



USCGC ORCAS (WPB 1327)

SPECIFICATION FOR DRYDOCK REPAIRS

FY2021

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(Rev-1, 30 September 2020)

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REVISIONS RECORD

This page is used to record specification revisions, which may have occurred subsequent to a Revision 0 (Rev-0) package. Information listed is intended to provide contractors and field unit personnel a means to ensure all the current specification revision pages are present when reviewing or utilizing this specification package.

DATE	REV#	WORK ITEM#	CHANGES MADE
09/30/2020	1	27	Update to paragraph 3.2 wording, removed “and flanged connections for the purposes of bidding” Added “including connection type”

NOTE: All work item and paragraph numbers listed above for a given revision correspond to same numbers in the previous revision. This revised specification is self-contained with all of the above listed changes incorporated.

CONSOLIDATED LIST OF REFERENCES

The below-listed documents form a part of this specification to the extent specified herein. Approval/publication dates or revision dates/numbers are also identified, to ensure that same document versions are used at the time of specification writing and during contract execution.

All Coast guard drawings, technical publications, and standard specifications will be provided to contractors by the Coast Guard at an appropriate time, or upon request, free of charge. Other Government documents may be accessed – free of charge – from links located on the SFLC website. Commercial sites provide access to their respective documents.

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 085-002, Rev 2, Docking Plan
Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan
Coast Guard Drawing 110 WPB 114-001, Rev B, Stern Flap
Coast Guard Drawing 110 WPB 114-002, Rev A, Spray Rail
Coast Guard Drawing 110 WPB 161-006, Rev -, Intermediate Shaft Strut Manufacturing Details
Coast Guard Drawing 110 WPB 171-001, Rev B, Mast Details
Coast Guard Drawing 110 WPB 171-002, Rev G, Mast Details
Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details
Coast Guard Drawing 110 WPB 245-004, Rev A, Propeller Details
Coast Guard Drawing 110 WPB 259-005, Rev C, 18" Raw Water Discharge Spray Ring Assembly w/
Companion Flanges & Gaskets
Coast Guard Drawing 110 WPB 259-006, Rev D, MDE 8" Exhaust Flapper Valve Assembly
(w/Companion Flanges & Gaskets)
Coast Guard Drawing 110 WPB 528-001, Rev B, Sewage Piping A&D (1301)
Coast Guard Drawing 110B WPB 085-001, Rev A, Tank Capacity Curves
Coast Guard Drawing 110B WPB 085-010, Rev B, Docking Plan
Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-
WPB-085-7)
Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion
Coast Guard Drawing 110B WPB 113-001, Rev K, Inner Bottom Plating
Coast Guard Drawing 110B WPB 117-001, Rev H, Transverse Sections (Frames 0 thru 4)
Coast Guard Drawing 110B WPB 121-001, Rev D, Longitudinal Bulkheads
Coast Guard Drawing 110B WPB 161-001, Rev C, Main Shaft Strut Details
Coast Guard Drawing 110B WPB 161-002, Rev D, Main Shaft Strut Installation
Coast Guard Drawing 110B WPB 161-004, Rev C, Intermediate Shaft Strut Installation
Coast Guard Drawing 110B WPB 163-002, Rev C, Chest Detail
Coast Guard Drawing 110B WPB 201-002, Rev A, Propulsion Configuration
Coast Guard Drawing 110B WPB 243-005, Rev B, Shaft Locking Device
Coast Guard Drawing 110B WPB 245-002, Rev B, Assembly of Oil Injection Equipment

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Coast Guard Drawing 110B WPB 256-001, Rev G, Main Engine SW Cooling System A&D
Coast Guard Drawing 110B WPB 256-003, Rev -, Main Engine Sea Water Cooling
Coast Guard Drawing 110B WPB 256-004, Rev B, Mods to SW Cooling Incidental to Install of Charge Air Cooler Diverter
Coast Guard Drawing 110B WPB 259-001, Rev D, Main Engine Exhaust Piping System
Coast Guard Drawing 110B WPB 259-002, Rev D, Genset Exhaust Piping System
Coast Guard Drawing 110B WPB 261-001, Rev C, Fuel Oil Service Piping (A&D)
Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics
Coast Guard Drawing 110B WPB 521-001, Rev H, Firemain Piping Arrg't & Details
Coast Guard Drawing 110B WPB 526-001, Rev M; Scuppers & Deck Drains Piping Arrangement
Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details
Coast Guard Drawing 110B WPB 561-001, Rev A, Steering System Details
Coast Guard Drawing 110B WPB 561-004, Rev B, Steering System Details – Piping
Coast Guard Drawing 110B WPB 565-002, Rev B, Fin Stabilization Dets - Piping
Coast Guard Drawing 110B WPB 601-027, Rev F, Outboard Profile and Weather Decks
Coast Guard Drawing 110B WPB 602-002, Rev D, Visual Identification
Coast Guard Drawing 110B WPB 633-001, Rev A, Cathodic Protection Plan & Detail
Coast Guard Drawing 110B WPB 633-002, Rev C, Cathodic Protection Install Schematic & Layout
Coast Guard Drawing 110C WPB 161-005, Rev G, Stern Tube Installation Details
Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)
Coast Guard Drawing 110C WPB 565-001, Rev D, Fin Stabilizer System (Struct Locs & Dets)
Coast Guard Drawing 110C WPB 601-027, Rev D, Outboard Profile & Weather Deck
Coast Guard Drawing FL 6713-203, Rev -, CRP-V850, SST XDCR (SS505) Adapter Assembly
Coast Guard Fleet Drawing FL 2804-12, Rev -, U.S.C.G. Emblem
Coast Guard Fleet Drawing FL 2804-22, Rev-, Consolidated Visual ID for Cutters

COAST GUARD PUBLICATIONS

Coast Guard Commandant Instruction (COMDTINST) M10360.3, Jun 2006, Coatings and Colors Manual
Coast Guard Technical Publication (TP) 2924, Jun 1990, General Information Book and Operating Manual for USCG 110 Foot Patrol Boat, Annex 1B, Propeller Renewal Procedure
Coast Guard Technical Publication (TP) 3223, May 1985, SWBS 420, Section G, Doppler Service Manual
Coast Guard Technical Publication (TP) 3495, May 2002, Chapter 243, Installation Duramax Shaft Seal System
Coast Guard Technical Publication (TP) 3906, Oct 2008, Ship's Steering Gear System
Coast Guard Technical Publication (TP) 3907, Feb 2007, SWBS 565, Ship's Fin Stabilizing System
Coast Guard Technical Publication (TP) 4655, Sep 2007, Cathodic Protection System
Coast Guard Technical Publication (TP) 4666, Feb 2008, Steering System
Coast Guard Technical Publication (TP) 4691, SWBS 593, Section E, December 1985, Sewage System
Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements
Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

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Surface Forces Logistics Center Standard Specification 3020 (SFLC Std Spec 3020), 2018, Overhaul AC Electrical Motors

Surface Forces Logistics Center Standard Specification 5000 (SFLC Std Spec 5000), 2018, Auxiliary Machine Systems

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 6341 (SFLC Std Spec 6341), 2018, Install Interior Deck Covering Systems

Surface Forces Logistics Center Standard Specification 8634 (SFLC Std Spec 8634), 2018, Drydocking

Surface Forces Logistics Center Standard Specification 8635 (SFLC Std Spec 8635), 2014, Temporary Services

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

OTHER REFERENCES

American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME), B4.1-1967, (reaffirmed 2009), Preferred Limits and Fits for Cylindrical Parts

American National Standards Institute/American Water Works Association (ANSI/AWWA) C652, 2011, Disinfection of Water-Storage Facilities

American National Standards Institute/NSF International (ANSI/NSF) 61, 2015, Drinking Water System Components - Health Effects

American Society for Nondestructive Testing (ASNT) SNT-TC-1A, 2006, Recommended Practice for Nondestructive Testing Personnel Qualification and Certification

American Society of Mechanical Engineers (ASME) B16.34, 2004, Valves-Flanged, Threaded, and Welding End

ASTM International (ASTM) D1330, 2015, Standard Specification for Rubber Sheet Gaskets

ASTM International (ASTM) D4138, 2013, Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means

ASTM International (ASTM) D5363, 2016, Standard Specification for Anaerobic Single-Component Adhesives

ASTM International (ASTM) F992, 2006, Standard Specification for Valve Label Plates

ASTM International (ASTM) D3951, Re-approved 2004, Standard Practice for Commercial Packaging

Commercial Item Description (CID) A-A-59316, Abrasive Materials for Blasting

Commercial Item Description (CID) A-A-59588, 2013, Rubber Silicone

Commercial Item Description (CID) A-A-59323 A, 2005, Cloths, Cleaning, Low-Lint

Federal Specification (Fed Spec) HH-P-151, Mar 1991, Packing; Rubber-Sheet, Cloth-Insert

Federal Specification (Fed Spec) QQ-N-281, Oct 1985, Nickel-Copper Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections

Federal Standard (FED-STD) 595, 2008, Colors Used in Government Procurement

Furuno Operators Manual RDP-139/148/149

International Organization for Standardization (ISO) 484/2, 1981, Shipbuilding - Ship Screw Propeller - Manufacturing tolerances - Part 2: Propellers of Diameter Between 0.80 and 2.50m, Inclusive

International Standard Organization (ISO) 4406, 1999, Hydraulic Fluid Power – Fluids – Method for Coding Level of Contamination by Solid Particles

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- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-61, 2003 Edition, Pressure Testing Of Steel Valves
- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-67, 2002 Edition, Butterfly Valves
- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-72, 1999 Edition, Ball Valves with Flanged or Butt-Welding Ends for General Service
- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-80, 2008 Edition, Bronze Gate, Globe, Angle and Check Valves
- MIL PRF-16173, Sep 2006, Corrosion Prevention Compound, Solvent Cut Back, Cold Application
- MIL-A-22262, Mar 1996; Abrasive Blasting Media Ship Hull Blast Cleaning
- MIL-DTL-1222, Dec 2000, Studs, Bolts, Screws and Nuts for Applications Where a High Degree of Reliability Is Required
- MIL-G-6032D (1), Grease, Plug Valve, Gasoline and Oil Resistant, NATO Code #G-636
- MIL-PRF-24635, 2009, Coating Systems, Weather-Resistant, Exterior Use
- MIL-PRF-24647, Apr 2013, Paint System, Anticorrosive and Antifouling, Ship Hull
- MIL-S-45180, 1998; Sealing Compound, Gasket, Hydrocarbon Fluid and Water Resistant
- MIL-S-8660C (2), Silicone Compound, NATO Code # S-736
- NAVSEA Drawing 803-921865, Rev P; Cathodic Protection Hull Zinc Anodes
- Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013, Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets
- Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) G-6032, 2014 Grease, Plug Valve, Gasoline and Oil Resistant, NATO Code Number G-363, Metric
- The Society for Protective Coatings (SSPC) Surface Preparation Specification No.1 (SSPC-SP 1), 2015, Solvent Cleaning
- The Society for Protective Coatings (SSPC) Surface Preparation Specification No.11 (SSPC-SP 11), 2012, Power Tool Cleaning to Bare Metal
- The Society for Protective Coatings (SSPC), January 2015, Paint Application Specification No. 2 (PA-2), Procedure for Determining Conformance to Dry Coating Thickness Requirements
- The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 10/NACE No. 2, 2007, Near-White Blast Cleaning
- The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 12/NACE No.5, 2002, Surface Preparation and Cleaning of Metals by Waterjetting Prior to Recoating
- Vosper Thornycroft Technical Bulletin No. 49, Jul 1992, Procedure for Fitting New Tiller Rod Eye Bearings to Actuators and Removing Redundant Grease Hose On BMS Island Class USCG Cutters

CONSOLIDATED LIST OF GOVERNMENT-FURNISHED PROPERTY

The following is a list of property, which the Government will furnish. This list supersedes any other material obligations indicated or implied by referenced drawings.

WORK ITEM	MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
16	N	**4" Diameter x 28' Long, Aquamet-17 propulsion shaft	NSN: 2010-01-445-7940	2 ea.	8,700.00
16	N	*Oil Injection Equipment Kit	N/A	1 set	6,000.00
18	N	Shaft seal assembly kit	NSN: 5330-01-497-8095	2 ea.	859.48
18	N	**Shaft seal assembly	NSN: 4320-01-497-8057	2 ea.	3,111.84
18	N	Emergency Shaft Seal Inflator Kit	NSN: 5330-01-497-9866	2 ea.	175.00
19	N	Main Shaft Strut Bearing, Bronze and rubber cutlass bearing, 4" ID x 5" OD x 16" Long	NSN: 3120-01-222-3927	2 ea.	200.00
19	N	Intermediate Shaft Strut Bearing, Bronze and rubber cutlass bearing, 4" ID x 5" OD x 16" Long	NSN: 3120-01-222-3927	2 ea.	200.00
20	N	Stern Tube Bearing, Bronze and Rubber cutlass bearing, 4" ID x 5" OD x 8" Long	NSN: 3120-01-238-0689	2 ea.	150.00
22	Y	**Propeller, LH	NSN: 2010-01-222-2440	1 ea.	23,445.00
22	Y	**Propeller, RH	NSN: 2010-01-222-2441	1 ea.	22,800.00
23	N	**Port spray ring	NSN: 2990-01-475-9621	1 ea.	1,584.00
23	N	**Starboard spray ring	NSN: 2990-01-475-9620	1 ea.	1,584.00
23	N	**Port 8" flapper valve	NSN: 4810-01-475-8648	1 ea.	2,072.00
23	N	**Starboard 8" flapper valve	NSN: 4810-01-475-8415	1 ea.	2,072.00
23	N	MDE gasket kit	NSN: 5330-01-475-8157	2 ea.	389.45
23	N	MDE gasket kit	NSN: 5330-01-475-8169	2 ea.	312.52
23	N	Exhaust gasket kit	NSN: 5330-01-475-8804	4 ea.	128.24
23	N	Turbo Charger gasket	NSN: 5330-01-424-6806	2 ea.	283.01
23	N	Expansion bellows and flower pot to bellows	NSN 5330-01-394-8528	6 ea.	96.84
23	N	Soft patch Kit	NSN: 2040-01-469-1629	1 kit	1812.37
25	Y	V850 Color Echo Sounder	NSN: 5845-01-518-7245	1 ea.	1,423.41
26	N	**CELZ-SRD-331 Doppler speed log	NSN: 5845-01-302-4161	1 ea.	3,255.08

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28	N	**Kraissl 2 1/2" Duplex strainer	NSN: 4730-01-394-9731	2 ea.	3,900.00
28	N	**Kraissl 4" duplex strainer	NSN: 4730-01-173-1413	4 ea.	4,700.00
28	N	**Kraissl 1 1/2" Duplex strainer for RO	NSN: 4730-01-600-9049 PN:72-38F	1 ea.	600.00
28	N	**Kraissl 1" Simplex Strainer	NSN: 5840-00-732-0829 PN: 72-8	1 ea.	195.00
30	Y	**Rudder	NSN: 2040-01-223-2674	2 ea.	25,000.00
30	N	Lower Rudder Bearing	NSN: 3120-01-477-8696	2 ea.	1,364.00
31	N	Spherical Roller Bearing	NSN: 3110-00-902-7288	2 ea.	314.80
31	N	Spherical Roller Bearing	NSN: 3120-99-806-7289	4 ea.	221.07
31	N	Bolt, Trunnion, Special	NSN: 5325-01-394-7933	4 ea.	367.67
31	N	Tiller Pin (Bolt)	NSN: 5306-99-538-1451	4 ea.	145.44
31	N	Tiller Spacer Flange Bush	NSN: 5365-99-807-4040	4 ea.	163.73
31	N	Trunnion Spacer Flange Bush	NSN: 3120-01-396-1724	4 ea.	159.25
31	N	Circlip	NSN: 5365-99-902-2593	8 ea.	2.76
31	N	Fin 25/32 Washer	NSN: 5310-99-538-1450	4 ea.	4.44
31	N	Actuator seals	NSN: 5330-99-729-7570	4 ea.	128.87
31	N	Fin Rod Eye Bearings (Assy)	NSN: 3120-01-377-1940	4 ea.	1,190.95
31	N	Rod Eye Lock nut	NSN: 5310-01-468-7665	4 ea.	23.76
31	N	Tiller Pin nylock nut	NSN: 5315-01-485-3148	4 ea.	20.86
31	Y	**Fin Stabilizer assembly	NSN: 2040-99-726-4768	2 ea.	19,987.00
31	N	**Fin Stabilizer Lower Bearing/Bushing	NSN: 3120-99-726-2345	2 ea.	1,091.25
31	N	Fin Stabilizer Cooler	NSN: 4420-99-820-3141	2 ea.	706.71
31	N	Fin Stabilizer Sealing Kit consists of (5) pre-cut rings of Slade 3300 packing material (DELAMAR)	NSN: 2040-01-566-3198	2 ea.	499.80
43	Y	*Transducer Cover Plate	N/A	1 ea.	50.00

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

***Government-furnished property, which is to be supplied by either the vessel or the C4IT Service Center

CONSOLIDATED LIST OF CRITICAL INSPECTION ITEMS

The following is a list of work items, which contain Critical Inspection reports, which the Contractor must complete within the first 25% of the availability contract period (see SFLC Std Spec 0000, (Inspection report particulars)):

Work Item	Title
4	Appendages (U/W), Leak Test
7	Voids (Non-Accessible), Leak Test
16	Propulsion Shafting, Remove, Inspect, And Reinstall
22	Propellers; Remove, Inspect, and Reinstall
28	Sea Strainers - (All Sizes), Overhaul
30	Rudder Assembly, Remove, Inspect and Reinstall
31	Fin Stabilizers (General), Overhaul
39	U/W Body, Preserve (100%) Used with Side Scan)
42	Impressed Current Cathodic Protection System, Inspect and Maintain

PRINCIPAL CHARACTERISTICS

110' WPB (B-CLASS)	
PHYSICAL	
Length overall	110' 0" or 113' if stern flap present
Length between perpendiculars	104' 1/2"
Depth	10' 1/2"
Beam, molded	21' 3"
Depth, molded	N/A
Full load draft	6' 5-3/4"
Height of highest projection	55'
Full load displacement	165 long tons
Anchor	150 lb. Danforth with 450 ft. 3" nylon rope
Shore tie voltage requirements	450VAC 400A 3PH, 60Hz ungrounded
HULL	
Hull	BS-4360, GR 43A Steel
Main weatherdeck & superstructure	5086 Aluminum Alloy
Frame spacing	Various
Bulkheads	Seven watertight transverse
Fin stabilizers	Frame 22-1/2
MACHINERY	
Main propulsion	Two Paxman Type 16 RP200M (Valenta) V-16 Diesel; 2880 BHP each @ 1500 RPM (max)
Reduction gears	Two ZF Model BW 1500 reversible reduction gearboxes; 1.839:1 ratio
Number of propellers	2
Number of blades	5
Diameter of propeller	49.6"
Pitch	61.4"
Rpm	N/A
Shaft	AQUAMET 17
Shaft diameter	4"
Shaft seal	Johnson Duramax split face seal
Shaft bearings	Rubber Cutless or Thordon
Rudders	Twin underslung type, 5 sq ft each
Ship's service generators	Two Caterpillar Type 3304BT diesel; 99KW, 460V, 60Hz, 3-phase, 3-wire @ 1800 RPM
TANK	
Fuel oil (95%)	9,306 gal.
Fresh water (100%)	940 gal.
Lubricating oil (95%)	109 gal.

General Requirements

1. SCOPE

1.1 Intent. This standard specification invokes general requirements for conducting vessel repairs performed at a commercial contractor's facility for Coast Guard vessels.

1.2 Term interchangeability. The terms 'Contractor', 'CG Yard', 'NAVSTA EVERETT', 'shipyard', 'Base', and 'Coast Guard Industrial' are used interchangeably in this specification. Where the primary service provider is Coast Guard personnel, references to contractor and other noted descriptors within this specification or within drawings, publications, SFLC Standard Specifications or other commercial and military references are deemed the same as prime service provider.

2. REFERENCES

COAST GUARD DRAWINGS

None

COAST GUARD PUBLICATIONS

Coast Guard Commandant Instruction (COMDTINST) M10360.3 (series), Coatings and Color Manual
Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General. The Contractor shall conform to all requirements specified in SFLC Std Spec 0000 and in this item, as applicable, during the performance of this availability.

NOTE

The requirements of paragraph 3.1 (General) applies to all work under the scope of this contract, whether explicitly stated in work items or not, and to all other work subsequently authorized by changes, modifications, or extensions to the contract.

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3.2 Contractor-provided fire watch personnel. The Contractor shall provide fire watch personnel and equipment.

3.3 Preservation requirements. The Contractor shall accomplish all preservation tasks, including touch-ups, in accordance with SFLC Std Spec 6310.

3.3.1 Brand name approval. Ensure that all contractor-furnished coatings are in accordance with SFLC Std Spec 6310, Appendix C (Authorized Coatings for Use on Cutters and Boats).

3.3.2 Coating colors and system color schemes. Ensure that all colors and color coat/paint schemes are in accordance with COMDTINST M10360.3, Chapter 6 (Cutter and Boat Colors Exterior and Interior).

NOTE

Unless a waiver has been granted (in writing) by the KO, deviations from authorized coatings (listed in Appendix C of SFLC Std Spec 6310) and colors and color schemes (provided in Chapter 6 of COMDTINST M10360.3) are strictly prohibited.

3.4 Welding and brazing requirements. The Contractor shall perform all welding and allied processes, and NDE in accordance with SFLC Std Spec 0740.

3.5 Environmental protection requirements. The Contractor shall adhere to the following environmental protection requirements in accordance with the SFLC Stand Spec 0000:

3.5.1 Contractor operated (non USCG) facilities. The Contractor shall provide and maintain environmental protection as defined in SFLC Std Spec 0000 Appendix A, Requirements for Environmental Protection at Contractor Operated (Non USCG) Facilities, as applicable, during the performance of this availability. Contractor shall plan for and provide environmental protective measures to control pollution that develops during normal practice, as well as plan for and provide environmental protective measures required to correct conditions that develop during the project. Contractor shall comply with applicable Federal, state, and local laws, codes, ordinances, and regulations in their entirety. Any reference to a specific portion of a Federal, state, or local law, code, ordinance, or regulation in this or any other item shall not be construed to mean that relief is provided from any other sections of the law, code, ordinance, or regulation.

3.5.2 Test and procedures. The Contractor shall be required to promptly conduct tests and procedures for the purpose of assessing whether operations are in compliance with applicable Environmental Laws. Analytical work shall be done by qualified laboratories; and where required by law, the laboratories shall be certified.

3.5.3 Regulatory notifications. The Contractor shall be responsible for all regulatory notification requirements in accordance with Federal, State and local regulations. In cases where the Coast Guard must also provide public notification, such as storm water permitting, the Contractor must coordinate with the Contracting Officer or COR, and if work is being performed at a USCG Facility, the local Facility Engineer or Engineering Officer. The Contractor shall submit copies of all regulatory notifications to the Contracting Officer and the local Facility Engineer or Engineering Officer prior to commencement of work activities. Regulatory notifications shall be provided for including but not limited to demolition, renovation, National Pollutant Discharge Elimination System (NPDES) defined site work, and remediation of controlled substances such as asbestos, hazardous waste, and lead paint.

3.5.4 Environmental manager. The Contractor shall appoint in writing an Environmental Manager for the project, and shall be responsible for coordinating Contractor compliance with Federal, State, local, and station environmental requirements. The Environmental Manager shall ensure compliance with Hazardous Waste Program requirements, including hazardous waste handling, storage, manifesting, and disposal; implement the Contractors' Environmental Management Plan; ensure that all environmental permits are obtained, maintained,

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and closed out; ensure compliance with Storm Water Program Management requirements; ensure compliance with Hazardous Materials including storage, handling, and reporting requirements; as well as coordinate any remediation of regulated substances such as lead, asbestos, and polychlorinated biphenyl (PCB). This may be a collateral position; however the individual must be trained to accomplish the following duties; ensure waste segregation and storage compatibility requirements are met; inspect and manage Satellite Accumulation areas; ensure only authorized personnel add wastes to containers; ensure all Contractor personnel are trained in 40 CFR requirements and individual position requirements; coordinate removal of waste containers; and maintain the Environmental Records binder and required documentation, including environmental permits compliance and close-out.

3.5.5 HW disposal. Contractor shall comply with SFLC Std Spec 0000 Appendix A, Requirements For Environmental Protection At Contractor Operated (Non USCG) Facilities for HW disposal.

3.6 Local Policy. None.

3.7 SFLC standard specification approved changes. The Contractor shall be aware that the following are approved changes to published SFLC 2018 Edition Standard Specifications and supersede published content:

4. NOTES

4.1 QA inspection forms. QA inspection forms (QA-1 thru QA-5), required in SFLC Std Spec 6310 to be completed and submitted during preservation of “critical-coated surfaces”, and are provided at the end of this document.

