating washers, a brass washer, a nut, and another brass washer, cable terminal lug,
f) Install a split washer and a nut, connection box cover and secure with screws.
g) Fill the connection box with paraffin and insert the pipe plug in the tapped fill hole.

6.8.4.5 CHECKPOINT (Anode Repaired / Replacement): Verify Anode/Dielectric Shield is applied properly.
a) (Dry Film Thickness): Accomplish dry film thickness measurements IAW Ref. 2.b.
b) (Capastic Smoothed): Conduct visual inspection to ensure shield is smooth.
c) Test Anode for shorts or grounds IAW manufacturer's specifications.
1) The new anode resistance between ground and any cable lead should be at least 1 megohm.

NOTE: FOR PREVIOUSLY EXISTING ANODES, THE RESISTANCE BETWEEN GROUND AND ANY LEAD SHOULD BE 1000 OHMS.

WARNING: DO NOT ATTEMPT TO MEGGER ANY LEAD ELECTRICALLY CONNECTED TO THE ICCP POWER SUPPLY. DISCONNECT ELECTRICAL LEADS FROM THE POWER SUPPLY VICE ISOLATING BY OPENING BREAKER OR REMOVING FUSES. THIS IS REQUIRED SINCE MEGGERING HAS CAUSED ELECTRICAL CURRENT TO JUMP THE GAP OF THE OPEN BREAKER / REMOVED FUSES.

d) Air test compartment IAW compartment / tank requirements (only if work done inside ship).

6.8.4.5.1 All tests and inspections noting unsatisfactory conditions shall result in the termination and rescheduling of the checkpoint. At rescheduled checkpoint, QA shall document satisfactory corrective actions taken to correct discrepancy.

6.8.4.5.2 In order to pass the checkpoint, Appendix 1 **from the core PPI**, and Appendices 5, 6, and **7** shall be up to date and submitted to QA. QA shall sign in the appropriate areas on Appendix 5.

6.8.4.6 Proceed to paragraph 8 and complete procedures to overcoat dielectric shield with underwater hull anticorrosive and antifouling coating systems.

7. SURFACE PREPARATION: (REFER TO SECTION 6 OF CORE PPI EXCEPT FOR THE FOLLOWING)

NOTE: IMPLEMENTING AUTHORITY *SHALL* DESIGNATE ONE OF THE FOLLOWING METHODS TO ACHIEVE CLEANLINESS LEVELS OF SSPC-SP-5 AND SSPC-SP-10 SURFACE PREPARATION:
1) Dry abrasive blasting
2) Dry abrasive blasting with *abrasive sponge* media
3) Wet abrasive blasting followed by dry abrasive blasting to remove flash rust
4) Wet abrasive blasting followed by dry abrasive blasting with *abrasive sponge* media to remove flash rust
5) UHP water jetting followed by dry abrasive blasting to remove flash rust and ensure a 2-4 mil surface profile
6) UHP water jetting followed by dry abrasive blasting with *abrasive sponge* media to remove flash rust and ensure a 2-4 mil surface profile

7.2 Accomplish the surface preparation requirements IAW Ref. 2.a and 631-11-1, II (Surface Preparation), for the location/area being prepared. Minimum requirement is cleanliness level of SSPC-SP-5 (White Metal Blast Cleaning). A white metal blast cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and other foreign matter. The blast media shall meet the requirements specified in NSTM 631, or have written authorization for use from NAVSEA 05**P23**. Accomplish a surface profile of 2-4 mils (50-100µ).

7.3 **Not applicable to this PPI.**

NOTE: ENSURE THAT ANODE SURFACES ARE MASKED WITH HEAVY CARDBOARD OR PLYWOOD.

7.5.1 (Surface Profile Measurements): **Surface peak-to-valley profile shall be checked**. **Take 1 reading for each 200 ft^2 for the first 1,000 ft^2; for each additional 1,000 ft^2, 2 profile readings shall be taken. Each group of profile readings shall average 2.0 to 4.0 mils with no reading less 1.0 mil nor more than 5.0 mils. If minimum profile is not present, proper minimum profile shall be established. Profile readings shall be taken in accordance with Ref 2.d using either Method B or C. The abrasive manufacturer's type and mesh size used, if applicable, shall be entered on Appendix 3 from the core PPI (SURFACE PROFILE /PREPARATION & CLEANLINESS LOG).**

7.5.2 (Soluble Salt Measurements Conductivity Testing): Accomplish conductivity tests IAW the method described in Enclosure 1 using a 1250 mm^2 Bresle Sample Patch. Use HORIBA B-173 or equivalent NAVSEA approved test equipment. Measurements shall be made randomly over the prepared surface. **Take 1 reading for each 200 ft^2 for the first 1,000 ft^2. Take five (5) measurements for every 1,000 ft²) above 1000 ft^2).** Soluble salts (total ionic) shall not exceed 30µS/cm (microsiemens/cm). For the dielectric shield area, each dielectric shield shall have a minimum of 5 measurements taken.