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**QA-1 - QUALITY ASSURANCE INSPECTION FORM
(PRESERVATION CHECKLIST)**

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE
LOCATION OF WORK (INCL. FRAME #'S)		AREA (SQFT)	

CHECKPOINT 1 – COATING SYSTEM COMPLIANCE			
	Ensure all coatings are in compliance with SFLC Std Spec 6310, Appendix C.		
CHECKPOINT 2 - PAINT STORAGE			
	Ensure all coatings are kept at a temperature of 65 to 85°F at all times, unless otherwise specified by the coating mfr.		
CHECKPOINT 3 - AMBIENT CONDITIONS			
	Ensure surface and surrounding temperatures are each between 50 and 90°F for water-containing coatings, and 35 and 95°F for other coatings, unless otherwise specified by the coating manufacturer(s).		
	Ensure maximum relative humidity (RH) is as follows, from surface preparations through final curing of topcoat: 50% for tanks, voids, and vent plenum; and 85% for all other areas, unless otherwise specified by manufacturer(s).		
	Ensure surface temperature is at least 5°F above the dew point, unless otherwise specified by the coating mfr.		
CHECKPOINT 4 - PRE-SURFACE PREPARATION			
	Remove surface contaminants (soluble salts, loose rust, mud, and marine growth) with low pressure fresh water wash down (maximum 5,000 psi). If oil and grease are present, perform solvent cleaning, as per SSPC SP-1.		
	Verify equipment setup, blast media, and surface preparation methods match designated test coupon.		
CHECKPOINT 5 - SURFACE PREPARATION			
	Verify environmental conditions (see CHECKPOINT 3).		
	Ensure cleanliness of prepared surface is as per specification (i.e.: SSPC SP-11, SP-10, SP WJ-2...).		
	Verify surface anchor profile using ASTM D4417-Methods B or C against SFLC Std Spec 6310. Conduct profile readings at a minimum of 5 locations for the first 1000-sqft area, and 2 locations for each succeeding 1000-sqft area.		
	Measure soluble salt conductivity in accordance with SSPC-Guide 15. Conduct 5 measurements per each 1000-sqft area (max. threshold: 70 microsiemens/cm for non-submerged surfaces, 30 microsiemens/cm for submerged surfaces).		
CHECKPOINT 6 - PRIMER COAT APPLICATION			
	Verify environmental conditions (see CHECKPOINT 3).		
	Verify proper mixing and stand-in (induction) times.		
	Ensure no paint is applied when the temperature is expected to drop to freezing before the paint has dried.		
	Ensure surfaces are completely dry, unless otherwise allowed by the coating manufacturer(s).		
	Verify wet film thickness (WFT) at random, to prevent under or over application. Verify final DFT.		
	Brush out all runs, sags, drips, and puddles.		
	Perform visual inspection for holidays and other defects.		
CHECKPOINT 7 – STRIPE COAT APPLICATION			
	Verify environmental conditions (see CHECKPOINT 3).		
	Ensure overcoating window is as per manufacturer's instructions.		
	After primer coat (mist coat after inorganic zinc), brush-apply un-thinned coat of same primer paint over edges, weld seams, cut-outs, and areas of complex geometries @ 3-4 mils wet film thickness (WFT).		
CHECKPOINT 8 – TOP COAT APPLICATION			
	Verify environmental conditions (see CHECKPOINT 3).		
	Ensure overcoating window is as per manufacturer's instructions.		
	Verify proper mixing and stand-in (induction) times, as applicable.		
	Verify wet film thickness at random, to prevent under or over application.		
	Brush out all runs, sags, drips, and puddles.		
CHECKPOINT 9 – FINAL INSPECTION			
	Verify final system dry film thickness. Conduct 5 sets of 3 readings for each of the first 3 100-sqft areas, followed by 5 sets of 3 readings for each succeeding 1000-sqft area.		
	Ensure that system cure is in accordance with manufacturer's recommendation for intended service.		
	Ensure potable water tank exhaust ventilation is maintained continuously from and during coating application through final system cure, to exhaust all solvent to the atmosphere and to prevent solvent entrapment.		
	For immersion coatings (including tank U/W body), record date and time of the following events: Final coat application: ____/____/____; Return to service or removal from environment controls: ____/____/____		
CHECKPOINT 10 – RECORD KEEPING			
	Complete, sign, and submit all provided QA Inspection Forms.		
NAME OF QP-1/NACE INSPECTOR	SIGNATURE	CERT. #	DATE / TIME

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 QA-2 - QUALITY ASSURANCE INSPECTION FORM
 (ENVIRONMENTAL READINGS)

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE

Use one sheet for each activity. Record conditions every four hours from before surface preparation to application of final coating system coat.

DATE & TIME	ACTIVITY (SURFACE PREPARATION, PRIMER COAT, BARRIER COAT, TOP COAT, ETC...)	LOCATION (FRAME & DECK, RELATION TO EQUIPMENT, ETC.)	TEMPERATURE				% REL. HUMIDITY
			DEW PT.	SURFACE	AMBIENT	ΔT DP - SURFACE	
NAME OF QP-1/NACE INSPECTOR		SIGNATURE			CERT. #	DATE / TIME	

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QA-3a - QUALITY ASSURANCE INSPECTION FORM
(SURFACE PROFILE LOG FOR PROFILE MEASUREMENTS IAW ASTM D4417-METHOD-C)

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE
LOCATION OF WORK (INCL. FRAME #'S)			AREA (SQFT)

SURFACE PREPARATION METHOD		PROFILE ACHIEVED (MILS)		
		MIN	MAX	MEAN
SSPC-SP-10/NACE No. 2	☐			
SSPC-SP WJ-1/NACE WJ-1	☐			
SSPC-SP WJ-2/NACE WJ-2	☐			
SSPC-SP WJ-3/NACE WJ-3	☐			
SSPC-SP WJ-4/NACE WJ-4	☐			
SSPC-SP-3	☐			
SSPC-SP-11	☐			
SSPC-SP-11 (inaccessible area)	☐			
Brush-blasting (non-metallic substrate)	☐			
ABRASIVE MANUFACTURER:		ABRASIVE SIEVE SIZE:		

PLACE SURFACE PROFILE REPLICA TAPES IN THE SPACES PROVIDED BELOW, TO SERVE AS PERMANENT QA RECORD. MAINTAIN A SEPARATE LOG FOR EACH LOCATION. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS, MAINTAIN A SEPARATE LOG FOR EACH SECTION.					
Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here	
Reading (mils):		Reading (mils):		Reading (mils):	
Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here	
Reading (mils):		Reading (mils):		Reading (mils):	
Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here	
Reading (mils):		Reading (mils):		Reading (mils):	
Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here	
Reading (mils):		Reading (mils):		Reading (mils):	
Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here		Place Surface Profile Replica Tape Here	
Reading (mils):		Reading (mils):		Reading (mils):	
MEAN MIL READING (IAW ASTM D4417-METHOD C) FOR ABOVE 15 READINGS:					

NAME OF QP-1/NACE INSPECTOR	SIGNATURE	CERT. #	DATE /

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			TIME

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QA-3b - QUALITY ASSURANCE INSPECTION FORM
(SURFACE PROFILE LOG FOR PROFILE MEASUREMENTS IAW ASTM D4417-METHOD-B)

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE
LOCATION OF WORK (INCL. FRAME #'S)		AREA (SQFT)	

SURFACE PREPARATION METHOD		PROFILE ACHIEVED (MILS)		
		MIN	MAX	MEAN
SSPC-SP-10/NACE No. 2	☐			
SSPC-SP WJ-1/NACE WJ-1	☐			
SSPC-SP WJ-2/NACE WJ-2	☐			
SSPC-SP WJ-3/NACE WJ-3	☐			
SSPC-SP WJ-4/NACE WJ-4	☐			
SSPC-SP-3	☐			
SSPC-SP-11	☐			
SSPC-SP-11 (inaccessible area)	☐			
Brush-blasting (non-metallic substrate)	☐			
ABRASIVE MANUFACTURER:		ABRASIVE SIEVE SIZE:		

RECORD MEASUREMENTS TAKEN IN THE SPACES PROVIDED BELOW, TO SERVE AS PERMANENT QA RECORD. MAINTAIN SEPARATE LOG FOR EACH LOCATION. WHEN AN AREA IS DIVIDED INTO SEPARATE SECTIONS, MAINTAIN A SEPARATE LOG FOR EACH SECTION.					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Reading (mils):					
Mean Reading (mils)					
Mean Reading (mils) IAW ASTM DD4417).					

NAME OF QP-1/NACE INSPECTOR	SIGNATURE	CERT. #	DATE / TIME

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QA-4 - QUALITY ASSURANCE INSPECTION FORM
(SURFACE SOLUBLE SALT CONDUCTIVITY LOG)

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE
LOCATION OF WORK (INCL. FRAME #'S)			AREA (SQFT)

[illegible]

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NAME OF QP-1/NACE INSPECTOR	SIGNATURE	CERT. #	DATE / TIME

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QA-5 - QUALITY ASSURANCE DATA FORM
(COATING THICKNESS)

(Use one sheet for each sequence)

VESSEL NAME	HULL #	WORK ITEM #	WORK ITEM TITLE

COATING MFG	PRODUCT NAME	BATC H #	INDUCTI ON TIME	COATING SYSTEM SEQUENCE (PRIMER/TOUCHUP/3RD COAT, ETC.)

DRY FILM THICKNESS (DFT) MEASUREMENTS IAW SSPC-PA 2.						
SPOT	1	2	3	4	5	AVERAGE VALUE
*BASE METAL READING (BMR) Required, If Magnetic Pull-Off (Type I/Banana) Gauge Is Used.						

LOCATION (FRAME REFERENCE):								
SPOT	1	2	3	4	5	OVERALL AVG. DFT	ADJUSTMENTS	
1							AVG. BMR	DEVIATION
2								
3						BEFORE ADJUSTMENTS	AFTER ADJUSTMENTS	
AVG.								

LOCATION (FRAME REFERENCE):								
SPOT	1	2	3	4	5	OVERALL AVG. DFT	ADJUSTMENTS	
1							AVG. BMR	DEVIATION
2								
3						BEFORE ADJUSTMENTS	AFTER ADJUSTMENTS	
AVG.								

LOCATION (FRAME REFERENCE):								
SPOT	1	2	3	4	5	OVERALL AVG. DFT	ADJUSTMENTS	
1							AVG. BMR	DEVIATION
2								
3						BEFORE ADJUSTMENTS	AFTER ADJUSTMENTS	
AVG.								

APPLICATION METHOD (AIRLESS, CONVENTIONAL SPRAY, ROLLED)	AVERAGE DFT

NAME OF QP-1/NACE INSPECTOR	SIGNATURE	CERT. #	DATE / TIME

WORK ITEM 1: Hull Plating (Side Scan), Ultrasonic Testing

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to perform thickness measurements of underwater (u/w) hull plating and freeboard up to the data couple by ultrasonic side scan method.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion

Coast Guard Drawing 110B WPB 085-010, Rev B, Docking Plan (SUPERCEDES 110B-WPB-085-2)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

OTHER REFERENCES

American Society for Nondestructive Testing (ASNT) SNT-TC-1A, 2006, Recommended Practice for Nondestructive Testing Personnel Qualification and Certification

3. REQUIREMENTS

3.1 General. The Contractor shall use drawings listed in Section 2 herein as guidance during the performance of work specified herein.

3.1.1 CIR.

None.

3.1.2 Tech Rep. The Contractor shall provide the services of a qualified ultrasonic testing company, with suitable side scan equipment, to conduct a "Scanning Crawler Automated Test" of the vessel's u/w hull

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plating and entire freeboard up to the data couple for the presence of metal corrosion and deterioration. Ensure the following:

- Follow the ASNT Recommended Practice No. SNT-TC-1A 2006 for all personnel qualification and certification.
- Provide supporting documentation to show the ASNT qualifications and certifications of all personnel directly involved in the scanning process.
- All scanning shall be completed by a certified automated scanner with a proven history and certificate of qualifications.
- Provide an ASNT Level III analyst on site during the entire scanning process to oversee the project and evaluate all data obtained during scanning.
- Provide an ASNT Level III or II analyst to verify with a hand held meter all areas on the hull identified as thinner than the criteria for repair defined in paragraph 3.2.3.
- Provide all qualified personnel required to complete the requirements contained herein at an on-site location.

3.1.3 Protective measures. The Contractor shall furnish and install suitable covering to seal off and protect all non-affected surfaces/equipment and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, remove protective material and inspect for the presence of contamination. Clean all equipment and spaces, contaminated due to improper protection, to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Docking blocks.
- Capastic fairing.

3.1.5 Work preparations and coordination. The Contractor shall plan and coordinate all specified vessel work detailed in this specification package to ensure the side scan survey does not necessitate a work stoppage. Abide by the following guidance to facilitate the ultrasonic survey:

- Ensure and verify all u/w body, entire freeboard surface preparation and primer coat application tasks are completed within ten days of lifting the vessel.
- Prior to side-scan survey, inspect interior and bilge plating for the presence of bubbles from rusted metal; break up and remove all rust bubbles with a small hand tool to facilitate accurate survey results.
- Following completion of the side scan survey, contractor shall preserve all disturbed interior surfaces and bilge plating rust bubbles that were removed to facilitate accurate survey. Contractor shall preserve disturbed areas in accordance with Surface Forces Logistics Center Std Specification 6310 (SFLC Std Spec 6310) Preservation of Ship Structures.

3.1.6 Coast Guard notification. The Contractor shall normally complete and plan on completing all required work within 7 calendar days, any extension will require a Condition Found Report (CFR) provided to the COR.

3.1.6.1 Provide a daily update to the COR on all areas inspected and potential issues or potential schedule change.

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3.1.6.2 Notify the COR at least 3 days prior to completion for an onsite review of readings and repair areas.

3.1.6.3 The Contractor shall ensure the side scan technician does not directly cause delays or work stoppages to the dry-dock work scheduled during the scanning process. The Government will not be held liable for associated cost if they are found to have been the cause for delays in the dry-dock work schedule.

3.2 Scanning parameters. The Contractor shall ensure side scan technician follows all recommended guidelines, procedures, and practices as defined by ASNT for Ultrasonic Non-Destructive Testing. Reference Coast Guard Drawing 110B WPB 111-3 and use the following guidelines:

- Scanning resolution shall be set to (.5x .5) inches.
- The automated scanning resolution shall, at a minimum, be calibrated at the beginning and end of each day. The calibration process shall include the comparison of the results of the automated scanner to the results of the calibrated hand held gauge at a specific point on the hull. This shall be done in the presence of the designated Coast Guard Inspector.
- The waveform for each point collected shall be saved and made available to the US Coast Guard for four years after the inspection.
- The automated scanning machine shall cover all areas of the hull (below the water line and entire freeboard area) up to a maximum of six inches around obstacles. Acceptable obstacles include sea suction, discharges, rudderposts, anodes, stern tubes, drydock blocks and areas blocked by immovable scaffolding or shipyard activity. The automated scanner shall also be capable of scanning all convex areas with a radius of 8 inches and greater and concave areas with a radius of 12 inches and greater.
- All areas within six inches of obstacles listed above, not covered with the automated scanner, shall be scanned with a hand held meter set to a resolution of 2.0" x 2.0".

3.2.1 Hand held scanner. Areas that are accessible but cannot be scanned by scanning equipment shall be hand-scanned. Any repair areas found during the hand scan shall be marked on the ship's hull and their approximate positions recorded on the plate drawings and report summary. All hand held scanning procedures shall follow the following parameters:

- The Contractor shall ensure the side scan technician calibrates the hand held meter each time it is powered up for use using an ASNT certified calibration block made of mild steel.
- The Contractor shall ensure the side scan technician scans all areas within six inches of automated scanning obstacles to include; sea suction, discharges, rudderposts, anodes, stern tubes, drydock blocks and areas blocked by immovable scaffolding, using a hand held meter set to a resolution of 2.0"x 2.0".
- The Contractor shall ensure the side scan technician provides supplemental hand held readings in accordance with ASNT Recommended Practice No. SNT-TC-1A 2006 on any area of the hull identified as thinner than the criteria for repair defined in paragraph 3.2.5.
- The Contractor shall ensure the side scan technician scans any areas where the automated scanner lost data due to sharp dents, surface irregularities, roughness, etc. using a hand held meter with a resolution set to 1.0" x 1.0".

3.2.2 All Under-Water Body and Freeboard plating shall adhere to the following evaluation criteria:

- 4-5 LB plate – C scan data indicating wastage greater than or equal to 15% of nominal plate thickness shall be highlighted in RED and designated a repair area.

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- 4-5 LB plate – C scan data indicating wastage greater than or equal to 10% to 14% of nominal plate thickness shall be highlighted in YELLOW.
- 4-5 LB plate – C scan data indicating wastage less than 10% of nominal plate thickness shall be highlighted in DARK GREEN.
- 6 – 10 LB plate – C scan data indicating wastage greater than or equal to 25% of nominal plate thickness shall be highlighted in RED and designated a repair area.
- 6 – 10 LB plate – C scan data indicating wastage greater than or equal to 15% to 24% of nominal plate thickness shall be highlighted in YELLOW.
- 6 – 10 LB plate – C scan data indicating wastage less than 14% of nominal plate thickness shall be highlighted in DARK GREEN.

NOTE

1. Contractor must have KO approval for any scanning parameter or scope of work changes.

CAUTION

The side scan technician is not authorized and shall not use the echo to echo transducer because of technical difficulties and inconsistent readings. There shall be no deviation from the color scheme specified above.

3.3 Hull identification and markings.

3.3.1 The Contractor shall label each plate on the hull designated for inspection using Coast Guard Drawing 110B WPB 111-3 as reference.

3.3.2 The Contractor shall label the starting point for each scan on the hull.

3.3.3 The Contractor shall outline the areas measured with the hand held meter on the hull.

3.3.4 The Contractor shall outline in WHITE or YELLOW all areas on the hull identified as thinner than the criteria for repair defined in paragraph 3.2.2. The colors used to label repair areas shall not be used for any other markings on the hull.

3.4 Reports. The Contractor shall measure the average paint thickness in order to provide a more accurate metal thickness at all scanned points. The average paint thickness shall be clearly defined in the reports.

3.4.1 The Contractor shall submit to the COR two hard copies of the final written report within 10 calendar days after the side scan inspection is completed. The written report shall include the following contents (minimum):

- Overview.
- Plate summary – shall be in table format with at minimum a column for plate identification, repair identification, location of repair area, size of repair area, and brief description (i.e. exterior pitting, holes, interior corrosion, etc.).
- A composite of mosaic of the C-Scan images overlaid on Coast Guard Drawing 110B WPB 111-3.

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- A separate page for each plate with a C-scan image of that plate only. The upper right or lower right of each page shall contain the plate identification for easy retrieval. Each page shall also contain the following:

Plate design weight.

Nominal thickness.

Criteria thickness for green, yellow and red as listed in paragraph 3.2.5.

All repair areas shall be outlined in blue in the C-Scan image as they are marked on the hull. Each repair area shall be labeled corresponding to the label on the hull.

All Unusual areas on the C-scan such as rough surface, etc. shall be called out and noted in blue.

- A separate AutoCAD drawing for each plate with repair area(s) identified. The upper right or lower right of the page shall contain the plate identification for easy retrieval. All repair areas shall be drawn to scale and hatched as they are marked on the hull. The plates shall be drawn to scale and dimensioned. Orientation of the plate to the boat shall be identified. Assume the lower left corner of the plate is a right angle for drawing purposes. Use the left and bottom weld for obtaining dimensions of repair areas. Drawing tolerances can be $\pm 1/2"$.
- A minimum of 1 page for digital photos of each plate with repair area(s) identified. The upper right or lower right of the page shall contain the plate identification for easy retrieval.

3.4.2 The written report is to be organized as follows:

- Table of contents.
- Overview.
- Plate Summary.
- Port Side Mosaic.
- Port side C-scan, AutoCAD drawing and digital photos of each plate in sequential order.
- Starboard Side Mosaic.
- Starboard Side C-scan, AutoCAD drawing and digital photos of each plate in sequential order.
- Transom C-Scan, AutoCAD drawing and digital photos.

3.4.3 The Contractor shall submit two copies of the report in electronic format to the COR with two CD's containing the electronic (raw) data. Ensure that the electronic reports include:

- All items contained in the physical written report as stated above.
- A separate tab or file for each plate with the data or thickness value measured for every point used in the C-scan image. These readings should be proportionate on the page as to the location measured on the plate. The plate identification, design weight, and nominal thickness shall be included at the upper left of the screen.
- An interactive file of the C-scan image for each plate that the USCG can change the thickness criteria for each color. The COR shall be able to input either the % wastage or material thickness for each color and the program shall generate a new C-scan image per the new inputted criteria.
- Provide digital photos of all designated repair areas.

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- Electronic files shall be capable of being opened using MS Word, MS Excel, or PDF software.
- Digital pictures shall be recorded in JPEG format.

4. NOTES

4.1 The COR will be on site during the entire scanning evolution to witness procedures and review collected data.

WORK ITEM 2: Hull Plating (U/W Body), Inspect

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to inspect/survey the vessel's Under Water (U/W) hull plating, including U/W appendages and coating system.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan
Coast Guard Drawing 110 WPB 114-001, Rev B, Stern Flap
Coast Guard Drawing 110 WPB 114-002, Rev A, Spray Rail
Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion
Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)
Coast Guard Drawing 110C WPB 565-001, Rev D, Fin Stabilizer System (Struct Locs & Dets)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

ASTM International (ASTM) D4138, 2013, Standard Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means
The Society for Protective Coatings (SSPC), January 2015, Paint Application Specification No. 2 (PA-2), Procedure for Determining Conformance to Dry Coating Thickness Requirements

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

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None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Inspection. The Contractor shall accompany the Underwater Hull Inspection Board (UWHIB) in the performance of the below inspection tasks, as applicable, using the drawings listed in Section 2 (References) as guidance. The Contractor shall provide the following, to facilitate the UWHIB in assessing the condition of the designated U/W hull components and systems:

- A hull repair supervisor and a marker.
- Temporary staging and other necessary equipment, as applicable, for ensuring safe access to all areas of the U/W hull.

NOTES

1. The COR will convene the UWHIB as soon as possible after the vessel has been dry-docked and before any work (except U/W hull cleaning/wash down) is performed on the U/W hull and appendages.

2. Some of the components and/or systems addressed in this work item may not be applicable to all vessel classes.

3.2.1 Hull plating. The Contractor shall inspect the condition of the hull plating (including thruster tunnel plating, as applicable), for the presence of marine growth, deformation, and any evidence of major corrosion or electrolytic action.

3.2.1.2 The Contractor shall inspect the hull and keel areas, report on the condition of butt-welded seams, doubler plates, lap seams, and for any signs of damaged plating or unusual waviness in the plating.

3.2.2 Sea chests and all other cooling system intake components. The Contractor shall inspect all sea chests, sea beam arrays, tunnels, hull openings, and grates for general appearance, loose, damaged, or missing grates, loose or missing fasteners, condition of sea strainers and lock wire on bolts, marine growth on grating slots, and any obstructions in the openings that might prevent proper suction and discharge of water.

3.2.3 Rudders. Check general condition, condition around the drain plugs, and check for pitting, if any, on the leading and trailing edges.

3.2.4 Propeller and shaft associated components. The Contractor shall inspect the condition of propellers for signs of corrosion, pitting, erosion, fouling, cracks, dings, and nicks by side and blade; inspect fairwaters, rope guards, shafts, and mechanical seals - look for missing screws, physical damage to the

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blades, pitting, condition of dunnage caps, and condition of securing devices.

3.2.5 Transducers. The Contractor shall check general condition for cuts, cracks, corrosion, and surface defects around the openings. Check transducer securing nuts for tightness, and inspect cables for chafing and other damage.

3.2.6 Zinc anodes. The Contractor shall remove all marine growth and oxide coating from all hull, rudder, shaft strut, sea chest, sea beam array, z-drive, and thruster tunnel zinc anodes, or water jet drives anodes, as applicable, using a light-wire brush.

3.2.6.1 The Contractor shall visually inspect all zinc anodes; check the soundness of mounting strap and stud welds, missing fasteners, and percentage of remaining material.

3.2.7 Coating system inspections. The Contractor shall accomplish the below inspections, in conjunction with the underwater hull inspection conducted by the Underwater Hull Inspection Board (UWHIB). Document the condition found as "Partial - Condition A", "Partial - Condition B", "Partial Condition C", or "100%", as applicable (see 4.1 (Definitions)). Submit a CFR.

NOTE

The following inspections are for determining the existing condition of the coating system for the underwater body surfaces, which are deemed "Critical-coated" surfaces; they must be carried out by a SSPC-QP-1 certified contractor/sub-Contractor or a NACE Inspector – see SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for "critical-coated surfaces").

3.2.7.1 Visual. Perform a visual inspection of the existing U/W body coating system.

4. NOTES

4.1 Definitions.

4.1.1 "Partial – Condition A": The condition that exists where the substrate is exposed in up to 33% of the entire U/W body.

4.1.2 "Partial - Condition B": The condition that exists where the anticorrosive (AC) undercoating system has incurred damage, but, the u/w body hull substrate is not exposed in any location.

4.1.3 "Partial - Condition C": The condition that exists where damage is confined to the antifouling (AF) top coating; the epoxy undercoating system is not exposed in any location.

4.1.4 "100%": The condition that exists where more than 33% of the U/W body hull substrate is exposed.

4.2 UWHIB convention. The COR will convene the UWHIB as soon as possible after the vessel has been dry-docked and before any work (except U/W hull cleaning/wash down) is performed on the U/W hull and appendages.

WORK ITEM 3: Hull Plating Freeboard, Preserve “100%”

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve 100% of the freeboard surfaces defined in 4.1 Definition of freeboard surfaces.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

Coast Guard Drawing 110B WPB 602-002, Rev D, Visual Identification

Coast Guard Fleet Drawing FL 2804-12, Rev -, U.S.C.G. Emblem

Coast Guard Fleet Drawing FL 2804-22, Rev-, Consolidated Visual ID for Cutters

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

MIL-PRF-24635, 2009, Coating Systems, Weather-Resistant, Exterior Use

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Apply protective measures as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection) to the following components, spaces and equipment:

- Areas where underwater body coating system interfaces with freeboard coating system (unless u/w body surfaces are also being preserved).
- Adjacent deck surfaces and deck fittings.
- Exhaust ports (port and starboard).
- Deck equipment.
- Vent intakes.
- Life lines.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Initial inspection. Prior to removing the existing coating system, the Contractor shall inspect and verify whether or not all hull identification numbers and letters have permanent markings (weld beads or impressions), showing their location on the hull. Submit a CFR.

3.3 Surface preparation optional methods. The Contractor shall have the option of using either high/ultrahigh pressure water Jetting or abrasive blasting to achieve the required surface preparation, prior to application of the coating system specified in 3.6 (Preservation requirements). The Contractor may add abrasives to the waterjet stream, for one or both of the following reasons:

- Achieving greater productivity.
- Achieving the required surface profile.

NOTE

Water jetting without abrasive addition does not provide any additional anchor profile to the surface, beyond what was present after the previous surface preparation.

3.4 Substrate inspection. After completing surface preparation and before coating application, the Contractor shall perform a visual inspection of the prepared substrate, and submit a CFR.

3.5 Pre-surface preparation wash. The Contractor shall accomplish low-pressure (less than 5,000 psi) fresh water wash of all affected surfaces, to remove soluble chlorides and other surface contaminants. Capture, contain, and dispose of wash water for proper disposal in accordance with all Federal, state and local regulations.

3.6 Preservation requirements. The Contractor shall accomplish the following tasks:

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3.6.1 System particulars. Prepare and coat 100% of the freeboard surfaces as designated in paragraph 1.1 (Intent) with the system specified for “Freeboard/Superstructure/Mast (Freeboard/Superstructure)” in SFLC Std Spec 6310. Select the following:

- Select “Option I” system, for the applicable metal substrate.
- White (17925), as the top/finish coat color.

3.6.2 Visual identification markings. The Contractor shall paint all distinctive visual safety and identification markings as follows:

3.6.2.1 Decals. Furnish and install the following decals in accordance with Coast Guard Drawing 110B-WPB-602-2:

1. Coast Guard Emblem: 2 ea.
2. US Coast Guard Legend: 2 ea.
3. Vessel Name: 1 ea.
4. Vessel Hull Number: 2 ea.

3.6.2.2 Painted markings. Paint all remaining, non-decal visual identification markings, including the Coast Guard diagonal stripes and draft marks in accordance with SFLC Std Spec 6310, and Coast Guard Drawings FL 2804-12 and FL 2804-22 as applicable.

NOTES

Surfaces being preserved are considered “critical-coated surfaces”.

Although there may be several possible procurement sources for the Coast Guard Emblem decals and vinyl adhesive letters and numbers, one known source is:

**Brace Enterprises
10250 SE 138 Terrace
Dunnellon, FL 34431**

**352-489-4442 / Fax: 352-489-4476
www.braceenterprise.com**

3.6.3 Tear drop. “Tear Drop” around through hull exhaust ports. Repaint/restore the “tear drop” around each through hull exhaust ports, using Black (17038) “Silicone Alkyd Enamel” paint, conforming to MIL-PRF-24635, Type II, Class 1.

3.7 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

3.8 Repair of un-intended damages. The Contractor shall repair all damages, including overspray, incurred to surfaces not covered by the scope of this work item, during surface preparation and paint application procedures.

4. NOTES

4.1 Definition of freeboard surfaces. For the purposes of this item the freeboard is defined as exterior steel hull surfaces extending from the upper limit of the boot-topping to the Main Deck Level; also included are the steel deck portions outboard of the Detacouple, Main Deck lifeline stanchions, goosenecks, vents, bulwarks, and hawespipe, as shown on Coast Guard Drawing 110B WPB 085-012.

WORK ITEM 4: Appendages (U/W), Leak Test

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to perform leak test of the U/W appendages.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan
Coast Guard Drawing 110 WPB 114-001, Rev B, Stern Flap
Coast Guard Drawing 110 WPB 114-002, Rev A, Spray Rail
Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion
Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)
Coast Guard Drawing 110C WPB 565-001, Rev D, Fin Stabilizer System (Struct Locs & Dets)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements
Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

ASTM International (ASTM) D5363, 2016, Standard Specification for Anaerobic Single-Component Adhesives
MIL-S-45180, 1998; Sealing Compound, Gasket, Hydrocarbon Fluid and Water Resistant

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph:

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- 3.2 Leak test particulars.
- 3.4 Appendage air test.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Leak test. In the presence of the Coast Guard Inspector, the Contractor shall accomplish the following tasks for all appendages as designated in Table 1 below, using the Coast Guard drawings listed in Section 2 (References) as guidance:

- Remove and dispose of all existing plugs (e.g. drain plugs, fill/vent plugs), as applicable.
- Note any liquids draining from any of the appendages – indicating the presence of a leak. Submit a CIR.
- Dispose of any drained liquids in accordance with all Federal, state, and local laws and regulations.

CAUTION

Some liquids that are drained may be may be classified as hazardous materials or hazardous waste depending on state and local regulations. The vessel environmental coordinator may assist with determination of waste category.

3.3 Plug renewal. Upon completion of all work on appendages, the Contractor shall accomplish the following tasks:

- Chase the hull insert threads of all plugs.
- Renew all stainless steel, Type 316 and Monel plugs (as applicable) in place of those removed.
- Coat new plugs prior to installation with a sealing and locking compound conforming to ASTM D5363-AN0123 or a flexible joint compound conforming to MIL-S-45180, Type II.

TABLE 1 – PLUGS FOR U/W APPENDAGES

Appendage	FRAME	SIDE
Stabilizer Fin	22 to 23	P/S
Rudders	35	P/S
Stern Flap	Stern	CL
Spray Rail	2 to 8	S
Spray Rail	1 to 8	P

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Boxed-in Keel	17 to 29	CL
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3.4 Appendage air test. The Contractor shall accomplish the following tasks for any appendage from the above list designated by the Coast Guard Inspector, with an approved Change Request resulting from the CIR from paragraph 3.2:

- Perform an air test of the appendage, in accordance with SFLC Std Spec 0740, Appendix C.
- Submit a CIR.

4. NOTES

This section is not applicable.

WORK ITEM 5: Appendages (U/W) - Internal, Preserve

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve internal surfaces of designated U/W appendage(s) (see Table 1).

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan

Coast Guard Drawing 110 WPB 114-001, Rev B, Stern Flap

Coast Guard Drawing 110 WPB 114-002, Rev A, Spray Rail

Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion

Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)

Coast Guard Drawing 110C WPB 565-001, Rev D, Fin Stabilizer System (Struct Locs & Dets)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

MIL-PRF-16173, Sep 2006, Corrosion Prevention Compound, Solvent Cut-Back, Cold-
Application

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

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Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Preservation of void internal surfaces. The Contractor shall accomplish the following tasks for each appendage designated by the Coast Guard Inspector, using the Coast Guard Drawings listed in Section 2 (References) herein as guidance:

- Fill all appendage interior surfaces with a rust preventive compound conforming to MIL-PRF-16173, Class II, Grade 3, to coat all surfaces.
- Drain, collect, and dispose of remaining compound in accordance with all applicable Federal, state, and local regulations.
- Ensure that the coated surfaces are left exposed to the atmosphere for 24 hours to allow for adequate drying.

TABLE 1 - DRAIN PLUGS FOR U/W APPENDAGES

Appendage	FRAME	SIDE
Stabilizer Fin	22 to 23	P/S
Stern Flap	Stern	CL
Spray Rail	2 to 8	S
Spray Rail	1 to 8	P
Boxed-in Keel	17 to 29	CL

4. NOTES

This section is not applicable to this work item.

WORK ITEM 6: Tanks (Mp Fuel Stowage And Overflow), Clean And Inspect

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank(s):

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	LOW SUCTION (GALLONS)
Diesel Fuel	3-17-0-F	2,560	74
Diesel Fuel*	3-28-1-F	1,162	37
Diesel Fuel*	3-28-2-F	1,162	37

*Due to the complex geometrical shape and hard accessibility, it is very difficult to perform thorough visual inspection of these tanks. Tanks are baffled and cannot be fully cleaned by hand.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 085-001, Rev A, Tank Capacity Curves
 Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)
 Coast Guard Drawing 110B WPB 113-001, Rev K, Inner Bottom Plating
 Coast Guard Drawing 110B WPB 117-001, Rev H, Transverse Sections (Frames 0 thru 4)
 Coast Guard Drawing 110B WPB 121-001, Rev D, Longitudinal Bulkheads

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

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Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018,
Welding and Allied Processes

OTHER REFERENCES

Federal Specification (Fed Spec) QQ-N-281, Oct 1985, Nickel-Copper Alloy Bar, Rod, Plate, Sheet, Strip, Wire, Forgings, and Structural and Special Shaped Sections

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013, Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Fuel
- Piping
- Tank access cover

3.1.4.1 Tank content removal shall be completed in accordance with the “Dry Dock” work item.

3.1.4.2 Dispose of removed fluids in accordance with all applicable Federal, state, and local regulations.

3.1.4.3 Provide the following to support Coast Guard personnel to refuel equipment:

- boom around cutter (if required by local/state regulations)
- tag out crane way equipment
- Oil transfer supervisor.
- Suitable pier space to allow transfer of fuel

NOTE

Vessel may come in with less tank fluid contents than specified above.

NOTE

Initial and post repair operational tests apply only to tanks that possess TLIs.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.1.5 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel test TLIs for tanks listed in paragraph 1.1 (Intent) to demonstrate existing operational condition. Submit a CFR.

3.1.6 Plug log. The Contractor shall keep a written record of all plugs put in any tank vents. A separate list shall be kept for each tank being entered.

3.1.6.1 Ensure that all plugs are removed from each tank upon completion of work in the tank.

3.1.6.2 The plug log shall be available to the Coast Guard Inspector when the inspector is performing his close-out inspection on each tank.

3.2 Cleaning requirements. The Contractor shall refer to Coast Guard Drawings 110B WPB 085-001, 110B WPB 085-012, 110B WPB 113-001, 110B WPB 117-001 and 110B WPB 121-001 for guidance. The Contractor shall remove tank cover(s) and clean tank interior surfaces free of all foreign materials, such as residual fuel or water, sediment, sludge, rust, or biological growth, taking care not to damage the coating system (if applicable). Remove cleaning media and residues continuously during the washing process. Remove any residual wash media; and wipe up residual moisture with clean lint-free cloths.

3.3 Tank content and waste disposal. The Contractor shall dispose of residual tank contents and any cleaning fluids in compliance with all applicable Federal, state, and local laws, ordinances and regulations. Document a complete chain of custody record of the removed tank contents and generated wastes, from the vessel to the point of final destination or delivery. Submit document to the COR upon completion of work.

3.4 Inspection. The Contractor shall visually inspect all tank interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas.
- Condition of tank coating, including; measurements taken, percentage, location, and type of coating failure (if tank interior surfaces are coated).
- Tank level indicator (TLI) and/or float switch condition, as applicable.
- Sounding/vent tube and striker plate condition (including vent check valve and waster piece).
- Suction and discharge piping condition.
- Fastener material and condition (correct fastener material is stainless steel).

3.4.2 Measure up to 10 “pits” within each tank as designated by the Coast Guard Inspector using a Contractor supplied ‘Pit Gauge’. Include pit measurement results in CFR specified above, showing where pit measurements were taken and the depth of the pit.

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3.5 Tank closing. The Contractor shall ensure that the tank(s) remain open for at least 24 hours after completion of any KO-authorized repair and preservation procedures. Notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector and completion of all authorized repairs, close tank manhole cover(s) with new gasket material conforming to AMS-C-6183. Chase threads on studs to ensure even installation of the access covers. Renew any damaged nuts.

3.5.1 The Contractor shall renew up to 10% of missing or damaged nuts and washers.

3.5.2 For unpainted fuel tank(s) that are not ballasted, apply a heavy coat of lube oil to the entire tank interior(s).

3.6 Operational test – post repairs. After completion of work, the Contractor shall witness Coast Guard personnel test all designated tank TLIs and vent check valves to prove satisfactory operating condition. Submit a CFR.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.7 Ultrasonic thickness (UT) measurement. The Contractor shall take a total of 50 UT measurements of tank plating, in locations designated by the Coast Guard Inspector, in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

4. NOTES

4.1. Coast Guard personnel. Coast Guard personnel will operate all shipboard machinery and equipment.

4.2 Tank content removal. When requested by the Contractor to assist with the offload of the fuel oil tank contents, Ship's force will pump down the tanks to the maximum extent possible with the installed pumping system.

4.3 Tank inspection. The Coast Guard Inspector will visually inspect the tank interior immediately prior to closing.

4.4 Tank content restoration. The Ship's force will procure new fluids and refill all tanks at the appropriate time.

WORK ITEM 7: Voids (Non-Accessible), Leak Test**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to leak test designated non-accessible voids. Refer to Table 1.

TABLE 1 - PLUGS FOR NON-ACCESSIBLE VOIDS

VOID	FRAME	SIDE
Depth Sounder Transducer Fairing	15	P
Forward inaccessible void	0	P/S

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan

Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

ASTM International (ASTM) D5363, 2016, Standard Specification for Anaerobic Single-Component Adhesives

MIL-S-45180, 1998; Sealing Compound, Gasket, Hydrocarbon Fluid and Water Resistant

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph:

- 3.2 (Leak test particulars).

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Leak test. In the presence of the Coast Guard Inspector, the Contractor shall accomplish the following tasks for all designated non-accessible voids (see Table 1 for list) and submit a CIR, using the Coast Guard drawings listed in Section 2 (References) as guidance:

- Remove and dispose of existing plugs (e.g. drain plugs, fill/vent plugs), as applicable.
- Submit a CIR noting any liquids draining from any of the voids - indicating the presence of a leak.
- Dispose of any drained liquids in accordance with all Federal, state, and local laws and regulations.

CAUTION

Some liquids that are drained may be classified as hazardous materials or hazardous waste depending on state and local regulations. The vessel environmental coordinator may assist with determination of waste category.

3.3 Plug renewal. Upon completion of all work on appendages, the Contractor shall accomplish the following tasks:

- Chase the hull insert threads of all plugs.
- Renew all stainless steel, Type 316, or Monel plugs, in place of original plugs.
- Coat new plugs prior to installation with a sealing and locking compound conforming to ASTM D5363-AN0123 or a flexible joint compound conforming to MIL-S-45180, Type II.

3.4 Void air test. If a Change Request is authorized and released, the Contractor shall accomplish the following tasks for any designated non-accessible void from the above list:

- Apply a vacuum or pressure of 2 psig to the void, in accordance with SFLC Std Spec 0740, Appendix C.
- Submit a CFR.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 8: Voids (Non-Accessible), Internal Surfaces, Preserve

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve internal surfaces of non-accessible voids. Refer to Table 1.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan

Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

MIL PRF-16173, Sep 2006, Corrosion Prevention Compound, Solvent Cut Back, Cold
Application

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against

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contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Work coordination. The Contractor shall coordinate performance of this work item with the “Voids (Non-Accessible), Leak Test” work item, which is a separate work item in this specification package. The Contractor shall refer to the Coast Guard drawing(s) listed in Section 2 (References) for guidance.

3.3 Preservation of void internal surfaces. The Contractor shall accomplish the following tasks for each void designated in Table 1, using the Coast Guard Drawings listed in Section 2 (References) herein as guidance:

- Fill all void interior surfaces with a rust preventive compound conforming to MIL-PRF-16173, Class II, Grade 3, to coat all surfaces.
- Drain, collect, and dispose of remaining compound in accordance with all applicable Federal, state, and local regulations.
- Ensure that the coated surfaces are left exposed to the atmosphere for 24 hours to allow for adequate drying.

TABLE 1 - DRAIN PLUGS FOR NON-ACCESSIBLE VOIDS

VOID	FRAME	SIDE
Depth Sounder Transducer Fairing	15	P
Forward inaccessible void	0	P/S

4. NOTES

This section is not applicable to this work item.

WORK ITEM 9: Tanks (Mp Fuel Service), Clean And Inspect**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank(s):

TABLE 1 - FUEL SERVICE TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	LOW SUCTION (GALLONS)
Diesel Service	3-17-1-F	2,560	81
Diesel Service	3-17-2-F	2,560	81

NOTE: Due to the complex geometrical shape and hard accessibility, it is very difficult to perform thorough visual inspection of these tanks.

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-001, Rev A, Tank Capacity Curves
 Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)
 Coast Guard Drawing 110B WPB 113-001, Rev K, Inner Bottom Plating
 Coast Guard Drawing 110B WPB 117-001, Rev H, Transverse Sections (Frames 0 thru 4)
 Coast Guard Drawing 110B WPB 121-001, Rev D, Longitudinal Bulkheads

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

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Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018,
Welding and Allied Processes

OTHER REFERENCES

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013,
Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets

MIL-DTL-1222, Dec 2000, Studs, Bolts, Screws and Nuts for Applications Where a High Degree
of Reliability Is Required

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Fuel
- Piping
- Tank access cover

3.1.4.1 Tank content removal shall be completed in accordance with the “Dry Dock” work item.

3.1.4.2 Dispose of removed fluids in accordance with all applicable Federal, state, and local regulations (see 4.2 (Tank content restoration))

NOTE

Vessel may come in with less tank fluid contents than specified above.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

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3.2 Operational test, initial. Prior to commencement of work, the Contractor shall witness Coast Guard Personnel perform an initial operational test of the TLI's for tanks listed in paragraph 1.1 (Intent), to demonstrate existing operational condition. Submit a CFR.

3.3 Plug log. The Contractor shall keep a written record of all plugs put in any tanks vents. A separate list shall be kept for each tank being entered.

3.3.1 Ensure that all plugs are removed from each tank upon completion of work in the tank.

3.3.2 Ensure the plug log is available to the Coast Guard inspector when the inspector is performing his close-out inspection on each tank.

NOTE

Initial and post repair operational tests apply only to tanks that possess TLIs.

3.4 Cleaning requirements. The Contractor shall remove tank cover(s) and clean tank interior surfaces free of all foreign materials, such as residual fuel or water, sediment, sludge, rust, or biological growth, taking care not to damage the coating system (if applicable). Remove cleaning media and residues continuously during the washing process. Remove any residual wash media; and wipe up residual moisture with clean lint-free cloths. The Contractor shall refer to Coast Guard Drawings 110B WPB 085-001, 110B WPB 085-012, 110B WPB 113-001, 110B WPB 117-001 and 110B WPB 121-001 for guidance.

3.5 Tank content and waste disposal. The Contractor shall dispose of residual tank contents and any cleaning fluids in compliance with all applicable Federal, state, and local laws, ordinances and regulations. Document a complete chain of custody record of the removed tank contents and generated wastes, from the vessel to the point of final destination or delivery. Submit document to the COR upon completion of work.

3.6 Inspection. The Contractor shall accomplish the following tasks:

3.6.1 Visually inspect all tank interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas.
- Condition of tank coating, including measurements taken, percentage, location, and type of coating failure (if tank interior surfaces are coated).
- Tank level indicator (TLI) and/or float switch condition, as applicable.
- Sounding/vent tube and striker plate condition.
- Suction and discharge piping condition.
- Fastener material and condition (correct fastener material is stainless steel).

3.6.2 Measure up to 10 "pits" within each tank as designated by the Coast Guard Inspector using a Contractor supplied 'Pit Gauge'. Include pit measurement results in CFR specified above, showing where pit measurements were taken and the depth of the pit.

3.7 Tank closing. The Contractor shall accomplish the following after completion of all KO-authorized

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repairs and/or preservation procedures:

3.7.1 For unpainted fuel tank(s) that are not ballasted, apply a heavy coat of lube oil to the entire tank interior(s).

3.7.2 Ensure that the tank(s) remain open for at least 24 hours. Notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector and completion of all authorized repairs, close tank manhole cover(s) with new gasket material conforming to AMS-C-6183. Chase threads on studs to ensure even installation of the access covers. Renew any damaged or missing fasteners. Use MIL-DTL-1222 as guidance. Existing undamaged fasteners may be reused. For purpose of bid, assume 10% of existing fasteners will require renewal. Renew all Nylock hex nuts.

NOTE

For unpainted fuel tanks, the 24 hour tank opening period begins after completion of the lube oil coating.

Coast Guard personnel will operate all shipboard machinery and equipment.

3.8 Operational test, post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all designated tank TLI's to be in satisfactory operating condition. Submit a CFR.

3.9 Ultrasonic thickness (UT) measurement. The Contractor shall take a total of 50 UT measurements of tank plating, in locations designated by the Coast Guard Inspector, in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

4. NOTES

4.1 Tank content removal. When requested by the Contractor to assist with the offload of the fuel oil tank contents, Ship's Force will use the installed fuel oil transfer system to assist with the offload of the fuel down to the loss of tank suction.

4.2 Tank content restoration. The Ship's force will procure new fluids and refill all tanks at the appropriate time.

WORK ITEM 10: Tanks (Potable Water), Clean and Inspect**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank(s):

TABLE 1 - TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	LOW SUCTION (GALLONS)
Potable Water	3-12-1-W	470	25
Potable Water	3-12-2-W	470	25

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

OTHER REFERENCES

American National Standards Institute/NSF International (ANSI/NSF) 61, 2015, Drinking Water System Components - Health Effects

American National Standards Institute/American Water Works Association (ANSI/AWWA) C652, 2011, Disinfection of Water-Storage Facilities

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Fluid contents
- Piping
- RO system components
- Deck grating.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.2 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard Personnel perform an initial operational test of the TLI's for tanks listed in paragraph 1.1 (Intent), to demonstrate existing operational condition. Submit a CFR.

3.3 Plug log. The Contractor shall keep a written record of all plugs put in any tanks vents. A separate list shall be kept for each tank being entered.

3.3.1 Ensure that all plugs are removed from each tank upon completion of work in the tank.

3.3.2 Ensure the plug log is available to the Coast Guard inspector when the inspector is performing his close-out inspection on each tank.

3.4 Tank content removal. The Contractor shall remove and dispose of all fluids and/or residues in accordance with all applicable Federal, state, and local regulations. The Contractor shall notify the Dock master prior to filling or draining the potable water tank(s), when this item is being executed in a dry-dock availability. The Contractor shall refer to Coast Guard Drawing 110B WPB 085-12 for guidance.

3.5 Tank cleaning. The Contractor shall remove tank cover(s); clean tank interior surfaces free of all foreign materials, such as sediment, sludge and bacterial growth. Remove all persistent residues, taking care not to damage any tank coating system. Remove cleaning media and residues continuously from the tank during the washing process. Remove any residual wash media and wipe up residual moisture with

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clean lint-free cloths. Collect, contain, and dispose of all wash media, residues, and cleaning materials in accordance with all Federal, state, and local regulations.

3.6 Inspection. The Contractor shall visually inspect all tank interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas, if any.
- Condition of tank coating, including measurements taken, percentage, location, and type of coating failure.
- Tank level indicator (TLI) and/or float switch condition (if applicable).
- Sounding tube and striker plate condition.
- Suction and discharge piping condition.
- Fastener material and condition.

3.7 Tank closing. The Contractor shall notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector, and completion of all authorized repairs, close tank manhole cover(s) with new gasket material conforming to ANSI/NSF 61. Renew all stud cotton grommets (as applicable) upon reinstallation of manhole cover(s).

3.7.1 The Contractor shall renew up to 10% of missing or damaged nuts and washers.

3.8 Tank disinfecting. After all other work involving the potable water system and tank closing have been completed, the Contractor shall disinfect and treat the affected potable water tank(s) and associated disturbed piping and components, as necessary, to meet or exceed the requirements of AWWA C652. After tank disinfecting; remove and dispose of all treated water in accordance with all Federal, state and local regulations. Ensure that no one enters the tanks once disinfection is completed.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.9 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate the designated tank TLI's to be in satisfactory operating condition. Submit a CFR.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 11: Tanks (Dirty Oil and Waste), Clean and Inspect**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank(s):

TABLE 1 – TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	LOW SUCTION (GALLONS)
Dirty oil**	3-27-1-F	155	5
Oily Water**	3-27-2-F	155	5

**These tanks are preserved.

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

OTHER REFERENCES

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013, Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Tank content removal shall be completed in accordance with the "Dry Dock" work item.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.3 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard Personnel perform an initial operational test of the TLI's for tanks listed in paragraph 1.1 (Intent), to demonstrate existing operational condition. Submit a CFR.

3.4 Plug log. The Contractor shall keep a written record of all plugs put in any tanks vents. A separate list shall be kept for each tank being entered.

3.4.1 Ensure that all plugs are removed from each tank upon completion of work in the tank.

3.4.2 Ensure the plug log is available to the Coast Guard inspector when the inspector is performing his close-out inspection on each tank.

NOTE

Vessel may come in with less tank fluid contents than specified above.

3.5 Cleaning requirements. The Contractor shall remove tank cover(s) and clean tank interior surfaces free of all foreign materials, such as sediment or sludge, taking care not to damage the coating system (if applicable). Use Coast Guard Drawing 110B WPB 85-012 for guidance. Remove cleaning media and residues continuously during the washing process. Remove any residual wash media; and wipe up residual moisture with clean lint-free cloths.

3.6 Tank content and waste disposal. The Contractor shall dispose of tank contents and all cleaning fluids in compliance with all applicable Federal, state, and local laws, ordinances and regulations. Document a

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complete chain of custody record of the removed tank contents and generated wastes, from the vessel to the point of final destination or delivery. Submit document to the COR upon completion of work.

3.7 Inspection. The Contractor shall visually inspect all tank interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas.
- Condition of tank coating, including measurements taken, percentage, location, and type of coating failure.
- Tank level indicator (TLI) and/or float switch condition.
- Sounding tube and striker plate condition.
- Suction and discharge piping condition.
- Fastener material and condition (correct fastener material is stainless steel).

3.8 Tank closing. The Contractor shall ensure that the tank(s) remain open for at least 24 hours after completion of all authorized repair and preservation procedures. Notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector and completion of all authorized repairs, close tank manhole cover(s) with new gasket material conforming to AMS-C-6183.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.9 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate the designated tank TLI's to be in satisfactory operating condition. Submit a CFR. Disregard this paragraph if the tanks do not contain TLIs.

3.5.1 Compartment air test. The Contractor shall air test the designated tanks after tank closing in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

4. NOTES

4.1 The Coast Guard Inspector will visually inspect the tank interior immediately prior to closing.

WORK ITEM 12: Forward Void, Preserve

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve the Forward Void, located between Bulkhead 8 to Bulkhead 13, underneath the Forward Berthing.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

None.

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018,
Requirements for Preservation of Ship Structures

OTHER REFERENCES

None.