8. PAINTING REQUIREMENTS: (REFER TO SECTION 7 OF CORE PPI EXCEPT FOR THE FOLLOWING)

NOTE: FOR REPAIRED WELDS THAT REQUIRE HYDROSTATIC TEST, NO COATINGS ARE TO BE APPLIED PRIOR TO PERFORMANCE OF HYDROSTATIC TEST.

8.3 RE-COAT PERIODS: Applicator shall conform to manufacturer's minimum and maximum re-coat periods IAW Ref. 2.c. If the recoat window is exceeded, follow manufacturer's requirements.

8.4 DRY PAINT FOR CHECKPOINTS: The first anticorrosive coat will be applied on top of tacky dielectric shield. For all other paint coats, the paint shall be dry prior to all paint related checkpoints. Dry shall be defined as fingernail hard.

8.6 Excessive dry film thickness in a coat or cumulative coats shall be determined IAW NSTM 631, Table 631-1-2. If excessive DFT is determined, the Responsible Implementing Authority shall be contacted on how to proceed.

8.7 RECEIPT INSPECTION OF COATING MATERIAL:

NOTE: RECEIPT INSPECTION OF CONTRACTOR-FURNISHED MIL-PRF-24647 IS THE SAME REQUIREMENT AS SPECIFIED UNDER MIL-PRF-23236 IN PARAGRAPHS 7.7.2 AND 7.7.3 OF THE CORE PPI.

9. PRIME COAT APPLICATION: (REFER TO SECTION 8 OF CORE PPI)

10. INTERMEDIATE COAT APPLICATION: (REFER TO SECTION 10 OF CORE PPI)

11. TOPCOAT #1 APPLICATION: (REFER TO SECTION 12 OF CORE PPI)

12. TOPCOAT #2 APPLICATION: (REFER SECTION 12 OF CORE PPI)

13. TOPCOAT #3 APPLICATION: (REFER TO SECTION 12 OF CORE PPI)

14. FINAL INSPECTION: (REFER TO SECTION 13 OF CORE PPI)

APPENDIX 5

CHECKPOINTS & MILESTONES COMPLETION & SIGN OFF LOG

SHIP: _____JOB ORDER: _____ DATE: _____
LOCATION: _____WORK ITEM: _____ PARA. NO.: _____
PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

ACTIVITY	TIME	DATE
Ships on Blocks		
Start of Pressure Washing		
Date Pre-Surface Preparation and Cleaning Begins Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Pre-Surface Preparation and Cleaning Checkpoint --Date of Visual and UV Light or Water-Break Inspection Check --Date of Structural and Pre-Surface Conditioning (ensuring de-burring and grinding) Check --Date of Contamination Containment and Masking Check Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Surface Preparation Begins Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Preparation Checkpoint --Date of Surface Profile Measurement Check --Date of Soluble Salt Measurement Check --Date of Environmental Check --Date of Contamination Containment and Masking Check --Date of Inspection of Prepared area (ensuring all areas are properly prepared) Check --Date of Inspection of area cleanliness prior to **Dielectric Shield** application Check Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Capastic Storage Area Inspected Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Capastic Mixing Inspected --Date of Shelf Life Check --Date of Temperature Check --Date of Mixing Check Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		

APPENDIX 5 (CONTINUED)

CHECKPOINTS & MILESTONES COMPLETION LOG

SHIP: _____JOB ORDER: _____ DATE: _____
LOCATION: _____WORK ITEM: _____ PARA. NO.: _____
PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

ACTIVITY	TIME	DATE
Date Dielectric Shield is Repaired / Replaced Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Dielectric Shield Repaired / Replaced Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Anode is Repaired / Replaced Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Anode Repair / Replacement Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Paint Storage Area Inspected Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Paint Mixing Inspected --Date of Shelf Life Check --Date of Temperature Check --Date of Mixing Check Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Prime Coat Applied Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Prime Coat Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		

APPENDIX 5 (CONTINUED)

CHECKPOINTS & MILESTONES COMPLETION LOG

SHIP: _____JOB ORDER: _____ DATE: _____
LOCATION: _____WORK ITEM: _____ PARA. NO.: _____
PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