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures. The Contractor shall protect non-affected vessel's equipment, components, and spaces during surface preparation and coating application procedures, as

specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection).

3.1.4 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

- Manhole cover to the Forward Void.
- Lighting.
- Cableways.
- TLIs.
- Flooding alarm.
- Adjacent tanks.

3.2 Surface preservation. The Contractor shall prepare and coat all Forward Void surfaces, including associated structural members, using the system specified for “Bilges, Cofferdams, and Forepeaks, Option I”, in SFLC Std Spec 6310, Appendix B (Cutters and Boat Interior Painting Systems). Select Light Gray (26373) or Haze Gray (26270) as the finish/top coat color.

3.3 Substrate inspection. After completion of surface preparation and before primer coat application, the Contractor shall perform a visual inspection of all prepared surfaces. Submit a CFR.

3.4 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 13: Tanks (Dirty Oil), Preserve “100%”**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to prepare and coat 100% of the following tank(s):

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	% OF TANK COATING REPAIR	LOW SUCTION (GALLONS)
Dirty oil	3-27-1-F	155	100%	5

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Coast Guard Commandant Instruction (COMDTINST) M10360.3 (series), Coatings and Color Manual

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013, Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets

3. REQUIREMENTS

3.1 General. The Contractor shall accomplish the following for all tanks listed in paragraph 1.1 (Intent). The Contractor shall refer to Coast Guard Drawing 110B WPB 85-012 for guidance.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures.

Not applicable.

3.1.4 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

3.1.5 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

3.2 Surface preservation. The Contractor shall accomplish the following tasks for the tanks listed in paragraph 1.1 (Intent):

3.2.1 Remove and retain the tank manhole cover(s).

3.2.2 Prepare and coat all (100%) tank interior surfaces (including internal surfaces of manhole cover(s), manhole cover hull ring(s) extending outward to the weld line that ties the hull ring into the tank plating on the tank exterior), using the system specified for "Tanks and Voids (Fuel/JP-5 Tanks, Service, Storage, Overflow, Drain, Option I or Option II)" in COMDTINST M10360.3, Appendix B (Cutter and Boat Interior Painting Systems).

3.2.3 Prepare and coat all manhole cover external surfaces to match existing adjacent surfaces, using the system specified for "Decks, Metal Interior and Non-Skid Areas (Steel and Aluminum Decks - Wet Areas, Food Preparation Areas, Exit Areas, and Areas Subject To Condensation)", in COMDTINST M10360.3, Appendix B (Cutter and Boat Interior Painting Systems). Select finish/top coat color to match existing adjacent surfaces.

3.4 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for "critical-coated surfaces").

NOTE

Surfaces being preserved are considered "critical-coated surfaces".

4. NOTES

This section is not applicable to this work item.

WORK ITEM 14: Tank (Oily Water), Preserve “100%”**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to prepare and coat 100% of the following tank(s):

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	% OF TANK COATING REPAIR	LOW SUCTION (GALLONS)
Oily Water	3-27-2-F	155	100%	5

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Coast Guard Commandant Instruction (COMDTINST) M10360.3 (series), Coatings and Color Manual

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) C6183, 2013, Cork and Rubber Composition Sheet; For Aromatic Fuel and Oil Resistant Gaskets

3. REQUIREMENTS

3.1 General. The Contractor shall accomplish the following for all tanks listed in paragraph 1.1 (Intent). The Contractor shall refer to Coast Guard Drawing 110B WPB 85-012 for guidance.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures.

Not applicable.

3.1.4 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

- Electrical Switchboard
- Piping
- Wiring

3.1.5 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

3.2 Surface preservation. The Contractor shall accomplish the following tasks for the tanks listed in paragraph 1.1 (Intent):

3.2.1 Remove and retain the tank manhole cover(s).

3.2.2 Prepare and coat all (100%) tank interior surfaces (including internal surfaces of manhole cover(s), manhole cover hull ring(s) extending outward to the weld line that ties the hull ring into the tank plating on the tank exterior), using the system specified for "Tanks and Voids (Fuel/JP-5 Tanks, Service, Storage, Overflow, Drain, Option I or Option II)" in COMDTINST M10360.3, Appendix B (Cutter and Boat Interior Painting Systems).

3.2.3 Prepare and coat all manhole cover external surfaces to match existing adjacent surfaces, using the system specified for "Decks, Metal Interior and Non-Skid Areas (Steel and Aluminum Decks - Wet Areas, Food Preparation Areas, Exit Areas, and Areas Subject To Condensation)", in COMDTINST M10360.3, Appendix B (Cutter and Boat Interior Painting Systems).

3.3 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for "critical-coated surfaces).

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 15: Main Mast, Preserve, 100%

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve the aluminum Main Mast, shown on Coast Guard Drawings 110 WPB 171-001, and 110 WPB 171-002.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Draqing 110 WPB 171-001, Rev B, Mast Details

Coast Guard Drawing 110 WPB 171-002, Rev G, Mast Details

Coast Guard Drawing 110C WPB 601-027, Rev D, Outboard Profile & Weather Deck

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

None.

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep. The Contractor shall ensure that all Contractor personnel performing removal and installation of electronics equipment shall have the training of an electronics journeyman and be

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knowledgeable in the areas of electrical and physical standards for communications equipment, such as radar, waveguides and antennas.

3.1.3 Operational test - initial. Prior to commencement of work, the Contractor shall witness an operational pre-test (by Coast Guard personnel) of all mast electrical and electronic equipment, to demonstrate existing operational condition. Submit a CFR.

3.1.4 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's equipment, components, and spaces during surface preparation and coating application procedures, as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection). Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness. Accomplish the following tasks:

3.1.4.1 Coil up and tie-wrap antenna cables. Connectors shall be covered to protect from dust, dirt, and weather.

3.1.4.2 Coil up electrical cabling down to the deck/bulkhead penetrations. Disassemble stuffing tube or Multi-Cable-Transit block to accomplish cable protection. Cables shall be coiled, tie-wrapped, marked, sealed, and covered and protected from any cutting and grinding that may occur in the immediate vicinity.

CAUTION!

Do not bend any electrical cable to a radius less than 20 times their diameter. Do not hoist a radar pedestal using its array.

3.1.4.3 Furnish and install suitable covering to seal off and protect all non-affected surfaces/equipment and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, remove protective material and inspect for the presence of contamination. Clean all equipment and spaces, contaminated due to improper protection, to original condition of cleanliness.

3.1.4.4 Weatherproof all open connectors from removed electrical or electronics equipment as follows:

- Clean and dry connector to prevent trapped moisture from causing corrosion by use of cleaning compound with silicone (water-displacing). Spray the internal parts of the connector; allow to dry two to three minutes before proceeding to next step.
- Using silicone rubber tape (self-bonding), wrap an overlapping layer from the cable to the connector. Make sure holes of the connector at the cable clamp are covered and continue the tape about 2 inches back onto the cable.
- Using insulation tape wrap insulation tape tightly around the connector and cable so that the tape butts extends and wraps around the connector and onto the cable. Overlap insulation tape about one-half. Do not leave any part of the connector exposed to the air.
- Apply one coat of an approved moisture repellant to outer layer of insulation tape of the cable/connector designed to protect the insulation tape from the weather; regular paint and other coatings will soften the tape and cause it to unwind. Allow three to five minutes for approved moisture repellant to become tacky.

NOTE

RTV is not to be used as a connector preservation material.

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3.1.4.5 Protect all multi-cable-transits using a fire retardant water repellent material. The protection shall prevent the entry of water and foreign mater.

NOTE

The Contractor shall notify the COTR 72 hours in advance of beginning interference removals.

3.1.5 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

- AN/KAX-2 (Stabilized Gimbal Assy).
- AB-1399/SPS-73(V) (Radar Pedestal).
- AS-4474/SPS-73(V) (Radar Antenna).
- TS-4499/SPS-73(V) (RADAR Performance Monitor).
- An/SPS-73 RADAR Safety Switch.
- AN/SAT-2A (infrared Transmitter).
- AT-150/SRC (UHF ANTENNA).
- CDIC-9312CG-9-1A (Weather fax Antenna).
- CETV-BA-1012 (VHF/AM Antenna).
- CFFA-203720-0001 (Inmarsat C Antenna).
- CFHN-IES-LA-77 (DF Antenna).
- CFHN-IES-LA-73 (DF Antenna).
- CEMT-396-1 (VHF Antenna, Various).
- CEMT-HS-2774-1 (VHF Antenna).
- AV-2093 (UHF SATCOM Antenna).
- AS-177B/UPX (IFF Antenna).
- M-68453 (Loran C Antenna).
- GP-37 (DGPS Antenna).
- 403007C (Inmarsat Mini-M Antenna).
- Naval Electronics (TV Antenna).
- TEDDY SAFE Antenna.
- 1MC Speaker.
- AIS Antennas.
- FURUNO Radar.
- Electrical Boxes (Multiple).
- Halyards.
- Wind Speed Air Vane.
- Cables.
- Cable Labels.
- Plates.
- Connectors.

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- Navigation lights.
- Gaskets.
- Shock Mounts.
- Ship's Bell.
- Ship's Horn.
- Blue Light.
- Halyard line and pulley assembly

3.1.5.1 The Contractor shall abide by the following guidance, in regards to handling of interferences:

- All interferences shall be removed by disconnecting the interference from the cable at the connector or terminal board.
- Interference shall be removed from their foundations.
- All connector protection rubber sleeves shall be saved and shall be reused during installation of new mast.
- Utilize a crane to steady large antennas, during removal and reinstallation processes.
- Use a man-lift to safely access equipment on the mast yardarm ends.

3.2 Mast removal. The Contractor may elect to remove (unship) the mast, to facilitate mast preservation. All welding shall be in accordance with SFLC Std Spec 0740. If mast is to be removed, complete the following.

3.2.1 Weld cross-braces and piping to the mast structure, as shown in Figure 1, Section 4 (NOTES).

3.2.2 Use a crane to provide tension to the mast, and crop the mast off below the sections of bracing.

3.2.3 Lay the mast on a platform and transport to a suitable facility for authorized repairs and preservation.

3.2.4 Weld chill rings into the mast side of the legs and grind the rings down slightly to provide a taper.

3.3 Surface preparation optional methods. The Contractor has the option of using either high/ultrahigh pressure water Jetting or abrasive blasting to achieve the required surface preparation, prior to application of the coating system specified in 3.5 (Preservation requirements). The Contractor may add abrasives to the waterjet stream, for one or both of the following reasons:

- Achieving greater productivity.
- Achieving the required surface profile.

NOTE

Water jetting without abrasive addition does not provide any additional anchor profile to the surface, beyond what was present after the previous surface preparation.

3.4 Substrate inspection. After surface preparation and before the coating application, the Contractor shall perform a visual inspection of all cleaned mast surfaces, including electrical hangers, hardware, and safety rail hardware. Submit a CFR

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3.5 Preservation requirements. The Contractor shall prepare and coat the mast surfaces using the system specified for “Freeboard/Superstructure/Mast (Freeboard/Superstructure),” in Appendix A (Cutter and Boat Exterior Painting Systems) of SFLC Std Spec 6310. Select the following:

- “Option I” system, for aluminum surfaces.
- Spar (10371), as the top/finish color.

3.6 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

CAUTION

1. Unless a containment system is used to contain surface preparation dust and debris and coating application overspray during pier side/dockside preservation, the following must be adhered to:

a. All surface preparation tools/equipment must vacuum-shrouded.

b. Coating s must be applied by brushing or rolling.

2. Coating application by brushing or rolling may require additional coats to obtain required dry film thickness.

3. Surfaces being preserved are considered “critical-coated surfaces”.

3.7 Mounting hardware renewal. After all authorized work is complete, the Contractor shall renew all retaining clamps and standoffs, nylon fasteners, Type 316 stainless steel tie bands, and rubber chafing strips, as shown on Coast Guard Drawings 110 WPB 171-002 and 110C WPB 601-027.

3.8 Repair of un-intended damages. The Contractor shall repair all damages, including overspray, incurred to surfaces not covered by the scope of this work item, during surface preparation and paint application procedures.

3.9 Touch-up preservation. Upon mast reinstallation, prepare and touch-up coat all disturbed surfaces (upon mast reinstallation) to match existing adjacent surfaces, in accordance with SFLC Std Spec 6310, Appendix A (Cutter and Boat Exterior Painting Systems).

3.10 Operational test – post repairs. After completion of work, the Contractor shall witness an operational test (by Coast Guard personnel) of all mast electrical and electronic equipment, to prove satisfactory operating condition. Submit a CFR.

4. NOTES

4.1 Definition. The mast surfaces are defined as structures, starting at the (4) pillar posts on the Open Bridge, up to the highest point of the cutter, to include, but not limited to: forward overhang, pedestals, yardarms, frames, gussets, ladder, foundations, and stand-offs. The mast surface preparation and preservation will extend a minimum of 2-inches below the bottom of the mast pillars into the Open Bridge and Wing Bridge surfaces to create an ‘overlap’ between the two coating system and tie the two systems together.

4.2 Figure 1.

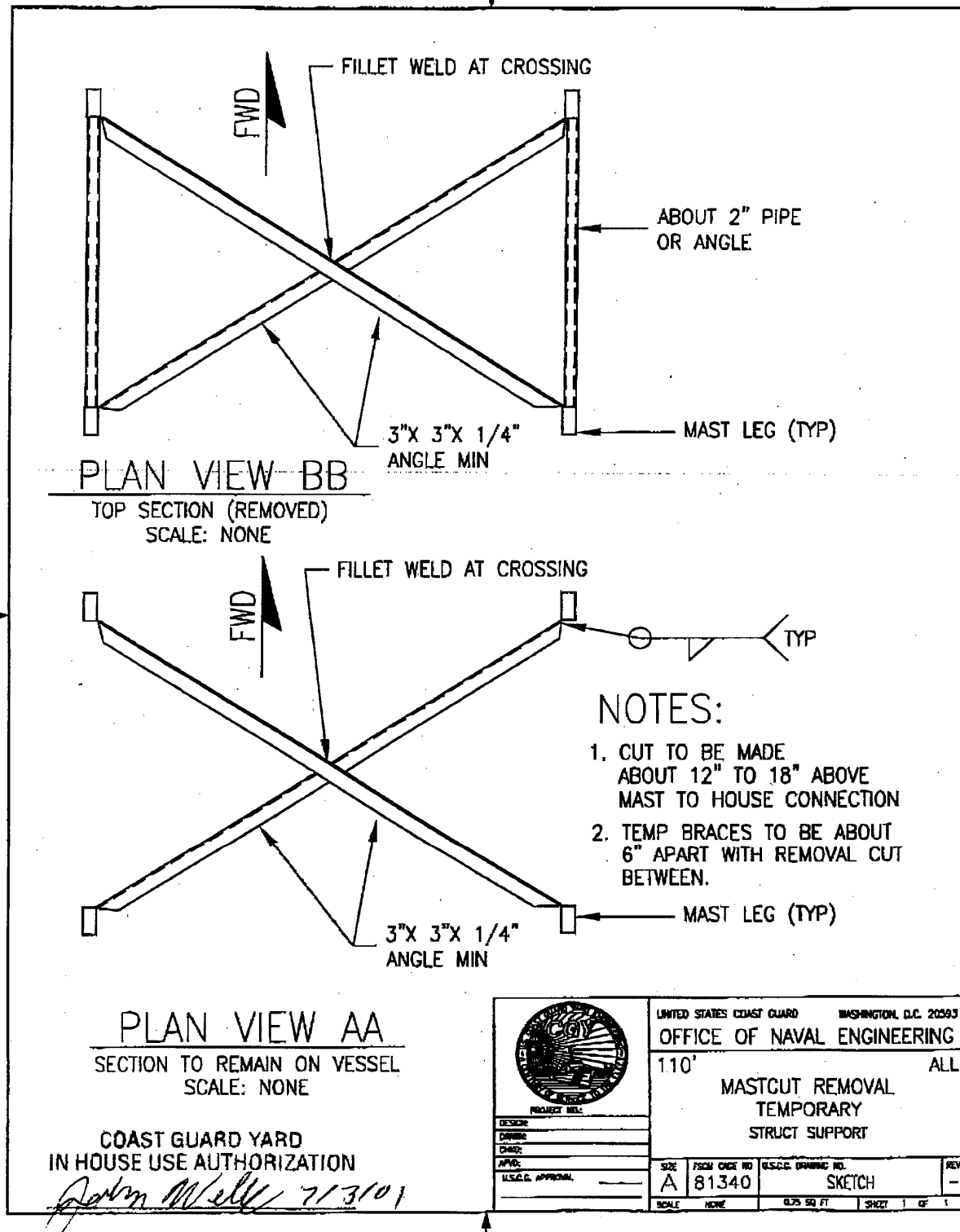


Figure 1 Mast cut Removal, Temporary Structural Support

WORK ITEM 16: Propulsion Shafting, Remove, Inspect, And Reinstall

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to remove, inspect, and reinstall the port and starboard propeller shafts.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	**4" Diameter x 28' Long, Aquamet-17 propulsion shaft	NSN: 2010-01-445-7940	2 ea.	8,700.00
N	*Oil Injection Equipment Kit	N/A	1 set	6,000.00

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 161-001, Rev C, Main Shaft Strut Details
 Coast Guard Drawing 110B WPB 161-002, Rev D, Main Shaft Strut Installation
 Coast Guard Drawing 110B WPB 161-004, Rev C, Intermediate Shaft Strut Installation
 Coast Guard Drawing 110C WPB 161-005, Rev G, Stern Tube Installation Details
 Coast Guard Drawing 110 WPB 161-006, Rev -, Intermediate Shaft Strut Manufacturing Details
 Coast Guard Drawing 110B WPB 243-005, Rev B, Shaft Locking Device
 Coast Guard Drawing 110B WPB 245-002, Rev B, Assembly of Oil Injection Equipment
 Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements
 Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes
 Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

ASTM International (ASTM) D5363, 2016, Standard Specification for Anaerobic Single-Component Adhesives

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the following paragraph(s):

- 3.3 Shaft Inspections.
- 3.4 Forward bearing housing.
- 3.5 Main and intermediate strut bearing inspection.
- 3.6 Strut nuts and cotter pins.
- 3.7 Stern tube inspection.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures.

Not applicable.

3.1.4 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

- Shaft bearing carrier.
- Deck plates.
- Wiring.
- Machinery.
- Piping.

3.2 Removal. The Contractor shall remove the port and starboard propeller shafts.

3.2.1 Mark the original propeller-to-shaft location and shaft-to-reduction gear coupling location as a baseline for reinstallation.

NOTE

These shaft markings are only for establishing a reference, refer to the requirements listed in work item titled 'Propellers; Remove, Inspect, and Reinstall' for the proper propeller installation and fit requirements.

3.2.2 Mark the existing orientation of each shaft coupling and bearing prior to removal, indicating the top, starboard, port, and bottom (12 o'clock, 3 o'clock, 6 o'clock, and 9 o'clock) positions as a baseline for reinstallation.

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3.2.3 Provide proper support to the reduction gear/propulsion shaft flange to prevent it from drooping and sagging.

3.2.4 Protect the shafts from damage during removal, storage, and reinstallation.

3.2.5 Ensure the shafts are properly supported at all bearing journals while being transported and stored.

3.3 Shaft inspections. The Contractor shall clean each shaft of all surface contaminants; set up the shaft in a lathe, and accomplish the below inspections. Submit a CIR.

3.3.1 Visual inspection. Visually inspect the propeller shafts, as shown on Coast Guard Drawing 110 WPB 243-006, and all associated components including propeller nut, gear nut, locking fasteners, hydraulic nut assembly, and coupling, for evidence of corrosion, pitting, surface cracks, or other defects. Visually inspect the shaft for evidence of it previously being flipped end for end as evidenced by prior bearing wear patterns.

3.3.2 Measurements.

- Measure the strut, intermediate and forward stern tube bearing journal diameters and runouts.
- Before taking shaft runout readings, spin the shaft on a lathe for approximately two hours at a rated speed of 80-100 rpm to eliminate any sagging that may have occurred during handling and storage.
- Measure and record the shaft straightness (run-out) along the length of the shaft, starting at two-inches from the coupling end and measuring, at a minimum, the top and bottom of both tapers, and every 24in along the length of the shaft. Where the reading position falls on a bearing journal, measure the TIRs at the forward, aft and middle bearing positions. Compare the instantaneous TIR readings at each location to the maximum allowable TIR shown on Coast Guard Drawing 110 WPB 243-006 and provide a pass/fail recommendation.

NOTE

Allowable TIR is listed on Coast Guard shaft drawings and ‘varies’ with location along the shaft.

3.3.3 NDI. The Contractor shall perform NDI of both shafts in accordance with SFLC Std Spec 0740, Appendix C.

3.4 Forward bearing housing. The Contractor shall accomplish the following for each forward bearing housing. Submit a CIR.

3.4.1 Removal. Remove the shaft bearing housing from the stern tube. Before unbolting the shaft bearing housing, drill and ream two holes in the flanges where the bearing housing mounts to the stern tube. Insert Type 316 stainless steel tapered pins in the holes. Ensure that the holes are located to provide the same vertical and horizontal offset, as well as angularity that existed before the bearing housing was unbolted.

WARNING!

DO NOT drill new holes, if holes and taper pins already exist.

3.4.2 Bearing and bearing housing inspection. After removal, the Contractor shall clean and visually inspect all bearings and bearing housings for any corrosion or defects. Measure and record all bearing

inside diameters at forward, aft, and middle positions. Remove the water injection threaded connection and perform a corrosion inspection of the cooling water port thru the housing, including the interior wall.

NOTE

1. **The shaft bearing clearance should be between a minimum of 0.022 inch and a maximum of 0.120 inch" for 4" diameter shafts, otherwise condemn and renew the applicable bearing.**
2. **Measure the flange thickness on the cardinal points to determine if prior machining was performed.**
3. **Measure the overall length of the housing on the cardinal points to determine if the flanges are parallel.**
4. **Measure the maximum depth of corrosion present in relation to the flange face height.**
5. **If the flange has been reduced by more than 25 % or the flanges are no longer parallel, the bearing housing should be replaced.**
6. **If the depth of the corrosion is greater than 0.250" below the flange face height, the corroded area can be restored using Belzona and minimal machining to restore the displaced material.**

3.4.3 Bearing housing preservation. The Contractor shall preserve the forward bearing housings, using the system specified for "Bilges, Cofferdams, and Forepeaks, Steel, Option II" in SFLC Std Spec 6310 in Appendix B (Cutter and Boat Interior Paint Systems). Select Light Gray (26373), as the top/finish coat color.

3.4.4 Reinstallation. Reinstall the bearing housing(s) and bearing(s) upon completion of housing inspection and preservation using seamless o-ring.

3.5 Main and intermediate strut bearing inspection. The Contractor shall accomplish the following: Submit a CIR.

- Visually inspect the main and intermediate strut bearings for excessive wear and un-bonding.
- Measure and record the bearing inside diameters at the forward, middle and aft positions across the vertical and horizontal planes.
- Calculate the bearing clearance by subtracting the shaft bearing journal diameter from the bearing inside diameter readings.

NOTE

Example of CIR:
Bearing: 5.35-inches
Design: 5.48 to 5.52-inches
Determination: FAIL
Recommendation: RENEW

3.6 Strut nuts and cotter pins. The Contractor shall visually inspect all strut nuts and cotter pins for deterioration or defects. If a Change Request has been authorized and released by the KO, renew the designated strut nuts and cotter pins. Submit a CIR.

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3.7 Stern tube inspection. The Contractor shall perform a visual inspection of all stern tube interior surfaces for corrosion and other defects. Submit a CIR.

NOTE

Concurrent with the findings of the shaft inspection CIR, the Government intends to use each shaft in the most effective manner without renewing them. Since the propeller shaft is symmetric, it can be flipped end for end without the expense of repairing excessive worn bearing journal surfaces. In general, shafts that were previously marked and reused will be renewed with Government-furnished shafts.

3.8 Reinstallation. The Contractor shall install both propeller shafts by flipping each shaft end for end. Reinstall all associated components to their original configuration as shown on the applicable drawings referenced in Section 2. The final positions of both shafts shall be as close as possible to the original positions, unless shaft realignment has been authorized by the KO.

3.8.1 Reassemble the couplings in accordance with Coast Guard Drawing 110B WPB 245-002. Attain a proper "draw" of 0.182" - 0.192".

3.8.2 Ensure that hydraulic pressure when expanding the coupling to fit the shaft is between 15,500 and 30,000 psig. Hydraulic nut pressure to press coupling on to the shaft is between 5,950 and 10,000 psig. Maintain pressure for a minimum of 30 minutes.

NOTE

If ambient air temperature is below 40 degrees Fahrenheit, allow double the time before releasing the hydraulic oil pressure from the hydraulic nut.

3.8.3 Reassemble the shaft locking devices as shown on Coast Guard Drawing 110B WPB 245-002.

3.8.4 Secure each shaft coupling to the reduction gear output flange with new bolting hardware as shown on Coast Guard Drawing 110B WPB 243-006. After each bolt is completely threaded and properly torque onto the shaft coupling, ensure that the first two exposed threads are covered with nonpermanent, sealing compound, conforming to ASTM D5363.

3.8.5 Shaft marking. Mark the flipped shafts with the date the shafts were flipped with a permanent marker or paint on the shaft journal location so that the dates can be seen by future shaft inspection. Do not mark newly installed Government-furnished shafts.

NOTE

Verify all bolting hardware dimensions on the referenced drawing utilizing existing hardware PRIOR TO the purchase of new hardware. Variances from the drawings are possible.

3.9 Shaft renewal option. If a Change Request has been authorized and released, the Contractor shall renew the shafts with the Government-furnished shafts listed in paragraph 1.2. The Contractor shall accomplish the following tasks:

3.9.1 Rig the Government-furnished shaft from the delivery truck to a suitable inspection and repair facility. Remove all wrapping barrier material, and clean shaft surfaces of all preservative.

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3.9.2 Perform the shaft inspections, as specified in paragraph 3.3 (Shaft inspections), with the exception of NDI.

3.9.3 Scrap the old shaft.

3.10 Operational test – post repairs. After completion of work, the Contractor shall witness Coast Guard personnel test the propulsion shaft to prove satisfactory operating condition. Submit a CFR.

3.11 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

4.1 Typical misalignment symptoms. The following are some common shaft misalignment symptoms:

- Excessive vibrations during normal operations.
- Abnormal noises along the shaft line during normal operations.
- Uneven bearing wear (it is normal for the 6 o'clock position of the bearing should have the most wear).
- Wiped bearings.

WORK ITEM 17: Alignment Survey, Conduct

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to conduct a propulsion system alignment survey, pre- and post-repair.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 161-001, Rev C, Main Shaft Strut Details
Coast Guard Drawing 110B WPB 161-002, Rev D, Main Shaft Strut Installation
Coast Guard Drawing 110B WPB 161-004, Rev C, Intermediate Shaft Strut Installation
Coast Guard Drawing 110C WPB 161-005, Rev G, Stern Tube Installation Details
Coast Guard Drawing 110 WPB 161-006, Rev -, Intermediate Shaft Strut Manufacturing Details
Coast Guard Drawing 110B WPB 201-002, Rev A, Propulsion Configuration
Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 3495, May 2002, Chapter 243, Installation Duramax
Shaft Seal System
Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

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None.

3.1.2 Tech Rep. The Contractor shall provide the services of a qualified Tech Rep to conduct the full system alignment as described herein.

3.1.2.2 The Tech Rep shall have a résumé of demonstrated experience with conducting laser or optical alignment of marine propulsion systems.

3.1.2.3 Submit a copy of the résumé and a list of references to the COR.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Bearings
- Rudder(s)

3.2 Alignment survey. Using the references listed under Section 2 and in the presence of the Coast Guard Inspector, the Contractor shall conduct a full system laser or optical alignment survey of the affected propulsion system(s):

- prior to any bearing removal(s)
- Following all repairs (before shaft reinstallation).

3.2.1 Submit the applicable portions of the alignment survey forms at the end of this work item (Section 4, paragraph 4.2) as a CFR, inclusive of the details required below.

NOTE

Minimize thermal effects by performing the following late in the evening or before sunrise.

3.2.2 For the affected system(s), the pre- and post-repair alignment surveys shall measure and record the vertical and horizontal bearing offsets (fore and aft ends of each bearing) and shaft seal flange offsets relative to an established straight line.

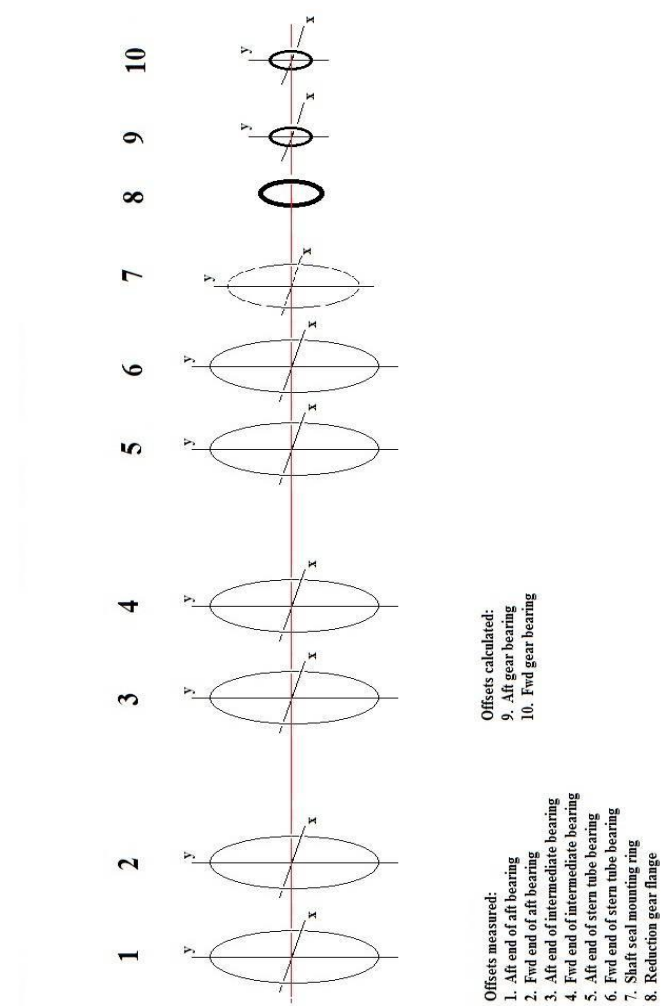
3.2.3 Following the pre-repair survey, provide movement magnitude and directional recommendations for each affected bearing to achieve a proper final alignment.

NOTE

Ensure the final, corrected orientation of machinery will not negatively/prohibitively impact mounting (i.e., engine footing hanging off of foundation rails, etc.), or system interfaces (i.e., exhaust connection point alignment or raw water connections).

4. NOTES

4.1 Bearing location reference sheet for survey forms under 4.2.



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4.2 Alignment survey forms.

INITIAL SURVEY – STARBOARD / PORT (CIRCLE ONE)		
Location	X offset (negative, outboard)	Y offset (negative, below target x axis)
1		
2		
3		
4		
5		
6		
7		
8		
9**		
10**		
RECOMMENDED CORRECTIONS (IF ANY) – STARBOARD / PORT (CIRCLE ONE)		
Location	X offset (negative, outboard)	Y offset (negative, below target x axis)
1		
2		
3		
4		
5		
6		
7		
8		
9**		
10**		
FINAL VERIFICATION – STARBOARD / PORT (CIRCLE ONE)		
Location	X offset (negative, outboard)	Y offset (negative, below target x axis)
1		
2		
3		
4		
5		
6		
7		
8		

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9**		
10**		

****Calculated**

WORK ITEM 18: Mechanical Shaft Seal Assemblies, Overhaul

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to overhaul the mechanical shaft seal assemblies on the port and starboard propeller shafts.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	Shaft seal assembly kit	NSN: 5330-01-497-8095	2 ea.	859.48
N	**Shaft seal assembly	NSN: 4320-01-497-8057	2 ea.	3,111.84
N	Emergency Shaft Seal Inflator Kit	NSN: 5330-01-497-9866	2 ea.	175.00

****New or refurbished equipment that the Government may provide for installation in place of existing equipment.**

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110C WPB 161-005, Rev G, Stern Tube Installation Details

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 3495, May 2002, Chapter 243, Installation Duramax Shaft Seal System

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Deck plate.
- Deck plate framing.
- Propulsion shaft.

3.2 Seal overhaul particulars. The Contractor shall accomplish the following for each shaft seal assembly, using TP-3495 as a guide:

- Disassemble and remove the shaft seal assembly and emergency shaft seal inflator system.
- Clean all components free of marine growth.
- Perform visual inspection of cleaned components. Submit CFR.
- Renew all seal components with Government-furnished shaft seal assembly kit and emergency shaft seal inflator.
- Renew shaft seal cooling flex hoses.
- Reassemble and reinstall the seal assembly.

CAUTION

Do not rotate shaft during overhaul tasks.

NOTE

The seal inflator adaptor is of universal length and will require adjustments.

3.2.1 The Contractor shall measure, cut, and fit the inflator adaptor to the length required to achieve a depth that passes into the center chamber of the inflator but not touch the inside wall of the interior diameter. The seal inflator adaptor end shall be rounded following the cutting to length, to prevent rubbing/chaffing. When installed and the seal inflation cycled, the seal must return to a fully relaxed position with no visible bulging or protrusion in the seal inflator adaptor area.

3.2.2 Prior to installing the mechanical shaft seal assembly on the cutter, the Contractor shall perform NDT testing of the newly installed shaft seal inflator. Install a 4-inch stub shaft into the emergency shaft seal of similar or better surface finish of the propulsion shaft. Inflate the emergency shaft seal inflator to a pressure of 15 psi to engage seal, maximum 40 psi. Visually inspect the seal to ensure that it inflates uniformly around the shaft and is not bulging or otherwise displaying signs of mechanical derangement or seal compromise. Leave the emergency shaft seal inflated with the stub shaft installed and submerge the

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system in water for 5-minutes. Inspect for signs of air leaks from the emergency shaft seal inflation tube or Schraeder valve assembly. Remove the emergency shaft seal inflator and stub shaft from the water and orient the inflator with the mounting flange facing up. Fill the cavity between the stub shaft and seal housing with water up to the mounting flange. After 5-minutes have elapsed, inspect the water level in the seal housing for signs of leakage. No visible air or water leaks are permitted. Make repairs as necessary to obtain a leak free condition. Submit a CFR.

3.2.3 After the propulsion shafts have been installed and coupled to the reduction gear output flanges, the Contractor shall perform a clearance measurement between the propulsion shaft and the shaft seal adapter flange thru the emergency inflator boss across the vertical and horizontal planes; make any adjustments necessary to re-center the seal around the shaft. Submit a CFR.

NOTE

Minor relocating of the shaft seal adapter flange within the mechanical limits of the pilot grooves is authorized to achieve the Duramax running clearance tolerances between the propulsion shaft to shaft seal adapter flange. It is IMPORTANT that upon installation of the Duramax Marine Shaft Seal System that the propeller shaft is as close to the center of the friction ring as possible. Failure to center the shaft could cause it to hit the inside of the friction ring. If this happens the seal faces could separate and drip.

3.3 Government right to change out seal assembly. The Contractor shall be aware that the Government reserves the right to furnish up to two new shaft seal assemblies in lieu of overhauling the seals, at no additional cost to the Government.

3.4 Seal venting. After launching the cutter and in the presence of the Coast Guard Inspector, the Contractor shall remove the cooling water injection lines from both seals and allow the stern tube and seal assemblies to flood with water, in accordance with the manufacturer's guidance in TP 3495 and CG Drawing 110C WPB 161-005. When the air is vented from the seal assemblies re-connect the injection lines.

WARNING

Do not rotate shaft until the stern tubes have been vented.

3.5 Operational test, post repairs. After completion of work and in the presence of the Coast Guard Inspector, the Contractor shall thoroughly test and demonstrate the equipment listed below to be in satisfactory operating condition. Submit a CFR.

- Shaft seal assembly

NOTE

Pay special attention to water leaks, abnormal noises, and any binding in normal shaft operation.

3.6 Touch-up preservation. The Contractor shall prepare and coat all new and disturbed surfaces to match existing adjacent surfaces in accordance with SFLC Std Spec 6310, paragraph 3.1.13 (Touch-ups and minor coating repairs).

4. NOTES

4.1 Coast Guard personnel. Coast Guard personnel will operate all equipment and machinery.

WORK ITEM 19: Propulsion Shaft Bearings (External), Renew**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to renew the strut shaft bearings (external) for the port and starboard propeller shafts.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	Main Shaft Strut Bearing, Bronze and rubber cutlass bearing, 4" ID x 5" OD x 16" Long	NSN: 3120-01-222-3927	2 ea.	200.00
N	Intermediate Shaft Strut Bearing, Bronze and rubber cutlass bearing, 4" ID x 5" OD x 16" Long	NSN: 3120-01-222-3927	2 ea.	200.00

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 161-001, Rev C, Main Shaft Strut Details
 Coast Guard Drawing 110B WPB 161-002, Rev D, Main Shaft Strut Installation
 Coast Guard Drawing 110 WPB 161-006, Rev -, Intermediate Shaft Strut Manufacturing Details
 Coast Guard Drawing 110B WPB 161-004, Rev C, Intermediate Shaft Strut Installation
 Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
 General Requirements

OTHER REFERENCES

None.

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures - general. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Government-furnished bearings inspection. After receiving the Government-furnished bearings, the Contractor shall visually inspect the bearings for damage or defects, measure and record the bearing dimensions, and submit a CFR.

3.3 Bearing renewal. The Contractor shall accomplish the following, for each bearing. Precautions shall be taken to not damage the bearing housing upon bearing removal. Using an air arc gouge rod often cuts away part of the housings and/or distorts the housing due to the excessive heat. The Contractor shall employ processes/methods that do not cause secondary damage to ship's structure.

3.3.1 Main shaft strut bearing. The Contractor shall remove and renew the main shaft strut bearing(s) with the Government-furnished bearing(s) using Coast Guard Drawings 110B WPB 161-001 and 110B WPB 161-002 as reference.

3.3.2 Intermediate strut bearing. The Contractor shall remove and renew the intermediate strut bearing(s) with the Government-furnished bearing(s) using Coast Guard Drawings 110 WPB 161-006 and 110B WPB 161-004 as reference.

3.3.3 Bearing housing inspection. After removing the bearing(s), the Contractor shall clean and visually inspect the main and intermediate strut bearing housings' bores for any corrosion and other defects. Measure and record all bearing housing inside diameters at forward, aft, and middle positions. Perform interference fit calculations to determine if the strut bore is within allowable tolerance to install the Government-furnished strut bearings. Submit a CFR.

3.4 Interference fit. The Contractor shall achieve an interference fit between the bearing and the strut tube of 0.001-inches to 0.002-inches. The Contractor is permitted to employ low temperatures to shrink fit the bearings during installation, but may not cool the bearings to lower than 0° Fahrenheit. The Contractor shall skim cut the outside diameter of the bearing to achieve the aforementioned interference fit. When skim cutting, the Contractor shall measure the concentricity of the bearing, internal diameter to outside diameter, at the forward and aft ends of the bearing prior to machining the bearing. When skim cutting operations are complete, the Contractor shall measure and verify that the concentricity of the bearing is equal to or better than the pre-machining concentricity measurements. Concentricity measurements shall be measured within minimum precision of 0.005-inches. Following the interference fitting of the bearings, submit a CFR noting at a minimum, the: installed interference fit, the post machining O.D. and concentricity, and the installed bearing I.D.

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3.4.1 Set screw installation. After the bearings are properly installed and positioned in the strut, the Contractor shall drill dimples into the outer bearing shell through the set-screw ports on the struts. The dimples shall be made with a 135-degree split point drill, to a depth of one-half the bronze bearing shell thickness, at 2 locations forward and 2 locations aft per strut at a 90-degree spacing. Plug the remaining set screw ports, 1 forward and 1 aft, with a pair of set screws set in a jam nut configuration that locks them in the strut body without making contact with the bearing sleeve. The Contractor shall install the set screws with non-permanent thread locking compound.

3.4.2 Running clearances. Following the installation of the bearings and setting the set screws, the Contractor shall measure the internal diameter of the bearing along the vertical and horizontal planes at a minimum of 3 stations: 2-inches from the forward end, the middle of the bearing, and 2-inches from the aft end. The Contractor shall then measure the propulsion shaft in the corresponding locations along the shaft that the bearing will mate in the same manner. The Contractor shall calculate the running clearance of the propulsion shaft to bearing. Submit a CFR. The minimum running clearance tolerance for this application is 0.012-inches to 0.017-inches.

NOTE

The maximum running clearance should be no more than 0.120".

3.5 Fasteners. During bearing installation, the Contractor shall renew all the fasteners with Type 316 stainless steel fasteners.

3.6 Report. The Contractor shall measure and record the new bearing clearance readings for the main strut bearings and intermediate strut bearings. Submit a CFR.

4. NOTES

4.1 Shaft details. Propulsion shaft details are shown on Coast Guard Drawing 110 WPB 243-006.

**WORK ITEM 20: Propulsion Shaft, Stern Tube Forward Bearing,
Renew****1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to renew the propulsion shaft stern tube forward bearing(s).

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	Stern Tube Bearing, Bronze and Rubber cutlass bearing, 4" ID x 5" OD x 8" Long	NSN: 3120-01-238-0689	2 ea.	150.00

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110C WPB 161-005, Rev G, Stern Tube Installation Details

Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

None.

OTHER REFERENCES

None.

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures.

Not applicable.

3.1.4 Interferences.

None.

3.2 Inspection of Government-furnished bearings. After receiving the Government-furnished bearings, the Contractor shall visually inspect the bearings for damage or defects, measure and record the bearing dimensions and submit a CFR.

3.3 Stern tube forward bearing(s). The Contractor shall remove and discard the designated stern tube forward bearing(s).

3.4 Bearing renewal. The Contractor shall accomplish the following, for each bearing, as designated by the COTR:

3.4.1 Renew designated bearing(s) with the Government-furnished bearing(s) using Coast Guard Drawing 110C WPB 161-005 as reference.

NOTE

The removal, inspection, reinstallation and preservation of the forward bearing housing is covered under a separate work item in this specification package titled "Propulsion Shafting, Remove, Inspect, and Reinstall."

3.4.2 Interference fit. The Contractor shall achieve an interference fit between the bearing(s) and the forward bearing housing of 0.001-inches to 0.002-inches. The Contractor is permitted to employ low temperatures to shrink fit the bearings during installation, but may not cool the bearings to lower than 0° Fahrenheit. The Contractor shall skim cut the outside diameter of the bearing to achieve the aforementioned interference fit. When skim cutting, the Contractor shall measure the concentricity of the bearing, internal diameter to outside diameter, at the forward and aft ends of the bearing prior to machining the bearing. When skim cutting operations are complete, the Contractor shall measure and verify that the concentricity of the bearing is equal to or better than the pre-machining concentricity measurements. Concentricity measurements shall be measured within minimum precision of 0.005-inches. Submit a CFR indicating the installed interference fit, the post machining O.D. and concentricity, and the installed bearing I.D.

3.4.3 Running clearances. Following the installation of the bearing(s), the Contractor shall measure the internal diameter of the bearing(s) along the vertical and horizontal planes at a minimum of 3 stations: 2-inches from the forward end, the middle of the bearing(s), and 2-inches from the aft end. The Contractor shall then measure the propulsion shaft in the corresponding locations along the shaft that the bearing will mate in the same manner. The Contractor shall calculate the running clearance of the propulsion shaft to bearing. Submit a CFR. The minimum running clearance tolerance for this application is 0.017-inches.

3.5 Report. The Contractor shall measure and record the bearing clearance readings and submit a CFR.

4. NOTES

4.1 Shaft details. Propulsion shaft details are shown on Coast Guard Drawing 110 WPB 243-006.

WORK ITEM 21: Stern Tube Interior Surfaces, Preserve 100%

WORK ITEM 1: SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve stern tube interior surfaces.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

MIL-A-22262, Mar 1996; Abrasive Blasting Media Ship Hull Blast Cleaning

MIL-PRF-24647, Apr 2013, Paint System, Anticorrosive and Antifouling, Ship Hull

The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 10/NACE No. 2, 2007, Near-White Blast Cleaning

The Society for Protective Coatings (SSPC) Surface Preparation Specification No.11 (SSPC-SP 11), 2012, Power Tool Cleaning to Bare Metal

The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 12/NACE No.5, 2002, Surface Preparation and Cleaning of Metals by Water jetting Prior to Recoating

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness. Specific equipment/components include, but are not limited to:

- Stern tube flange surfaces.
- Engine Room.
- Bearings and bearing housings.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Forward bearing housing.

3.2 Preservation requirements. Using Coast Guard Drawing 110B WPB 243-002 as guidance, the Contractor shall preserve 100% of the interior tube surfaces as follows:

3.2.1 The Contractor shall not prepare or coat waterborne bearing contact areas inside the stern tube. This includes bearing lands, areas in contact with bearing shell, areas in contact with Cutless type bearings, etc. These areas shall remain uncoated to provide required fits.

3.2.2 Surface preparation. The Contractor shall prepare surfaces by water jetting to a SSPC-SP 12/NACE No. 5, WJ-2/L standard, or by one or a combination of the following surface preparation methods:

TABLE 1 – SURFACE PREPARATION

ABRASIVE BLASTING	MECHANICAL CLEANING
Abrasive-blasting to SSPC-SP10/NACE No. 2, using grit conforming to MIL-A-22262 (1.5 to 2.5 mil anchor profile).	Power tool cleaning to a SSPC-SP 11 (1.0 mil anchor profile).

3.2.3 Inspection. After surface preparation and before coating application, the Contractor shall perform a visual inspection of the prepared stern tube surfaces, and submit a CFR.

3.2.4 Surface coating. The Contractor shall prime and coat the prepared surfaces with two coats of a “High Turbulence Coating”, at 5.0-6.0 mils DFT each.

NOTE

List of authorized suppliers for “High Turbulence Coatings” is provided in SFLC Std Spec 6310, Appendix C (Authorized Coatings for Use on Cutters and Boats).

3.3 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 22: Propellers; Remove, Inspect, and Reinstall**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to remove, inspect, and reinstall the port and starboard propellers.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
Y	**Propeller, LH	NSN: 2010-01-222-2440	1 ea.	23,445.00
Y	**Propeller, RH	NSN: 2010-01-222-2441	1 ea.	22,800.00

****New or refurbished equipment that the Government may provide for installation in place of existing equipment.**

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110 WPB 245-004, Rev A, Propeller Details

Coast Guard Drawing 110B WPB 245-002, Rev B, Assembly of Oil Injection Equipment

Coast Guard Drawing 110 WPB 243-006, Rev C, Propulsion Shaft Details

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 2924, Jun 1990, General Information Book and Operating Manual for USCG 110 Foot Patrol Boat, Annex 1B, Propeller Renewal Procedure

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

International Organization for Standardization (ISO) 484/2, 1981, Shipbuilding - Ship Screw Propeller - Manufacturing tolerances - Part 2: Propellers of Diameter Between 0.80 and 2.50m, Inclusive

ASTM International (ASTM), D3951, Re-approved 2004, Standard Practice for Commercial Packaging

3. REQUIREMENTS

3.1 General. The Contractor shall remove each propeller from its associated shaft in accordance with TP-2924, Annex 1B. Thoroughly clean the propeller, hub, and shaft taper free of all marine growth, dirt, and all other foreign substances.

CAUTION

Do not use a foreign object as an anti-torque device against the propeller blade(s) while removing the propellers. The application of force to the propeller blade will result in knocking the propeller blade out of 'rake' and affecting the overall 'track' of the propeller blades. The use of a non-marring shaft locking device is recommended.

3.1.1 CIR. The Contractor shall submit a CIR for the following paragraph(s):

- 3.2 Inspections.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Inspections. The Contractor shall perform the following inspections:

3.2.1 Visual. Visually inspect the following, for evidence of damage and defects:

- Each shaft taper, threads, propeller, propeller hub bore, and adjacent areas.
- The entire trailing edge of the propeller blades and the surface around the blade roots in the area of the anti-cavitation holes.
- The hub of the propellers, propeller nut, and the propeller fairing cones (if applicable).
- Anti-singing edges.

3.2.2 NDI. The Contractor shall perform NDI of the propeller surfaces in accordance with SFLC Std Spec 0740, Appendix C.

3.2.3 Measurement. "Using Coast Guard Drawing 110 WPB 245-004 as guidance, measure, compare and record the following for each propeller in accordance with ISO 484/2 Class 1 where applicable:

- Propeller diameter.
- Blade thickness.
- Blade pitch.
- Rake.

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- Track.

3.3 Report. The Contractor shall submit a CIR for the completed inspections.

3.4 Polishing. After resolution of any noted defects, the Contractor shall polish all surfaces to a finish as shown on Coast Guard Drawing 110 WPB 245-004.

3.5 Reinstallation. The Contractor shall reinstall the propellers in accordance with TP-2924, Annex 1B and as shown on Coast Guard Drawing 110B WPB 245-002.

3.5.1 Hydraulic pressure application. The Contractor shall ensure the following:

- Hydraulic pressure to expand propeller hubs to fit onto shafts is a minimum of 11,600 psig.
- Hydraulic nut pressure to press fit propellers onto shafts (at full draw) is between 4,440 and 7,500 psig. Maintain nut pressure for a minimum of 30 minutes.

CAUTION

If ambient air temperature is below 40 degrees Fahrenheit, allow double the time before releasing the hydraulic oil pressure from the hydraulic nut.

3.5.2 Fastener renewal. Renew all lock wire and locking compound for all fasteners using Coast Guard Drawing 110C WPB 243-002, Sheet-2 as guidance. Reinstall the thread cap protector.

3.6 Government's right for changing out propellers. The Contractor shall be aware that the Government reserves the right to furnish up to two new or reconditioned propellers for installation in place of the existing propeller(s) in lieu of overhauling the existing propellers, at no additional cost to the Government. If Government furnished propellers are provided the Contractor shall:

- Unship and inspect the Government-furnished propellers and shipping crate for damage. Submit CFR.
- Re-crate the MTI propellers using the Government furnished shipping crates, and reuse all the hardware that came with the original Government-furnished propellers including the stainless steel hardware, steel mounting plate, lifting eyes, propeller edge guards, etc. Securely package the propellers in accordance with ASTM D3951, so they do not shift inside the crates.
- Renew any missing or damaged hardware necessary to reinforce the crate.
- Provide heavy lift services to load the MTI propellers for transport.

4. NOTES

4.1 Equipment data. Each propeller is a 5-Blade, Nickel-Aluminum-Bronze Propeller, 49.6-inch Dia. x 61.4-inch Pitch; and weighs approximately 750 lbs.