ACTIVITY	TIME	DATE
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Amine Bloom Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date Intermediate Coat Applied Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Intermediate Coat Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Amine Bloom Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date 1st Topcoat Applied (Keel to Bottom of Boottop) Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of 1st Topcoat Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		

APPENDIX 5 (CONTINUED)

CHECKPOINTS & MILESTONES COMPLETION LOG

SHIP: _____JOB ORDER: _____ DATE: _____
LOCATION: _____WORK ITEM: _____ PARA. NO.: _____
PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

ACTIVITY	TIME	DATE
Date of Amine Bloom Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date 2nd Topcoat Applied (Keel to Bottom of Boottop) Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of 2nd Topcoat Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Surface Cleanliness Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Amine Bloom Inspection Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date 3rd Topcoat Applied (Keel to Bottom of Boottop) Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of 3rd Topcoat Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		
Date of Finished Coated Surfaces Checkpoint Implementing Contractor (Print/ Signature): _____ **Certified Inspector (Print): _____** **Certified Inspector (Signature): _____** **NACE Session I Certification ☐ NBPI Certification ☐** **Inspector #: _____ Certification Expiration Date: _____**		

APPENDIX 6

CERTIFIED COATING INSPECTOR'S CHECKPOINT SIGN-OFF LOG
PAINT APPLICATION EQUIPMENT AND PAINT CONSUMPTION LOG

SHIP: _____ JOB ORDER: _____ DATE: _____

LOCATION: _____WORK ITEM: _____ PARA. NO.: _____

PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

		Dielectric Inner Shield	Dielectric Outer Shield	Prime Coat	Inter-mediate Coat	1st Topcoat	2nd Topcoat	3rd Topcoat
Airless Paint Hose Size		**N/A**	**N/A**					
Airless Paint Hose Length		**N/A**	**N/A**					
Airless Tip Orifice Diameter / Fan Width		**N/A**	**N/A**					
Airless Pump Used & Model	Plural Airless	**N/A**	**N/A**					
	Conventional Airless ☐							
Airless Pump Ratio If plural component: Fixed ☐ or Variable ☐		**N/A**	**N/A**					
If Using Inline Heater Temperature F° (Fahrenheit)	Temperature Setting At Heater	**N/A**	**N/A**					
	Temperature At Tip							
Product Applied								
Product Manufacturer								
Expiration Date								
Color Applied		**N/A**	**N/A**					
Product VOC								
Base Portion Batch № (Part A)								
Hardener Portion Batch № (Part B)								
Gallons Used per Coat								
Square Feet Painted								

APPENDIX 7

QA INSPECTION FORM - DRY FILM THICKNESS MEASUREMENTS

SHIP: ______________________________ **JOB ORDER:** ____________ **DATE:** __________
LOCATION: ______________________________ **WORK ITEM:** ____________ **PARA. NO.:** ____
(I) ___ (V) ___ (G) ___ PRODUCT BEING APPLIED: ______________________________

MAINTAIN SEPARATE LOG FOR EACH AREA/LOCATION, PREPARED OR PAINTED SURFACE. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION.

Indicate Coating System Seq.

Indicate Type 1 or 2 DFT Gage Being Used: ________ **PARTIAL ___ FINAL ___**
Gage Manufacturer: ______________________________
Serial Number of Gage Being Used: ______________________________
Date Last Calibrated: __________ Current Calibration Due Date: __________

___1___ Inner Shield: ☐
________ Outer Shield: ☐
________ Prime Coat: ☐
________ Intermediate Coat: ☐

______ Topcoat #1: ☐
______ Topcoat #2: ☐
______ Topcoat #3: ☐
______ Other: ____ ☐

ACCEPT CRITERIA

PRIMER DFT ___ TO ___ MILS
#1 INTERMEDIATE DFT ___ TO ___ MILS
#2 INTERMEDIATE DFT ___ TO ___ MILS
TOPCOAT DFT ___ TO ___ MILS
TOTAL SYST. DFT ___ TO ___ MILS

ADJUSTMENT & MEASUREMENT-TYPE I PULL-OFF GAGES:
BASE METAL READING AVERAGE VALUE ________

Spot Measurement	DFT (Mils) Avg. of 3 Gage Readings	Approximate Location	
1			
2			
3			
4			
5			
Average		Date	Time

Contractor (Print): ______________________
Contractor (Signature): ______________________
Govt. Insp. (Print): ______________________
Govt. Insp. (Signature): ______________________

ADJUSTMENT & MEASUREMENT-TYPE I PULL-OFF GAGES:
BASE METAL READING AVERAGE VALUE ________

Spot Measurement	DFT (Mils) Avg. of 3 Gage Readings	Approximate Location	
1			
2			
3			
4			
5			
Average		Date	Time