WORK ITEM 23: Exhaust Piping System, Inspect

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to inspect the vessel's main diesel engine (MDE) and ship's service generators (SSDG) exhaust piping system.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	**Port spray ring	NSN: 2990-01-475-9621	1 ea.	1,584.00
N	**Starboard spray ring	NSN: 2990-01-475-9620	1 ea.	1,584.00
N	**Port 8" flapper valve	NSN: 4810-01-475-8648	1 ea.	2,072.00
N	**Starboard 8" flapper valve	NSN: 4810-01-475-8415	1 ea.	2,072.00
N	MDE gasket kit	NSN: 5330-01-475-8157	2 ea.	389.45
N	MDE gasket kit	NSN: 5330-01-475-8169	2 ea.	312.52
N	Exhaust gasket kit	NSN: 5330-01-475-8804	4 ea.	128.24
N	Turbo Charger gasket	NSN: 5330-01-424-6806	2 ea.	283.01
N	Expansion bellows and flower pot to bellows	NSN 5330-01-394-8528	6 ea.	96.84
N	Soft patch Kit	NSN: 2040-01-469-1629	1 kit	1812.37

****New or refurbished equipment that the Government may provide for installation in place of existing equipment.**

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 259-005, Rev C, 18" Raw Water Discharge Spray Ring Assembly w/ Companion Flanges & Gaskets

Coast Guard Drawing 110 WPB 259-006, Rev D, MDE 8" Exhaust Flapper Valve Assembly (w/Companion Flanges & Gaskets)

Coast Guard Drawing 110B WPB 259-001, Rev D, Main Engine Exhaust Piping System

Coast Guard Drawing 110B WPB 259-002, Rev D, Genset Exhaust Piping System

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 10/NACE No. 2, 2007, Near-White Blast Cleaning

3. REQUIREMENTS

3.1 General. The Contractor shall remove, inspect and reinstall the exhaust system using Coast Guard Drawings 110 WPB 259-005, 110 WPB 259-006, 110B WPB 259-002 and 110B WPB 259-001 for guidance.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures.

Not applicable.

3.1.4 Interferences. The Contractor shall be aware that interferences in way of work include, but are not limited to the below-listed. Handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences):

- Small Boat.
- Electrical cabling.
- Piping connections.
- Exhaust pipe insulation blankets.
- Soft Patches

3.1.5 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard Personnel perform an initial operational test of the flapper valves, to demonstrate existing operational conditions. Submit a CFR.

3.2 Removals. The Contractor shall remove all exhaust piping, expansion bellows, system flapper valves, spray rings, and spool pieces (as applicable) from the exhaust collector outlet down to the final hull mounted flanges at the upper and lower exhaust valves. Immediately install blank flanges and gaskets over the openings, secured with at least four bolts 90° apart.

3.3 Inspections. The Contractor shall accomplish the following, and submit a CFR:

3.3.1 Valves. Disassemble all component parts of the MDE exhaust 8-inch flapper valves (two each) and 18-inch flapper valve/spray ring assemblies (two each, as applicable) shown on Coast Guard drawings 110 WPB 259-005 and 110 WPB 259-006. Perform a visual inspection of all disassembled components for damage; including but not limited to pitting, cracks and corrosion.

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3.3.2 Exhaust piping. Clean and visually inspect the following port and starboard exhaust piping sections, shown on Coast Guard Drawing 110B WPB 259-001, for any signs of pitting, corrosion, or cracks in accordance with SFLC Std Spec 0740, Appendix C.

- 8-inch section: From the flapper valve outlet connection flange, down to and including the end of the exhaust pipe, through the hull penetration; this includes the welded joint between the hull plating and exhaust piping. Also, from the flapper valve inlet connection flange, up to where it intersects with the 18-inch exhaust piping.
- 18-inch section: From the 18-inch spool piece inlet connection flange, up to and including the weld between the two opposing 45-degree elbows. Also, from the outlet connection flange down to and including the interior hull penetration; this includes the welded joint between the hull plating and exhaust piping, on the inside of the vessel.

3.3.3 Nondestructive inspection. Abrasive-blast the flapper valve bodies, spool pieces, flexible bellows, outlet transition adapter, 18-inch elbow following the transition adapter, and MDE exhaust piping from the upper 18-inch flange at the exhaust bellows down to and including the final 8-inch and 18-inch flange at the spray ring and flapper valve to a "Near-White" surface condition, in accordance with SSPC-SP 10/NACE No. 2. The Contractor shall conduct a non-destructive inspection of the exhaust pipe welds, spool pieces, spray rings (as applicable), valve bodies, and exhaust bracket slip joint welds in accordance with Std Spec 0740_STD, Appendix C, to detect any surface and subsurface cracks and defects.

- Make weld repairs up to 20 linear inches of surface cracks per MDE.

3.3.4 Exhaust brackets. Visually inspect the exhaust bracket configuration against the "Exhaust Bracket Details" shown on Coast Guard Drawing 110B WPB 259-001 (Zone 4A). Check for the following and submit a CFR to correct defects and restore to the drawing configuration.

- Slip Joint: Inspect the shipside and exhaust brackets for the expansion slotting. Measure the length and width of the slots for gouging, wear, or any other mechanical defects that would prevent freedom of movement along the vertical plane.
- Renew both aluminum exhaust brackets mounted to the soft in accordance with Coast Guard drawing 110B-WPB-259-1.

3.3.5 Motor actuators. Inspect all motor actuators (2) and travel limit switches (4) for the following. Submit a CFR.

- Limit switches: Remove the dust boots and inspect for heat damage or mechanical failure of the rubber. Remove the electrical junction box covers and inspect the wiring for signs of heat damage. Operate the limit switches by hand and ensure that the switch action returns to the extended position from the internal spring action. Inspect for signs of saltwater contamination or intrusion.
- Actuators: Remove the quick release pins and inspect for signs of chaffing or metal loss that degrades or otherwise compromises the structural integrity of the pin. Compare the configuration of the toggle pins, retention chains, and associated hardware against Coast Guard Drawing 110 WPB 259-006 (Section 13-A). Inspect the motor for signs of saltwater contamination or intrusion.
- Wiring: Inspect the wiring from the relay junction box down to the actuators and the travel limit switches for signs of heat damage, chaffing, or any condition that may compromise the electrical qualities of the cabling. Inspect the stuffing tubes for signs of degradation, cracks, heat damage, or any other conditions that will not adequately safeguard personnel from electrical shock.

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3.4 Government-furnished valves/spray rings. The Contractor shall be aware that the Government reserves the right to furnish new valves or spray rings to be installed in place of any removed, at no additional cost to the Government. The Contractor shall be responsible for any fabrication, fitting, sizing, and installation processes required to mount the spray ring saltwater flange to the new valve/spray ring. When the Government exercises this right, the Contractor shall dispose of the old valves or rings as scrap, in accordance with all Federal, state and local regulations.

3.5 Generator exhaust piping inspection. The Contractor shall inspect the complete exhaust piping system on the port and starboard generators for any signs of pitting, corrosion, or cracks from the exhaust outlet to the overboard discharge, as shown on Coast Guard Drawing 110B WPB 259-002. Submit a CFR.

- Make weld repairs up to 20 linear inches of surface cracks per SSDG.

3.6 Reassembly. After any authorized repairs, the Contractor shall reassemble and reinstall the piping, valves, expansion bellows, and rings. Renew all gaskets, lubrication and packing. Use Coast Guard Drawing 110B WPB 259-001 as a guide. Remove all the blank flanges installed and reinstall each valve, ring and spool piece (as applicable) to their original location with new flange gaskets. Renew all fasteners (nuts, bolts, and washers) according to ASTM grade and materials listed on applicable Coast Guard drawings.

3.6.1 Exhaust slip joint. The exhaust slip joint shall be assembled to constrain the two plates together without creating a normal force that will prevent the two plates from slipping under heat expansion of the exhaust system. The slip joint fastener will be assembled with large flat washers under both the bolt head and the nut, so as to prevent binding of the fasteners in the slots and subsequent loss of freedom of movement across the joint. The exhaust fasteners and locking hardware will be constructed from stainless steel SS-316. The location of the slip joints when the exhaust is cold will favor the lower end of travel and must allow for a minimum of $\frac{3}{4}$ -inches of travel for the exhaust side plate to move in the upward direction when heated by the normal exhaust system temperatures. The castellated nut will be hand tightened to bring the two plates together, use a wrench to advance to the next castellation in the tightening direction and install a 316 stainless steel cotter pin to lock the fastness of the nut.

CAUTION!

The use of impact tools to install the fasteners is not permitted. All flanges will be fastened to the torque values for the fastener size and grade. Fasteners will be tightened in an alternating pattern in incremental steps to ensure an even draw across the sealing surface.

3.7 Post-repair operational testing. The Contractor shall inspect and perform an air test of the entire exhaust system in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

3.7.1 After all authorized exhaust system work is complete, in the presence of the Coast Guard Inspector, the Contractor shall thoroughly test and prove the exhaust system to be in satisfactory operating condition while the vessel is underway (see 4.1 (Equipment operation)). Visually inspect all actuators for proper operation (open and close) when the engine speed is at 1,000 plus or minus 50 RPM. Inspect all piping connections for leaks. Submit a CFR.

3.8 Tooling and instrument calibration. All tooling and instruments shall be in good working condition, be properly calibrated, and have a current calibration certificate issued by a third party calibration laboratory. Tooling and instruments to be calibrated, includes, but is not limited to: torque wrenches, voltmeters, ohmmeters, pressure and temperature gauges, and weight scales.

4. NOTES

4.1 Equipment operation. Coast Guard personnel will operate all shipboard machinery and equipment during all operational tests.

WORK ITEM 24: Sw Heat Exchangers; Clean, Inspect And Hydro**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following heat exchanger(s):

TABLE 1 – HEAT EXCHANGERS

SYSTEM	LOCATION	QTY
Steering Gear	Aft Steering	1
Fin Stabilizer	Forward E/R	0 (renewed as per Fin Stabilizers Overhaul work item)
MDE J/W	Engine Room	2
MDE L/O	Engine Room	2
Reduction Gear L/O	Engine Room	2
SSDG J/W	Engine Room	2
Air Condition R/W	Battery Space	1

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 256-001, Rev G, Main Engine SW Cooling System A&D

Coast Guard Drawing 110B WPB 256-003, Rev -, Main Engine Sea Water Cooling

Coast Guard Drawing 110B WPB 256-004, Rev B, Mods to SW Cooling Incidental to Install of Charge Air Cooler Diverter

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 5000 (SFLC Std Spec 5000), 2018, Auxiliary Machine Systems

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

OTHER REFERENCES

Commercial Item Description (CID) A-A-59588, 2013, Rubber Silicone

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Install blanks on the open ends of piping to prevent any contamination or foreign debris from entering the affected systems. Ensure that all cleaning equipment or media used in the cleaning process do not cause any damage to cooler components.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Piping and hoses
- Filters
- Deck plating and associated framing
- Electrical cables
- Thermal insulation.

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3.1.5 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

3.2 Environmental compliance. The Contractor shall dispose of all waste fluids in accordance with all Federal, state and local regulations. Document a complete chain of custody record of the removed tank contents and generated wastes, from the vessel to the point of final destination or delivery. Submit document to the COR upon completion of work.

3.3 Disassemble. The Contractor shall drain and disassemble the designated heat exchangers (see paragraph 1.1 (Intent)) to the extent necessary to perform all work specified herein. Refer to Coast Guard Drawings 110B WPB 256-001, 110B WPB 256-003, and 110B WPB 256-004 for guidance.

NOTE

MDE J/W Cooler cleaning requires draining of the entire MDE J/W system to prevent internal J/W leak down to the L/O system.

3.3.1 Perform all disassembly and reassembly in accordance with manufacturer-recommended procedures using manufacturer-recommended tooling to ensure parts are reinstalled in proper sequence and configuration.

3.4 Inspection. Before cleaning is begun, the Contractor shall visually inspect all heat exchanger surfaces for excessive deterioration and any other defects. Submit a CFR.

3.5 Cleaning requirements. The Contractor shall clean all interior and exterior heat transfer surfaces to a state free of all debris, scale and surface contaminants in accordance with the heat exchanger manufacturer's recommendations, and in compliance with all Federal, state, and local environmental regulations.

3.5.1 Ensure that chemical cleaners do not damage the environment, heat exchanger or the vessel.

NOTE

Historically, chemical cleaning has been necessary to thoroughly clean most heat exchanger tubes.

3.6 Reassembly. After authorized repairs, if any, the Contractor shall reassemble each heat exchanger.

3.6.1 Renew all software (seals, gaskets, O-rings, lantern rings).

3.6.2 Renew isolation fittings/mounts and fasteners if disturbed. Apply silicone rubber sealant conforming to CID A-A-59588 around all fasteners, nozzles or gaskets that penetrate the hull.

3.6.3 Renew all hoses, thermostats and anodes as applicable.

3.6.4 Refill all heat exchanger fluid levels in accordance with manufacturer and vessel specifications. Refill MDE J/W fluid levels in accordance with manufacturer and vessel specifications. All fluids utilized for refill or make up shall be provided by contractor and shall meet system equipment technical specifications. Prior to recirculation through the engines, the Contractor shall test the jacket water for

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chloride and nitrite concentrations in accordance with manufacturer recommendations in the presence of the Coast Guard Inspector. Submit a CFR.

3.7 Reinstallation. After completion of testing and all authorized repairs, if any, the Contractor shall reinstall each cooler (if previously removed). Where applicable, renew all zinc electrode plates, gaskets, and recessed hex-head bolts in accordance with the manufacturer's specifications. Apply a copper-based anti-seize compound on all bolts, and torque in accordance with manufacturer's specifications.

3.8 Touch-up preservation, general. The Contractor shall prepare and coat all new and disturbed exterior and interior surfaces, as applicable, to match existing adjacent surfaces in accordance with SFLC Std Spec 6310, paragraph 3.1.13 (Touch-ups and minor coating repairs.)

3.9 Cleanliness requirement. The Contractor shall ensure that all cleaned surfaces are one hundred percent free of debris and surface contaminants. Submit a CFR.

CAUTION

Extreme precaution must be taken to not exceed manufacturer's recommended test pressure during hydrostatic testing.

3.10 Pressure test. After all authorized work is complete and prior to reconnecting the heat exchanger(s), the Contractor shall pressure test each heat exchanger to the manufacturer's recommended test pressure in accordance with the applicable Coast Guard drawing listed under Section 2 (References). In the absence of a specified test pressure noted in the Coast Guard drawing, the Contractor shall pressure test each heat exchanger in accordance with paragraph C2.7 (Heat exchangers and fluid coolers) of SFLC Std Spec 5000. Ensure zero leakage from or permanent deformation of pressure-containing parts by repairing all leaks, deformations, and discrepancies. Submit a CFR.

3.11 Label plates. The Contractor shall attach an anodized aluminum test data plate to each heat exchanger using epoxy resin cement. Ensure that each plate is engraved with ¼-inch high letters, stating the following:

- Test pressure.
- Test date.
- Testing facility.

NOTE

If the heat exchanger design makes mounting a test data plate impractical, the Government reserves the right to request written documentation of the above-listed testing data in lieu of a test data plate, at no additional cost to the Government.

3.12 Leak test. After reconnecting the heat exchanger(s) on the vessel (and post undocking, if applicable), the Contractor shall perform an operational test of the heat exchanger and associated system piping for one hour using the system fluid at normal operating pressure. Ensure zero visible leakage from or deformation of mechanical parts by repairing all leaks and discrepancies. Submit a CFR.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 25: Fathometer Transducer, Renew

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to renew the transducer.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
Y	V850 Color Echo Sounder	NSN: 5845-01-518-7245	1 ea.	1,423.41

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing FL 6713-203, Rev -, CRP-V850, SST XDCCR (SS505) Adapter Assembly

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018,
Welding and Allied Processes

OTHER REFERENCES

Federal Specification (Fed Spec) HH-P-151, Mar 1991, Packing; Rubber-Sheet, Cloth-Insert
Furuno Operators Manual RDP-139/148/149

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures - general. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel test all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.3 Transducer renewal particulars. The Contractor shall accomplish the following tasks, using the Furuno Operators Manual RDP-139/148/149 and Coast Guard Drawing FL-6713-203 as guidance:

3.3.1 Transducer removal. Remove and turn over the transducer to the Coast Guard PA as an MTI item.

CAUTION

Do not discard the hull ring adaptor(s).

3.3.2 New transducer installation. The Contractor shall install new Government-furnished transducer, in place of the removed. Renew the transducer head to hull ring gasket with new gasket conforming to HH-P-151, Class 4, 1/8-inch gasket or 1/16-inch gasket utilizing the thickness that will provide the flushest transducer to hull seat as shown on Coast Guard Drawing FL 6713-203. Using appropriate thickness gasket, place gasket on adaptor plate of transducer apply 1/2" bead of 3M Marine 5200 Adhesive on adaptor plate along the inside edge of the gasket, install transducer. Refer to Figure 1.

3.3.2.1 Cut the transducer cable to length leaving 2-foot service loop in the cable using original manufacturer's equipment cable splice kit. The cut shall be in the center of the cable leaving the factory termination intact for connection at the junction box. Furnish and install new junction box and make connections using ring-tongue crimp connectors. Ensure cables are installed in a manner to prevent any chaffing which may require new cable way clamps and stuffing tubes.

3.3.3 Renew Emergency Cover Plate Set Screws. Furnish and install new set screws (8 ea.) with 1/2"-13 NC 3/4" length w/hex socket cup point screws 400 series Nickel Copper alloy (Monel). Fill remainder of screw orifice with beeswax or RTV to prevent corrosion (fill after witnessed emergency cover plate test).

3.3.4 Label plate. Following completion of transducer installation, the contractor shall fabricate a 3/4" x 3" x 1/4" aluminum label plate, engraved with 1/4-inch high numbers stating the installation date. Affix a label plate, using a suitable epoxy cement. Ensure that the label plate is visible and legible, without the need to move equipment or cables.

3.3.5 Cleaning of radiating surfaces. Thoroughly clean the transducer radiating surfaces with a strong solution of household detergent to remove any oil, dirt, and all other surface contaminants.

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3.4 Transducer seal. The Contractor shall inspect the transducer to ensure the outer circumference of the transducer is installed flush to the hull ring, and the transducer cover plate forms a tight seal with the hull ring.

3.5 Post installation tests. After completion of work, the Contractor shall accomplish the following tasks, in the presence of the Coast Guard Inspector:

3.5.1 Emergency cover plate seal. Test the transducer emergency transducer cover plate forms a tight seal with the hull ring. Fill screw orifices with beeswax or RTV to prevent corrosion.

3.5.2 Water hose test. The Contractor shall inspect and perform a water hose test of all affected boundaries in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

3.5.3 Leak test. After all authorized repairs of mechanical (i.e. threaded, bolted, etc.) joints, the Contractor shall perform an operational test of the affected system using the system fluid at normal operating pressure. Be aware that no visible leakage or deformation is acceptable. Repair all leaks and discrepancies found. Submit a CFR.

3.5.4 Operational test – post repairs. After completion of work, the Contractor shall witness Coast Guard personnel test all items or shipboard devices that have been disturbed, used, repaired, altered, or installed, to prove that they are in satisfactory operating condition. Submit a CFR.

4. NOTES

4.1 Coast Guard personnel. Coast Guard personnel will operate all shipboard machinery and equipment during all operational tests.



FIGURE 1 - 3M MARINE 5200 ADHESIVE ON ADAPTOR PLATE ON GASKET'S INSIDE EDGE

WORK ITEM 26: Speed Doppler, Remove, Inspect, and Reinstall - Doppler Valve, Overhaul

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to remove, inspect and reinstall the speed Doppler and overhaul Doppler valve.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	**CELZ-SRD-331 Doppler speed log	NSN: 5845-01-302-4161	1 ea.	3,255.08

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

***Government-furnished property, which is to be supplied by either the vessel or the C4IT Service Center.

2. REFERENCES

COAST GUARD DRAWINGS

None

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 3223, May 1985, SWBS 420, Section G, Doppler Service Manual

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

American Society of Mechanical Engineers (ASME) B16.34, 2004, Valves-Flanged, Threaded, and Welding End

ASTM International (ASTM) F992, 2006, Standard Specification for Valve Label Plates

Federal Specification (Fed Spec) HH-P-151, Mar 1991, Packing; Rubber-Sheet, Cloth-Insert

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Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-80, 2008 Edition, Bronze Gate, Globe, Angle and Check Valves

MIL-S-8660C (2), Silicone Compound, NATO Code # S-736

MIL-G-6032D (1), Grease, Plug Valve, Gasoline and Oil Resistant, NATO Code #G-636

The Society for Protective Coatings (SSPC)/NACE International (NACE) Joint Surface Preparation Standard SSPC-SP 10/NACE No. 2, 2007, Near-White Blast Cleaning

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph(s):

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures - general. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel test all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.3 Speed Doppler particulars. The Contractor shall accomplish the following tasks, using the TP 3223, SWBS 420, Section G as guidance:

3.3.1 Speed Doppler removal. The Contractor shall disconnect the CELZ-SRD-331 Doppler speed log head cabling. Loosen and retain the collar and retract the speed log transducer head into the maintenance position. Remove the sea chest cap and transducer head as an assembly.

3.3.2 Contractor's option for valve renewal. The Contractor may, at no additional cost to the Government opt to renew the valve designated for overhaul if preferable for the Contractor. If the Contractor elects to renew the valve designated for overhaul, ensure the valve is a commercial-standard type valve, conforming to the applicable standard listed in Table I (Valve Standards). New valve shall be equivalent (including identical material) to the valve being renewed. Visually inspect the piping, flange and mounting arrangements; and submit a CFR detailing any required modifications to accommodate the new valve(s). If the Contractor elects to renew a valve after attempting overhaul, it will be at no additional cost to the Government.

NOTE

This work item requires the Contractor to provide to the Government installed valve meeting the designated test requirements. This work item includes the cost of EITHER overhaul OR renewal of designated valve.

3.3.3 Overhaul Doppler valve. The Contractor shall remove the speed Doppler valve from the hull. Immediately after valve removal, install blank flange and gasket over opening and secure flange with at least two bolts, 180 degrees apart. Disassemble the valve to the extent necessary to perform the required work. Clean all internal surfaces and visually inspect for defects in body and structural material. Inspect the surface finish and condition of seats, disks, parting faces, plugs, and sealing surfaces. As applicable; machine, grind, lap and spot-in seat-to-disk to obtain an acceptable leakage rate at or below valve testing in accordance with (MSS) SP-80. Reassemble the valve using new hardware and software (packing, O-rings, gaskets, seal rings, non-metallic seats, pins, washers, inserts, etc.). Test the overhauled valves in accordance with (MSS) SP-80. Upon completion of all authorized work, the Contractor shall accomplish the following:

- Remove and dispose of blank flange and associated gasket.
- Reinstall overhauled valve with new gasket.
- Renew valve label plate.
- Renew all bolting hardware. Fasteners of 400 series Nickel Copper alloy (Monel) are required for the Doppler valve.
- Touch-up preserve all new and disturbed surfaces to match existing adjacent areas, in accordance with SFLC Std Spec 6310. Abide by all touch-up requirements outlined in paragraph 3.11.9 (Touch-ups and minor coating repairs)) of SFLC Std Spec 0000.

3.3.4 Disassemble. The Contractor shall disassemble the Doppler speed log and sea chest cap assembly. Abrasive blast the sea chest cap assembly to an SSPC-SP 10/NACE No.2, 2004, Near-White Blast Cleaning, being careful not to damage the sealing faces or O-ring lands. Inspect the sea chest cap for signs of wastage. Inspect and measure the sea chest O-ring land area to ensure that a leak free sealing surface is achieved upon renewal. Submit CFR. Prepare and coat the sea chest cap assembly surfaces to match existing adjacent areas, in accordance with SFLC Std Spec 6310.

3.3.5 Hull collar bushing. The Contractor shall inspect the transducer head to hull collar bushing, detail "A" Figure 7.1 in TP 3223, for sign of wear, chipping or cracking. Submit CFR. If transducer head collar bushing is in serviceable condition, clean any marine growth, paint, or foreign substances from the hull collar to achieve a proper fit of the transducer head.

3.4 New speed Doppler installation. The Contractor shall recognize that the Government reserves the right to provide a Government-furnished speed Doppler, in place of the removed at no additional cost.

3.4.1 O-ring renewal. The Contractor shall renew the O-ring in the sea chest cap using materials approved by Original Equipment Manufacturer. Apply silicone grease, conforming to MIL-S-8660 to lubricate the O-ring to transducer shaft mating. Install the transducer assembly into the sea chest cap and reassemble the retaining collar. Retract the transducer head into the sea chest cap and tighten the retaining collar. Apply a light coat of plug valve grease conforming to MIL-G-6032 to the outside diameter of the transducer head between the radiating end and the stepped shoulder.

3.4.2 Reinstall gate valve. The Contractor shall reinstall the gate valve using a new 1/8-inch cloth embedded gasket, conforming to HH-P-151, Class 4. Coat both sides of the gasket with a commercially

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available marine adhesive prior to installation. Furnish and install new mounting hardware. Fasteners of 400 series Nickel Copper alloy (Monel) are required.

3.4.3 Reinstall sea chest cap. The Contractor shall reinstall the sea chest cap using a new 1/8-inch cloth embedded gasket, conforming to HH-P-151, Class 4, and leave the transducer head in the retracted position. Apply a 1/4-inch bead of 5200 marine grade adhesive to both sides of the gaskets during installation. Perform a boundary test of both sides of the Doppler valve and the transducer in accordance with Std Spec 0740_STD, Appendix C. Submit CFR.

3.4.4 Reinstall transducer head. Upon completion of successful boundary test, the Contractor shall extend the transducer head down into the hull and dock the transducer into the hull collar bushing. Verify the Doppler transducer head is both flush mounted with the hull and the proper orientation forward and aft. Install the retaining collar. Mark the transducer shaft and the retaining collar to provide orientation marks for in water docking of the Doppler speed log transducer head. The marking shall be black paint bands measuring 1/2-inch to 3/4-inch in width and clearly provide both a depth and alignment reference between the transducer head and the sea chest cap and retaining collar assembly.

3.4.5 Test mechanical fit. The Contractor shall test the mechanical fit of the transducer head with the hull collar by immediately retracting the Doppler transducer, thus insuring that the ship's force will be able to undock the transducer head in the water for maintenance or renewal. Correct any alignment discrepancies or mechanical interferences noted during the test docking. Submit CFR. Re-dock the transducer head with the hull collar and tighten the retaining collar.

3.4.6 Transducer cable. The Contractor shall ensure cables are installed in a manner to prevent any chaffing which may require new cable way clamps and stuffing tubes.