Contractor (Print): ______________________
Contractor (Signature): ______________________
Govt. Insp. (Print): ______________________
Govt. Insp. (Signature): ______________________

Spot Measurement	DFT (Mils) Avg. of 3 Gage Readings	Approximate Location	
1			
2			
3			
4			
5			
Average		Date	Time

Contractor (Print): ______________________
Contractor (Signature): ______________________
Govt. Insp. (Print): ______________________
Govt. Insp. (Signature): ______________________

Spot Measurement	DFT (Mils) Avg. of 3 Gage Readings	Approximate Location	
1			
2			
3			
4			
5			
Average		Date	Time

Contractor (Print): ______________________
Contractor (Signature): ______________________
Govt. Insp. (Print): ______________________
Govt. Insp. (Signature): ______________________

SAT ___ UNSAT ___ HOLIDAY INSPECTION ____
SAT ___ UNSAT ___ SURFACE INSPECTION ____ SAT ___ UNSAT ___ DFT ____

COMMENTS: ____

APPENDIX 8

COATING SYSTEMS (10 – 12 YEAR SYSTEM)

Coating	Ameron	Ameron
Prime AC*	235 AMERCOAT DFT 5 mils RED	230 AMERCOAT DFT 5 mils RED
Intermediate AC*	235 AMERCOAT DFT 5 mils GRAY	230 AMERCOAT DFT 5 mils GRAY
1st Topcoat 1 AF**	AMERON ABC 3 RED DFT 6 mils	AMERON ABC 3 RED DFT 6 mils
2nd Topcoat AF**	AMERON ABC 3 BLACK DFT 6 mils	AMERON ABC 3 BLACK DFT 6 mils
3rd Topcoat AF**	AMERON ABC 3 RED DFT 6 mils	AMERON ABC 3 RED DFT 6 mils

Coating	International	International
Prime AC*	FPL 274 / FPA 327 DFT 5 mils RED	KHA 303 / KHA 062 DFT 5 mils RED
Intermediate AC*	FPJ 034 / FPA 327 DFT 5 mils GRAY	KHA 302 / KHA 062 DFT 5 mils GRAY
1st Topcoat 1 AF**	BRA 640 RED DFT 6 mils	BRA 640 RED DFT 6 mils
2nd Topcoat AF**	BRA 642 BLACK DFT 6 mils	BRA 642 BLACK DFT 6 mils
3rd Topcoat AF**	BRA 640 RED DFT 6 mils	BRA 640 RED DFT 6 mils

Coating	Sherwin Williams Seaguard Marine	Hempadur
Prime AC*	P32RQ82 / P23VQ80 DFT 5 mils	45150-50630 RED DFT 5 mils
Intermediate AC*	P23AQ81 / P23VQ80 DFT 5 mils	45150-11480 GRAY DFT 5 mils
1st Topcoat 1 AF**	Sherwin Williams Seaguard Marine P30RQ10 DFT 6 mils minimum	OLYMPIC 76600-51110 RED DFT 6 mils
2nd Topcoat AF**	Sherwin Williams Seaguard Marine P30BQ12 DFT 6 mils minimum	OLYMPIC 76600-19990 BLACK DFT 6 mils
3rd Topcoat AF**	Sherwin Williams Seaguard Marine P30RQ10 DFT 6 mils minimum	OLYMPIC 76600-51110 RED DFT 6 mils

*Anti-Corrosion System DFT for primer and intermediate coats, 10 mils minimum
**Anti-Fouling System DFT for 1st, 2nd, and 3rd topcoats, 15 mils minimum
AC = Anti-Corrosion
AF = Anti-Fouling

NAVSEA APPROVED ASTM-F-718 SHEETS MAY BE OBTAINED BY SELECTING THE NAVY COMMUNITY TAB ON THE WWW.NSTCENTER.COM WEBSITE AND FOLLOWING THE DIRECTIONS.

APPENDIX 9

QA INSPECTION FORM - CONDITION CATHODIC PROTECTION EQUIPMENT

SHIP: _____ **DATE:** _____
LOCATION: _____
PRODUCT BEING APPLIED: _____

MAINTAIN SEPARATE LOG FOR EACH AREA / LOCATION, PREPARED OR COATED SURFACE, WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS MAINTAIN A SEPARATE LOG FOR EACH SECTION

Dielectric Shields: _____

Anodes: _____

Recommendations: _____

Implementing Contractor (Print): _____
Implementing Contractor (Signature): _____
Date: _____