3.4.7 Label plate. Following completion of transducer installation, the Contractor shall fabricate a 3/4" x 3" x 1/4" aluminum label plate, engraved with 1/4-inch high numbers stating the installation date. Affix a label plate, using a suitable epoxy cement. Ensure that the label plate is visible and readable, without the need to move equipment or cables.

3.4.8 Cleaning of radiating surfaces. Thoroughly clean the transducer radiating surfaces with a strong solution of household detergent to remove any oil, dirt, and all other surface contaminants.

3.5 Speed Doppler seal. The Contractor shall inspect the speed Doppler to ensure the outer circumference of the Doppler is installed flush to the hull ring.

3.6 Post installation tests. After completion of work, the Contractor shall accomplish the following tasks, in the presence of the Coast Guard Inspector:

3.6.1 Water hose test. The Contractor shall inspect and perform a water hose test of all affected boundaries in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

3.6.2 Leak test. After all authorized repairs of mechanical (i.e. threaded, bolted, etc.) joints, the Contractor shall perform an operational test of the affected system using the system fluid at normal operating pressure. Be aware that no visible leakage or deformation is acceptable. Repair all leaks and discrepancies found. Submit a CFR.

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3.6.3 Operational test – post repairs. After completion of work, the Contractor shall witness Coast Guard personnel test all items or shipboard devices that have been disturbed, used, repaired, altered, or installed, to prove that they are in satisfactory operating condition. Submit a CFR.

4. NOTES

4.1 Coast Guard personnel. Coast Guard personnel will operate all shipboard machinery and equipment during all operational tests.

WORK ITEM 27: Sea Valves, Overhaul or Renew**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to overhaul or renew sea water (hull) valves.

1.1.1 Valves designated for overhaul.

TYPE	SIZE (INCHES)	MATERIAL	DESCRIPTION	FRAME LOCATION/ VALVE NO	CONNECTION	RATED PRESSURE CLASS (#)
Butterfly	4	Bronze (ASTM B62)	#2 MDE R/W Suction	24 port	LUG	150
Butterfly	4	Bronze (ASTM B62)	#1 MDE R/W Suction	24 stbd	LUG	150
Butterfly	4	Bronze (ASTM B62)	#1 MDE Overboard	24	LUG	150
Butterfly	4	Bronze (ASTM B62)	#2 MDE Overboard	24	LUG	150

1.1.2 Valves designated for renewal.

TYPE	SIZE (INCHES)	MATERIAL	DESCRIPTION	FRAME LOCATION/ VALVE NO	CONNECTION	RATED PRESSURE CLASS (#)
Butterfly	2.5	Bronze (ASTM B62)	#1 SSDG Suction	24 port	LUG	200
Butterfly	2.5	Bronze (ASTM B62)	#2 SSDG Suction	24 stbd	LUG	200
Ball	2	Bronze (ASTM B62)	Sewage Overboard	16	THREAD	200
Check	2	Bronze (ASTM B62)	Sewage Overboard	16	FLANGE	150
Ball	1.5	Bronze (ASTM B62)	AUX Sea chest Vent	24	THREAD	150
Ball	1.5	Bronze (ASTM B62)	AUX Sea chest Vent	24	THREAD	150
Ball	1.5	Bronze (ASTM B62)	MDE Sea chest Vent	22	THREAD	150

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Ball	1.5	Bronze (ASTM B62)	MDE Sea chest Vent	22	THREAD	150
Globe/Angle	1.5	Bronze (ASTM B62)	#1 SSDG Ovbd 90 Degree	27	THREAD	150
Globe/Angle	1.5	Bronze (ASTM B62)	#2 SSDG Ovbd 90 Degree	27	THREAD	150
Gate	1.5	Bronze (ASTM B62)	Water maker R/W Suct.	24	FLANGE	150
Gate	1.5	Bronze (ASTM B62)	Air Conditioner	26	FLANGE	150
Stop/Check	1.5	Bronze (ASTM B62)	A/C OVBD	31	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin Supply(Port)	22.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin Bearing Cooling(Port)	22.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin OVBD(Port)	22.5	THREAD	150
Check	.5	Bronze (ASTM B62)	Fin OVBD(Port)	22.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin Supply(STBD)	22.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin Bearing Cooling(STBD)	22.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Fin OVBD(STBD)	22.5	THREAD	150
Check	.5	Bronze (ASTM B62)	Fin OVBD(STBD)	22.5	THREAD	150
Ball	.75	Bronze (ASTM B62)	Steering OVBD	25	THREAD	150
Check	.75	Bronze (ASTM B62)	Steering OVBD	25	THREAD	150
Ball	.5	Bronze (ASTM B62)	Stern Tube Supply	27.5	THREAD	150
Ball	.5	Bronze (ASTM B62)	Stern Tube Supply	27.5	THREAD	150
Butterfly	4	Bronze(ASTM B62)	#2 MDE Recirculation Valve	24 Port	WAFER	50
Ball	.5	Bronze(ASTM B62)	Stern Tube Cross Connect	27.5	WAFER	50

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 256-003, Rev -, Main Engine Sea Water Cooling

Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

American Society of Mechanical Engineers (ASME) B16.34, 2004, Valves-Flanged, Threaded, and Welding End

ASTM International (ASTM) F992, 2006, Standard Specification for Valve Label Plates

Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-61, 2003 Edition, Pressure Testing Of Steel Valves

Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-67, 2002 Edition, Butterfly Valves

Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-72, 1999 Edition, Ball Valves with Flanged or Butt-Welding Ends for General Service

Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-80, 2008 Edition, Bronze Gate, Globe, Angle and Check Valves

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

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- Deck plates
- Piping
- Insulation
- Pipe contents
- Associated system tanks and filters
- Valve flanges.

3.2 Valve material. The Contractor shall assume all above-listed valves (paragraphs 1.1.1 and 1.1.2) have a bronze housing. The Contractor shall verify required valve list including connection type against referenced drawings and by ship-check prior to purchasing any materials. If the actual required valve list differs from what is listed in this work item, submit a CFR.

3.3 Fluid handling. The Contractor shall drain and dispose of all residual fluids in the piping system in accordance with all Federal, state, and local rules and regulations.

3.4 Remove. The Contractor shall remove all designated valves in Section 1.1 (Intent). Immediately after valve removal, install blank flanges and gaskets over all openings and secure each flange with at least two bolts, 180 degrees apart. Visually inspect associated flanges and piping; submit a CFR.

3.5 Contractor's option for valve renewal. The Contractor may, at no additional cost to the Government, opt to renew valves designated for overhaul if preferable for the Contractor. If the Contractor elects to renew valves designated for overhaul, ensure all new valves are commercial-standard type valves, conforming to the applicable standard listed in Table I (Valve Standards). New valves shall be equivalent (including identical material) to the valve being renewed. Visually inspect the piping, flange and mounting arrangements; and submit a CFR detailing any required modifications to accommodate the new valve(s). If the Contractor elects to renew a valve after attempting overhaul, it will be at no additional cost to the Government.

NOTE

This work item requires the Contractor to provide to the Government installed valves meeting the designated test requirements. This work item includes the cost of EITHER overhaul OR renewal of each designated valve.

3.6 Overhaul. The Contractor shall accomplish the following as required for each valve designated for overhaul (not including valves the Contractor has opted to renew) to meet the specified valve testing standard:

3.6.1 Disassemble. The Contractor shall disassemble the valve to the extent necessary to perform the required work.

NOTE

Complete disassembly of some valves may not be necessary to accomplish overhaul.

3.6.2 Clean. The Contractor shall clean all internal surfaces and visually inspect for defects in body and structural material. Inspect the surface finish and condition of seats, disks, parting faces, plugs, and sealing surfaces.

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3.6.3 Machine. The Contractor shall conduct all machining necessary, including but not limited to grind, lap and spot-in seat-to-disk, in order to obtain an acceptable leakage rate at or below valve testing standards (see Table I below).

3.6.4 Reassemble. The Contractor shall reassemble the valve using new hardware and software (packing, O-rings, gaskets, seal rings, non-metallic seats, pins, washers, inserts, etc.).

3.6.5 Test. The Contractor shall test the overhauled valves in accordance with the applicable standards listed in Table 1 (Valve Standards). Submit a CFR.

TABLE 1 - VALVE STANDARDS

VALVE TYPE	INDUSTRY STANDARD
Steel Valves	MSS SP-61
Butterfly Valve	MSS SP-67
Ball Valves, Flanged or Butt-Welded Ends	MSS SP-72
Bronze Gate, Globe, Angle and Check Valves	MSS SP-80
All others	ASME B16.34

3.7 Renewal.

3.7.1 Valve renewal. The Contractor shall renew all designated with commercial-standard type valves, conforming to the applicable standard listed in Table 1 (Valve Standards). The Contractor shall replace any Mil-Std valves listed for renewal with equivalent commercial standard valves. The Contractor shall be aware substitution of body material or trim set is not authorized.

3.8 Valve reinstallation/installation. Upon completion of all authorized work, the Contractor shall accomplish the following:

- Remove and dispose of all blank flanges and associated gaskets.
- Reinstall/install all overhauled and new valves with new gaskets.
- Renew all missing or damaged valve label plates.
- Renew all bolting hardware.
- Prepare and coat all new and disturbed surfaces to match existing adjacent surfaces in accordance with SFLC Std Spec 6310, paragraph 3.1.13 (Touch-ups and minor coating repairs).

3.9 Valve labeling. The Contractor shall install valve label plates on all new valves in accordance with ASTM F992.

3.10 Leak test. After completing all authorized mechanical (i.e. threaded, bolted, etc.) joint repairs, the Contractor shall test the effected seawater system's operation using the system fluid at normal operating pressure. Ensure zero visible leakage from or deformation of mechanical parts by repairing all leaks and discrepancies. Submit a CFR.

3.11 Hydrostatic test. After all authorized repairs, the Contractor shall hydrostatically test all new and disturbed piping and components of the effected seawater system in accordance with SFLC Std Spec 0740, Appendix C, Hydrostatic Test. Ensure zero leakage from or permanent deformation of pressure-containing parts by repairing all leaks, deformations, and discrepancies. Submit a CFR.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 28: Sea Strainers - (All Sizes), Overhaul**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to overhaul the following Sea Strainer(s).

SERVICE	SIZE (INCHES)	QTY	MANUFACTURER
S/S Generators	2 1/2	2	Kraissl
MDE	4	2	Kraissl
Fire Pumps	4	2	Kraissl
R/O	1 1/2	1	Kraissl
A/C	1	1	Kraissl

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PART NO.	QTY	ESTIMATED COST (\$/UNIT)
N	**Kraissl 2 1/2" Duplex strainer	NSN: 4730-01-394-9731	2 ea.	3,900.00
N	**Kraissl 4" duplex strainer	NSN: 4730-01-173-1413	4 ea.	4,700.00
N	**Kraissl 1 1/2" Duplex strainer for RO	NSN: 4730-01-600-9049 PN:72-38F	1 ea.	600.00
N	**Kraissl 1" Simplex Strainer	NSN: 5840-00-732-0829 PN: 72-8	1 ea.	195.00

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 256-003, Rev -, Main Engine Sea Water Cooling
Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics
Coast Guard Drawing 110B WPB 521-001, Rev H, Firemain Piping Arrg't & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

ASTM International (ASTM) D1330, 2015, Standard Specification for Rubber Sheet Gaskets

Society of Automotive Engineers (SAE) Aerospace Material Specification (AMS) G-6032, 2014 Grease, Plug Valve, Gasoline and Oil Resistant, NATO Code Number G-363, Metric

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph(s):

- 3.2.2 Cleaning and inspection

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Deck plates and grating
- Piping and hoses.

3.2 Requirements. The Contractor shall overhaul and test the designated strainers (see paragraph 1.1 (Intent)), shown on Coast Guard Drawings 110B WPB 501-001, 110B WPB 256-003 and 110B WPB 521-001. The Contractor shall accomplish the following for each sea strainer in accordance with manufacturer's recommendations:

3.2.1 Remove. Secure, isolate, and remove to a suitable repair facility the designated sea strainers. Install blank flanges and gaskets over the piping system openings and secure with at least two bolts 180-degrees apart to provide a watertight seal. Ensure that the blank flanges are installed immediately after the sea strainers are removed and remain in-place until strainers are reinstalled, removing only for sea valve visual inspection.

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3.2.2 Clean and inspect. After removing the sea strainers, visually inspect in-place the exposed sea valves and piping/hoses located adjacent to the strainers. Completely disassemble and thoroughly clean all strainer components to bright metal without damage or deformation to any component. Visually inspect all disassembled components. Submit a CIR.

3.2.3 Reassemble. Reassemble each strainer. Renew the basket, cover and packing gland fasteners; as applicable. Lubricate the valves with plug valve grease conforming to AMS-G-6032.

3.2.4 Plug valve test. Where applicable, lubricate the valves with plug valve grease conforming to AMS-G-6032. Hydrostatically test the plug valves of all duplex strainers for each strainer chamber, at a test pressure of 15 psig. To determine leakage rate the strainer shall have the outlet blanked and the unpressurized side top cover removed (two tests per duplex strainer). While maintaining the test pressure at the inlet side, the non-pressurized side shall not fill within twenty minutes. Provide a CFR which shall include, but is not limited to the following information:

- Grease type, including batch number and manufacturer.
- Time elapsed for chamber to fill, if less than twenty minutes.

CAUTION

Ensure that the drain valve for each chamber is closed.

3.3 Reinstall. After completion and acceptance by the Coast Guard Inspector; the Contractor shall reinstall all overhauled, cleaned and new strainers to their original locations, as shown on Coast Guard Drawings 110B WPB 501-001, 110B WPB 256-003 and 110B WPB 521-001. Renew all gaskets with material conforming to ASTM D1330 of the same size and configuration as those gaskets removed. Renew all hardware with nickel-copper alloy fasteners.

3.4 Notification. The Contractor shall notify the Coast Guard Inspector at least 24 hours prior to reinstalling sea strainers.

3.5 Government's right for changing out strainers. The Contractor shall be aware that the Government reserves the right to furnish new sea strainer(s) for installation in place of the existing strainer(s). If the Government exercises this right, the Contractor shall dispose of the old strainer(s) in accordance with all applicable Federal, state, and local regulations.

3.6 Contractor's option for strainer renewal. The Contractor may opt to renew strainers designated for overhaul if preferable for the Contractor, and is at no additional cost to the Government. New strainers shall be equivalent (including identical material) to the strainer being renewed. Visually inspect the piping and mounting arrangements, and submit a CFR detailing any required modifications to accommodate the new strainer(s).

3.7 Leak test. After completing all authorized mechanical (i.e. threaded, bolted, etc.) joint repairs, the Contractor shall test the seawater system's operation using the system fluid at normal operating pressure. Ensure zero visible leakage from or deformation of mechanical parts by repairing all leaks and discrepancies. Submit a CFR.

3.8 Surface preservation, 100% interior. The Contractor shall perform 100% preservation in accordance with SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems) on the following interior surfaces:

- Sea strainer surfaces

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- All adjacent structural members.

3.8.1 Preparation method. The Contractor shall prepare interior surfaces using system specified for “Bilges, Cofferdams and Forepeaks, Steel, Option II”.

3.8.2 Coating method. The Contractor shall apply finish/top coat color to interior surfaces as follows: match existing adjacent surfaces. Do not paint packing glands, valve stems, threads, and similar working surfaces.

4. NOTES

4.1 Definition. The terms ‘duplex’ and ‘simplex’ as used in this work item refer to the generic strainer type, not a manufacturer’s brand name.

WORK ITEM 29: Steering Gear (General), Overhaul

1. SCOPE

1.1 Intent. The intent of this item is to perform preventive maintenance on hydraulic components of the steering system, including the actuators.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 561-001, Rev A, Steering System Details

Coast Guard Drawing 110B WPB 561-004, Rev B, Steering System Details – Piping

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 3906, Oct 2008, Ship's Steering Gear System

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 3020 (SFLC Std Spec 3020), 2018,
Overhaul AC Electrical Motors

Surface Forces Logistics Center Standard Specification 5000 (SFLC Std Spec 5000), 2018,
Auxiliary Machine Systems

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018,
Requirements for Preservation of Ship Structures

OTHER REFERENCES

Commercial Item Description (CID) A-A-59323 A, 2005, Cloths, Cleaning, Low-Lint

The Society for Protective Coatings (SSPC) Surface Preparation Specification No.1 (SSPC-SP 1),
2015, Solvent Cleaning

3. REQUIREMENTS

3.1 General. The Contractor shall refer to Coast Guard Drawings 110B WPB 561-001, 110B WPB 561-004 and TP 3906 to accomplish the following tasks.

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3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Apply protective measures as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection) to the following components, spaces and equipment:

- Maintain existing hydraulic system cleanliness; take all necessary precautions to prevent the introduction of contaminants into the hydraulic system.
- When the hydraulic system is disassembled, install temporary threaded isolation caps on both sides of the separated fitting to prevent contamination. Temporary caps may be plastic or metal and must match both the threads type and size, and employ the same sealing technique (JIC, BSPP, SAE-Boss) of the ports they are fitted to so as to prevent mechanical injury to the seal surfaces or threaded ports.
- Provide suitable covering to protect all exposed rudder and vessel components against contamination during the performance of the work specified herein.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Deck plates.
- Framing.

3.2 Operational test, initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.2.1 The Contractor shall cycle the rudders from hard over port to hard over starboard on pump NR1, then pump NR2 and then both pumps. Repeat the test on each pump (2) times and record the time require to cycle the rudders. Compare the observed times to the published times in the TP 3906 and submit a CFR detailing the results with a PASS/FAIL determination and any repair recommendations. If a pressure gauge is installed, record the pressure at hard over.

3.2.2 The Contractor shall use an ammeter to record the amperage at startup and at three different positions – hard over, amidships, and hard over. Compare readings to each pump motor's name plate data.

3.2.3 The Contractor shall submit a list of readings to the Coast Guard Inspector of the pump and motor units, measuring discharge pressure and motor current draw.

3.3 The Contractor shall accomplish the following:

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- The Contractor shall drain all hydraulic fluid from the system and dispose of fluid in accordance with all applicable Federal, state and local regulations.
- The Contractor shall remove the hydraulic actuators from the steering gear in accordance with TP 3906.
- Remove the hydraulic pump and motor assemblies and separate them. Dispose of the pump in accordance with all applicable Federal, state and local regulations.
- Renew the pumps in accordance with TP 3906. Renew the pump's flexible drive coupling and drive shells.
- Clean, inspect, and test the hydraulic pump motor in accordance with Std Spec 3020. Submit a CFR. Prepare and coat the motor casing surfaces using the system specified for "Machinery, Operating Temperatures Under 200°F" in SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Paint Systems). Select finish/top coat color to match existing adjacent surfaces.
- Dismantle, clean, and examine the two hydraulic actuators in accordance with TP 3906. Submit CFR. Reassemble actuators in accordance with TP 3906, renewing seals, bearings, bushings, and O-rings.
- Open the hydraulic reservoir, renew the suction filter and top cover gasket, check the electrical operation of the low level alarm switch in accordance with TP 3906 Chapter 2. Clean the entire tank with solvent in accordance with SSPC-SP 1, and wipe down with lint-free rags conforming to A-A-59323. Do not fill the tank until all repairs to the system are completed.

3.4 Hydraulic actuators. The Contractor shall reinstall the hydraulic actuators and restore the system in accordance with TP 3906 and Coast Guard Drawings 110B WPB 561-001, 110B WPB 561-004.

3.5 Hydraulic fluid renewal. The Contractor shall renew the system hydraulic fluid in accordance with TP 3906 and SFLC Std Spec 5000, Appendix C, Paragraph C2.1 (Fluids).

3.6 Hydraulic fluid filtering. The Contractor shall filter the system hydraulic fluid in accordance with SFLC Std Spec 5000, Appendix C, Paragraph C2.1 (Fluids).

3.7 Leak test. After completing all authorized mechanical (i.e. threaded, bolted, etc.) joint repairs, the Contractor shall test the hydraulic piping system's operation using the system fluid at normal operating pressure. Ensure zero visible leakage from or deformation of mechanical parts by repairing all leaks and discrepancies. Submit a CFR.

3.8 High pressure inline filter renewal. The Contractor shall renew the high pressure inline filters and their seal after the system has been operated, cycled, and leak checked to capture any system contaminants in the filters in accordance with TP 3906.

3.9 Operational test, post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all items or shipboard devices that have been disturbed, used, repaired, altered, or installed to be in satisfactory operating condition. Submit a CFR.

3.9.1 Record the time from hard over too hard over with one and two pumps. Submit a CFR.

- With a single pump on line, it should be 16 seconds or less.
- With two pumps, it should be 8 seconds or less.

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3.10 Surface preservation, 100% interior. The Contractor shall perform 100% preservation in accordance with SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems) on the following interior surfaces:

- Rudder lower bearing housings
- Rudder upper bearing housing and support mounts.

3.10.1 Preparation method. The Contractor shall prepare interior surfaces using SFLC Std Spec 6310, Appendix B.

3.10.2 Coating method. The Contractor shall apply finish/top coat color to interior surfaces as follows:

- Match existing adjacent surfaces.

4. NOTES

4.1 Coast Guard personnel. Coast Guard personnel will operate all shipboard machinery and equipment during all tests.

WORK ITEM 30: Rudder Assembly, Remove, Inspect and Reinstall

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to remove, inspect, and reinstall the port and starboard rudder assemblies.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
Y	**Rudder	NSN: 2040-01-223-2674	2 ea.	25,000.00
N	Lower Rudder Bearing	NSN: 3120-01-477-8696	2 ea.	1,364.00

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

***Government-furnished property, which is to be supplied by either the vessel or the C4IT Service Center.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 561-001, Rev A, Steering System Details

Coast Guard Drawing 110B WPB 561-004, Rev B, Steering System Details – Piping

Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)

COAST GUARD PUBLICATIONS

Coast Guard Technical Publication (TP) 3906, Oct 2008, Ship's Steering Gear System

Coast Guard Technical Publication (TP) 4666, Feb 2008, Steering System

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME), B4.1-1967, (reaffirmed 2009), Preferred Limits and Fits for Cylindrical Parts

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph(s):

- 3.2 Post haul-out inspection.
- 3.4 Inspections.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Apply protective measures as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection) to the following components, spaces and equipment:

- Maintain existing hydraulic system cleanliness; take all necessary precautions to prevent the introduction of contaminants into the hydraulic system.
- When the hydraulic system is disassembled, install temporary threaded isolation caps on both sides of the separated fitting to prevent contamination. Temporary caps may be plastic or metal and must match both the threads type and size, and employ the same sealing technique (JIC, BSPP, SAE-Boss) of the ports they are fitted to so as to prevent mechanical injury to the seal surfaces or threaded ports.
- Provide suitable covering to protect all exposed rudder and vessel components against contamination during the performance of the work specified herein.
- Ensure that rudder stock/shaft surfaces are supported in a minimum of two locations, at all times, until reinstallation.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Deck plates.
- Framing.

3.2 Post haul-out inspection. After the cutter has been dry-docked, the Contractor shall perform the following inspection before disassembling the rudder assemblies. Submit a CIR detailing the results of the inspection and the recommendations to return the rudder configuration to the configuration detailed in the applicable Coast Guard drawings and Tech Pubs.

- Measure the rudder to rudder toe-in and toe-out alignment and compare the measurements to the specifications detailed on Coast Guard Drawing 110C WPB 562-001 and (TP)-4666.
- Operate the rudders from the helm control over the full range of motion, taking note of and documenting the port and starboard stop points (in degrees), the relationship between the hard mechanical tiller stops (in inches of gap), and if the rudder stopped due to an over-stroke and subsequent motor controller over-run shutdown or from a properly terminated rudder

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command at the requested rudder position. Observe and note the system hydraulic pressure during the rudder cycling and any pressure spikes.

- Center the rudders, compare the rudder angle indicator reading on the bridge to the actual rudder angle in aft steering, and document the readings.
- Following the centering of the rudders, shift the rudders to hard port and hard starboard and compare the rudder angle indicator readings on the bridge with the mechanical positions of the rudders. Create a temporary rudder angle indicator card on the underwater body to measure the rudder angles. See 4.8 Pictures in Section 4 (Notes).
- Inspect the tie bar adjustment nut for the presence of (2) flat bar lock tabs welded across the adjusting nut, see Coast Guard Drawing 110C WPB 562-001, sheet 5 for guidance.
- Inspect the threaded rods and associated fasteners on the rudder packing gland tension system for signs of defects or mechanical derangement. Verify the configuration and materials against the configuration specified on Coast Guard Drawing 110C WPB 562-001, sheet 3.

3.3 Rudder removal. The Contractor shall remove and disassemble each rudder assembly and accomplish the following during the rudder removal. Submit a CFR.

- After separating and uninstalling the hydraulic actuators from the tiller heads, in the presence of a Coast Guard Inspector, perform a freedom of motion check utilizing the emergency manual steering system. Observe the bearing action for signs of binding, clicking, or any other quality that would indicate a mechanical fault.
- Perform a visual inspection of the emergency mechanical steering system to include the mechanical drum, bearings, shaft, cables and securing system.

3.4 Inspections. The Contractor shall clean all rudder components, and accomplish the below-specified inspections, submit a CIR for rudder blade and stock only, and submit a CFR for all other component inspections:

NOTE

Example of CIR:
Bearing: 5.35-inches
Design: 5.48 to 5.52-inches
Determination: FAIL
Recommendation: RENEW

3.4.1 Visual. The Contractor shall perform the following visual inspections using 110B WPB 561-004, 110B WPB 561-001 and 110C WPB 562-001, as applicable. Submit a CFR.

- Visually inspect all components, including but not limited to rudder stock/shaft and blade surfaces, bearings, bearing housing, seals, and grease passages for signs of excessive wear and other mechanical defects such as nicks, cracks, and corrosion, using 110B WPB 561-004, 110B WPB 561-001 and 110C WPB 562-001, as applicable.
- Visually inspect the grease lines, fittings, and securing clamps, from the final threaded connection at the service end points back to the bulkhead connections at the hand operated grease pump. Inspect for corrosion, age and environmental degradation, chaffing, or any other mechanical discrepancy. Compare the configuration, materials, and route of the grease lines against Coast Guard Drawing 110B WPB 561-004.
- Visually inspect the hydraulic lines (flexible rubber and hard pipes), fittings, compression glands and seals, and securing clamps from the final threaded connection at the service end

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points to the bulkhead connections on the hydraulic power unit. Inspect for corrosion, age and environmental degradation, chaffing, or any other mechanical discrepancy. Compare the configuration and route of the hydraulic lines against Coast Guard Drawing 110B WPB 561-004.

- Void the packing boxes of any packing material. Power tool clean the packing gland pusher and packing box to remove any marine growth or contaminants. Leave the packing gland pusher to bare metal. Inspect the packing boxes and gland for signs of corrosion, wear, or mechanical fault.
- Operate the grease injection system on the lower rudder bearings and note if any grease is injected into the lower rudder bearings.
- Void the lower rudder bearings of grease and contaminants and inspect the rudder housing and lower bearing for signs of corrosion, wear, or mechanical fault.
- Visually inspect the upper rudder bearing mounting plate, mounting holes, and adjacent framing for corrosion, cracks, elongated holes, or any other mechanical fault.
- Visually inspect the rudder housing tubes, interior and exterior, to include but not limited to, the packing gland securing flange, the stiffening gussets and webs for signs of corrosion.

NOTE

The upper rudder bearing plates are a ‘fitted bolt’ application between the bearing plates and the ship’s framing system.

3.4.2 Measurements. Measure and record the following dimensions using the work sheets in paragraph 4.8 (Inspection forms). Compare all measurements against the published tolerances on Coast Guard drawings or the applicable technical publications. Record and provide the existing measurement, the design measurements and tolerances, and a SAT/UNSAT determination with a repair recommendation for each measurement.

NOTE

Example of CFR:
Bearing: 5.35-inches
Design: 5.48 to 5.52-inches
Determination: FAIL
Recommendation: RENEW

- Check rudder stock runout for straightness.
- Measure the outside diameter of the rudder stock where the upper and lower bearings sit.
- Using the rudder stock and lower rudder bearing measurements, perform running clearance calculations on the existing rudder components. Measure the lower rudder bearing inside diameter across the athwartship and longitudinal axis at the upper, middle, and lower sections of the bearing. Measurements shall be taken with a bore gage.
- Measure the diameters of the tie bar pins, hydraulic ram pins, tie bar pin and hydraulic ram pin bushings, the tie bar rod eye bores, and hydraulic ram rod eye bores. Check the minimum 0.004-inch gap reading using Coast Guard Drawing 110C 562-001, Sheet-5, Section view A6 as reference.
- Measure and record all bearing housing inside diameters at forward, aft, and middle positions.
- Check the concentricity/alignment between the upper bearing housing and lower bearing

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housing bores.

3.4.3 NDI. The Contractor shall perform NDI of the following items in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

- Keys.
- Keyways.

3.5 Reassembly and reinstallation. Upon completion of all inspections and authorized repairs, the Contractor shall reassemble and reinstall the port and starboard rudder assemblies, using Coast Guard Drawing 110C WPB 562-001, (TP)-3906 and (TP) 4666 as guidance, and accomplish the following:

3.5.1 Pin and bushing assembly. The Contractor shall assemble pins and bushings using Loctite bearing fit No.609 after degreasing using Loctite super clean safety solvent or equivalent.

3.5.2 Bearing housing seal renewal. The Contractor shall renew the upper and lower seals of the upper bearing housings.

3.5.3 Packing renewal. The Contractor shall furnish and install new packing material, (part number: USCG-RSK5-01.50), as shown on Coast Guard Drawing 110C WPB 562-001, following the manufacturer's installation instructions.

NOTE

Packing renewal requires the use of a 'consumable' installation tool as per the manufacturer's installation instructions.

3.5.2.1 Packing gland hardware. Remove and discard the existing packing gland hardware. Perform thread repair as required to restore the threads in the lower rudder bearing tube to accept new threaded hardware. Install new packing gland hardware conforming to the material type and grade (i.e. Naval Brass) in the rudder glands as per Coast Guard Drawing 110C WPB 562-001.

3.5.2.2 Packing bearing ports. Pack the upper and lower rudder bearing ports with grease and perform a freedom of movement check of the rudders prior to hooking up the hydraulic ram. New grease shall conform to Shell Alvania EP Grease 2 or equivalent, as per (TP)-3906, Technical Data. Operate each pin and lower rudder bearing grease injection station until grease is observed extruding from the associated station. Remove the upper rudder bearing grease injection line at the upper rudder bearing and operate until a solid flow of grease is observed and reconnect the grease injection line. Operate the upper rudder bearing grease injection a few cycles being careful not over pressurize the upper bearing lip seals.

3.5.3 Bearing renewal. If a change request has been released and authorized by the KO, the Contractor shall accomplish the following, for a designated rudder stock. Compare measurements to the dimensions in Table 1. and tolerances per ANSI/ASME B4.1, Class FN2 or FN1 Force as designated by the COR:

NOTE

The tolerance for installing the lower rudder bearing is 0.003-inches as per the Coast Guard Drawing 110C WPB 562-001. The 'condemning' dimension for the interior diameter of the lower rudder bearing housing, over the length of the installed lower rudder bearing, is any value in excess of 5.497-inches. When the lower rudder bearing housing exceeds 5.497-inches the lower rudder housing has to be line bored and sleeved.

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3.5.3.1 Upper bearing. Furnish and install a new upper roller bearing.

3.5.3.2 Lower bearing. Install new Government-furnished lower bearing.

3.5.3.2.1 Measure and record rudder tube inside diameter (ID) bearing inner diameter (ID), at six points (two at the top, two in the middle, and two at the bottom).

TABLE 1 – SLEEVE DIAMETER

AREAS	SLEEVES INSIDE DIAMETERS (INCHES)
Rudder Tube	5.497

3.5.3.2.2 Measure and skim cut the outer diameter (OD) of the Government-furnished lower bearing, as necessary to achieve a 0.003" interference fit. Install the new bearing.

3.5.3.2.3 Measure and record the inner diameter of the bearing at the same locations listed above, after bearing installation. If the Contractor freezes the bearing for a shrink fit installation, take measurements after the bearing temperatures have normalized.

3.5.3.2.4 Using the post-installation lower rudder bearing measurements, perform running clearance calculations for the renewed lower rudder bearing(s).

3.5.3.2.5 The new Government-furnished lower rudder bearings do NOT come with a pre-drilled grease injection port and shall be drilled after install.

3.5.4 After setting the lower rudder bearing in the rudder tube housing, verify the alignment between the grease injection port on the rudder housing and the lower bearing are aligned. If the ports do not align, drill a new 3/16-inch hole thru the existing threaded grease port on the rudder housing into the new lower rudder bearing, taking care not to damage the existing threads. Deburr the hole on the inside diameter of the lower rudder bearing. Clear the bearing and ports of any foreign material or metal chips.

3.5.4.1 Submit a CFR detailing all bearing measurements taken and the status of the grease line port alignment.

3.5.4.2 After each rudder is installed and before the hydraulic actuators are connected, perform a freedom of motion check in the presence of a Coast Guard Inspector. Verify the full range of motion and smooth bearing action of the rudders.

CAUTION

Perform the freedom of movement checks prior to installing the rudder packing. Otherwise, rudder packing will drag on the shaft and give a confusing result.

3.5.4.3 Reassemble the hydraulic actuators, hydraulic lines, and ancillary equipment to restore the rudder system.

3.6 Alignment. The Contractor shall perform a rudder system alignment per the following:

3.6.1 Realign the rudders to the tolerances specified on Coast Guard Drawing 110C WPB 562-001.

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3.6.2 Realign the pilothouse rudder angle indicator using (TP) 4666 as guidance. Adjust the mechanical alignment and rudder angle instrumentation to within ½-degree. Refer to rudder angle plate figures in Section 4. Demonstrate proper alignment to the Coast Guard Inspector using the temporary rudder angle indicator card at the following rudder angle positions, Submit a CFR:

- 0
- 10
- 20
- Full rudder.

3.7 Government's option for equipment renewal. The Contractor shall be aware that the Government reserves the right to furnish a new rudder for installation in place of each existing, at no additional cost to the Government. When the Government exercises this right, the Contractor shall accomplish the following:

3.7.1 Turn over the existing rudder to the Coast Guard Property Administrator (PA) as a MTI item.

3.7.2 Prior to installation of the new rudder(s), do the following:

3.7.2.1 Roughen the existing Belzona-coated rudder surface to facilitate paint adhesion, taking care not to remove the existing Belzona coating. Solvent clean the abraded surface.

3.7.2.2 Preserve the GFE rudders in accordance with the “Preserve Underwater Body” work item included in the Dry Dock availability specification package.

3.8 Undocking Checks. No later than 24-hours prior to undocking the cutter, the Contractor shall perform the following checks in the presence of a Coast Guard Inspector.

- Operate the greasing system and verify the extrusion of grease from the lower rudder bearings from the underside of the hull.
- Operate the greasing system and verify grease injection at each of the service end points in aft steering.
- Operate the rudder in all modes and across the full range of motion. Verify the operation and accuracy of the rudder angle feedback system.

3.9 Operational test, post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all items or shipboard devices that have been disturbed, used, repaired, altered, or installed to be in satisfactory operating condition. Submit a CFR.

3.10 Surface preservation, 100% interior. The Contractor shall perform 100% preservation in accordance with SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems) on the following interior surfaces:

- Rudder lower bearing housings
- Rudder upper bearing housing and support mounts.

3.10.1 Preparation method. The Contractor shall prepare interior surfaces using SFLC Std Spec 6310, Appendix B.

3.10.2 Coating method. The Contractor shall apply finish/top coat color to interior surfaces as follows:

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- Match existing adjacent surfaces.

4. NOTES

4.1 Coast Guard personnel. Coast Guard personnel will operate all shipboard machinery and equipment.

4.2 Rudder details. Rudder details are shown on Coast Guard Drawing 110C WPB 562-001 (all sheets).

4.3 Rudder stock data. The rudder stock outside diameter should be 5.000".

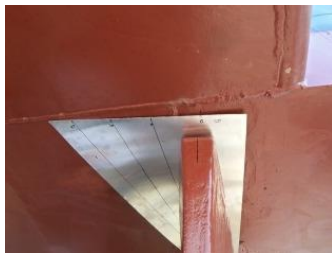
4.4 Seal particulars. Both seals are press fitted; the outside diameter of the upper seal is 4.506 inch and lower seal is 5.256 inch.

4.5 Lower bearing data. The inside diameter of the bearing should be in between 5.0093" and 5.0084". Clearance between the ID of the bearing and the stock should be in between 0.0109" and 0.0116". Installation of lower bearing may require machining to obtain a proper fit.

4.6 Upper bearing data. Bearing data for this bearing is as follows: SKF No. 21319CC, Spherical roller bearing, 3.7482 inch bore x 7.8740 inch O.D.

4.7 Packing material part number: USCG-RSK5-01.50

4.8 Pictures of rudder angle plate.



4.8 Inspection forms. See following pages.

4.8.1 Stock, housing and bearing measurements.

CL OF RUDDER

CIRCLE ONE: PORT STARBOARD

upper bearing journal

stock OD

fore/aft

port/stbd

fore/aft

housing OD

port/stbd

upper bearing ID

lower bearing journal area

lower bearing

top

middle

bottom

stock OD

fore/aft

port/stbd

bearing ID

fore/aft

port/stbd

housing OD

fore/aft

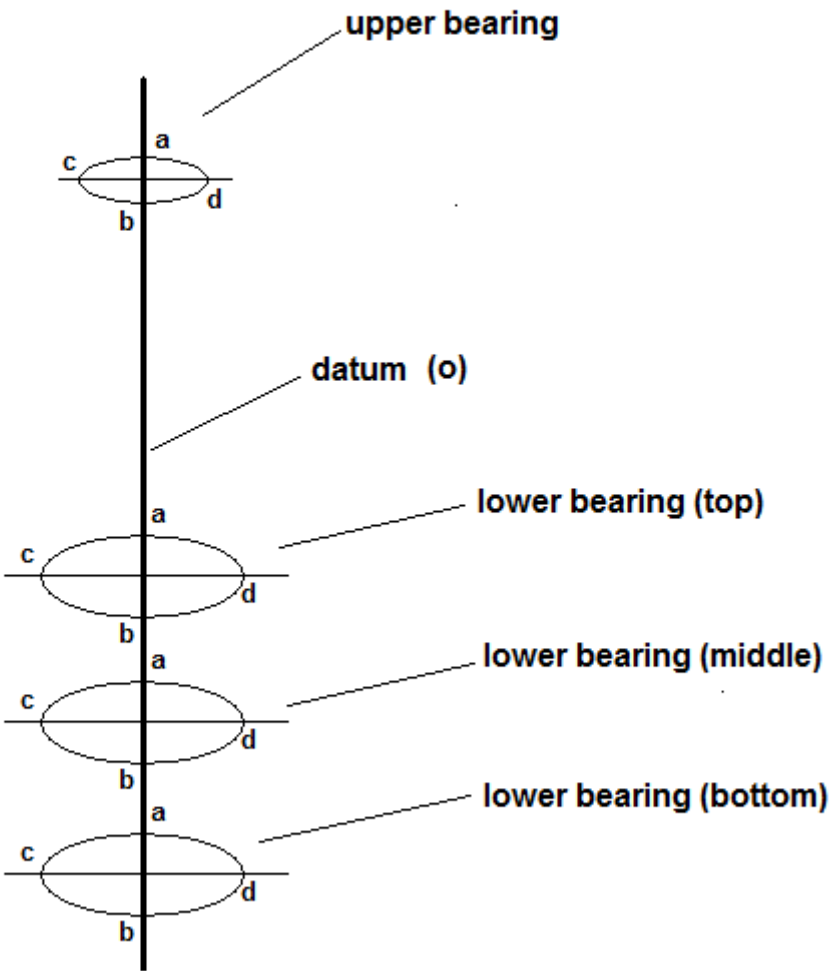
port/stbd

rudder blade top

Forward

4.8.2 Alignment survey.

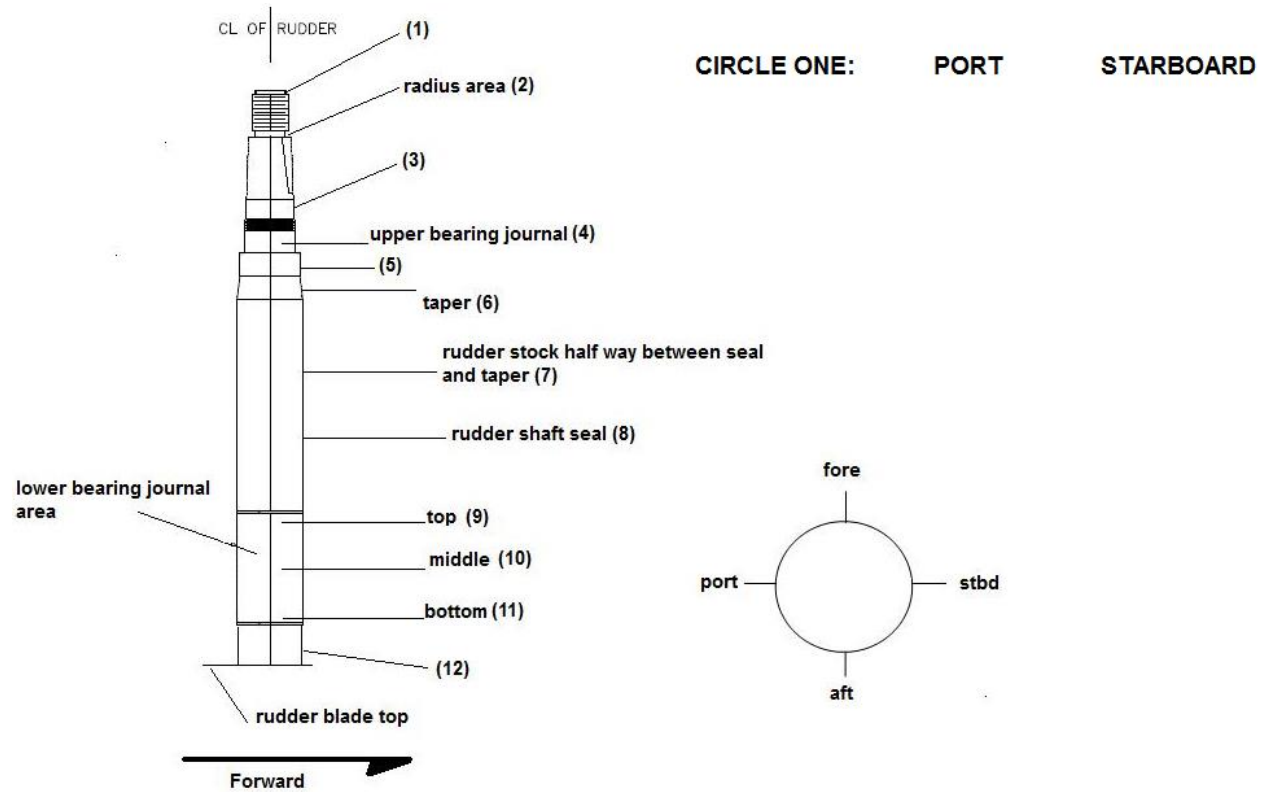
CIRCLE ONE: PORT STARBOARD



LOCATION	DISTANCES FROM DATUM TO LETTERED POINT			
	a to o	b to o	c to o	d to o
Upper bearing				
Lower bearing (top)				
Lower bearing (middle)				
Lower bearing (bottom)				

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4.8.3 Total indicated run-out (TIR) survey.



POINTS ALONG LENGTH	POINTS AROUND CIRCUMFERENCE (90° APART)				
	FORE	STBD	AFT	PORT	TIR
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

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56510_ESD_1117_110WPB
REC_56500_110_110' WPB 'B' Class (ALL) (0709)

WORK ITEM 31: Fin Stabilizers (General), Overhaul

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to overhaul the port and starboard stabilizing fins.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
N	Spherical Roller Bearing	NSN: 3110-00-902-7288	2 ea.	314.80
N	Spherical Roller Bearing	NSN: 3120-99-806-7289	4 ea.	221.07
N	Bolt, Trunnion, Special	NSN: 5325-01-394-7933	4 ea.	367.67
N	Tiller Pin (Bolt)	NSN: 5306-99-538-1451	4 ea.	145.44
N	Tiller Spacer Flange Bush	NSN: 5365-99-807-4040	4 ea.	163.73
N	Trunnion Spacer Flange Bush	NSN: 3120-01-396-1724	4 ea.	159.25
N	Circlip	NSN: 5365-99-902-2593	8 ea.	2.76
N	Fin 25/32 Washer	NSN: 5310-99-538-1450	4 ea.	4.44
N	Actuator seals	NSN: 5330-99-729-7570	4 ea.	128.87
N	Fin Rod Eye Bearings (Assy)	NSN: 3120-01-377-1940	4 ea.	1,190.95
N	Rod Eye Lock nut	NSN: 5310-01-468-7665	4 ea.	23.76
N	Tiller Pin nylock nut	NSN: 5315-01-485-3148	4 ea.	20.86
Y	**Fin Stabilizer assembly	NSN: 2040-99-726-4768	2 ea.	19,987.00
N	**Fin Stabilizer Lower Bearing/Bushing	NSN: 3120-99-726-2345	2 ea.	1,091.25
N	Fin Stabilizer Cooler	NSN: 4420-99-820-3141	2 ea.	706.71
N	Fin Stabilizer Sealing Kit consists of (5) pre-cut rings of Slade 3300 packing material (DELAMAR)	NSN: 2040-01-566-3198	2 ea.	499.80

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

**New or refurbished equipment that the Government may provide for installation in place of existing equipment.

***Government-furnished property, which is to be supplied by either the vessel or the C4ISR Service Center

2. REFERENCES

Coast Guard Drawings

Coast Guard Drawing 110B WPB 565-002, Rev B, Fin Stabilization Dets - Piping

Coast Guard Drawing 110C WPB 565-001, Rev D, Fin Stabilizer System (Struct Locs & Dets)

COAST GUARD PUBLICATIONS

- Coast Guard Technical Publication (TP) 3907, Feb 2007, SWBS 565, Ship's Fin Stabilizing System
- Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements
- Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes
- Surface Forces Logistics Center Standard Specification 5000 (SFLC Std Spec 5000), 2018, Auxiliary Machine Systems
- Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

- The Society for Protective Coatings (SSPC) Surface Preparation Specification No.11 (SSPC-SP 11), 2012, Power Tool Cleaning to Bare Metal
- International Standard Organization (ISO) 4406, 1999, Hydraulic Fluid Power – Fluids – Method for Coding Level of Contamination by Solid Particles
- Vosper Thornycroft Technical Bulletin No. 49, Jul 1992, Procedure for Fitting New Tiller Rod Eye Bearings to Actuators and Removing Redundant Grease Hose On BMS Island Class USCG Cutters

3. REQUIREMENTS

3.1 General. The Contractor shall accomplish the following for each fin assembly, using TP 3907 and Coast Guard Drawing 110C WPB 565-001 as guidance.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraphs:

- 3.2 Operational test - initial.
- 3.5.1 Fins pocket substrate inspection.
- 3.6 Ultrasonic thickness (UT) measurement.
- 3.8.3.1 Fin stock and blade inspections.

NOTE

The disassembly of the Fin Stabilizer System may require special tools. See TP 3907 Chapter 9, Page 26 for a list of special tools required for disassembly and overhaul.

3.1.2 Technical Representative.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated

equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Protective measures, hydraulic system(s). Maintain existing hydraulic system cleanliness and take all necessary precautions to prevent the introduction of contaminants into the hydraulic system.

Immediately after disconnecting or removing components from the hydraulic system, seal all openings to the rest of the system using caps for externally threaded connection points, bolt-on blanks, or taped-on discs/covers made of durable plastic or sheet-metal that is no less than 1/16-inch thick.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Port and starboard hydraulic lines from the rams on top of the plate assembly, aft of Frame 22.
- Top plate assemblies and mounting plates.
- Restrictive working environment.

3.2 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CIR.

WARNING!

Ensure all pressure; including stored energy of the accumulator tank has been bled off to 0 psig before working on the system.

3.3 Free movement inspection. The Contractor shall remove the tiller bolts and disconnect the actuator rams from the tillers. In the presence of the COR and coast guard inspector, rotate the fin and stock assemblies through their full range of travel and check for freedom of movement. Submit a CFR.

3.4 Fin stabilizer disassembly. The Contractor shall remove and disassemble the fin assembly using TP 3907 and Coast Guard Drawing 110C WPB 565-001 as guidance.

3.4.1 Hydraulic tank. Drain and dispose of the existing tank fluids, wipe the tank clean with lint free rags, renew the suction screen, and renew the tank lid gasket.

3.4.2 Before removal, secure the Control Rod (part 13 shown on TP 3907, Chapter 2, Figure 8) to the feedback lever (8). After centering the fins, use a calibrated ohm meter to record the resistance reading of the feedback transmitter potentiometer, mark and secure the feedback transmitter (7) to prevent the unit from rotating.

NOTE

Rotation of the Feedback Transmitter will hamper fin stabilizer calibration.

3.5 Fins bilge pocket surface preparation. The Contractor shall prepare the fin pocket bilge surfaces using power tool cleaning in accordance with SSPC-SP 11 as referenced in SFLC Std Spec 6310, Appendix B for "Bilges, Cofferdams, and Forepeaks, Steel" located in "Machinery Spaces".

3.5.1 Fins pocket substrate inspection. After completion of surface preparation and before coating application, the Contractor shall perform a visual inspection of the prepared substrate. Submit a CIR.

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3.5.2 Surface preservation. The Contractor shall prepare and coat the fins pocket bilge surfaces, including all adjacent structural members, using the system specified for “Bilges, Cofferdams, and Forepeaks, Option II”, in SFLC Std Spec 6310, Appendix B (Cutters and Boat Interior Painting Systems). Select Light Gray (26373) or Haze Gray (26270) as the finish/top coat color.

3.6 Ultrasonic thickness (UT) measurement. Upon completion of surface preparation and prior to application of primer coat, the Contractor shall take a total of 75 UT measurements of bilge surfaces, in locations designated by the Coast Guard Inspector, in accordance with SFLC Std Spec 0740, Appendix C. Submit a CIR.

3.7 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in Std Spec 0000_STD, paragraph titled “Preservation requirements-general.”

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

3.8 Fins inspections. The Contractor shall clean all removed components, and accomplish the following inspections:

3.8.1 Perform a visual inspection of the following components for signs of corrosion, pitting, and other defects:

- Bilge surfaces.
- Fin packing tube housings.
- Gussets and mounting fasteners.
- Fin and stock and blade surfaces.
- Stock bearing surfaces and stock bearings.
- Fin housing assembly.
- Tiller and trunnion bushings and associated bolts.

3.8.2 Measure and record the following dimensions. Compare all measurements against the published tolerances on Coast Guard Drawing 110C WPB 565-001 or TP 3907. Record and provide the existing measurement, the design measurements and tolerances, and a SAT/UNSAT determination with a repair recommendation for each measurement:

- Stock journal surface runouts.
- Stock bearing clearances.
- Trunnion and tiller trunnion bolt bearing surfaces, spherical bearings and bushings.
- Fin housing assembly inner diameter at top, middle sections, and bottom.

3.8.3 Documentation.

3.8.3.1 For all fin stock and blade inspections. Submit a CIR.

3.8.3.2 For components other than stock and blade, submit a CFR. Include a list of all defects noted, clearance measurements taken and recommendations for repair.

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3.8.4 Component renewal. Upon completion of inspections, reassemble the fin assembly with the Government-furnished components listed in section 1.2 (Government-furnished equipment). Use Coast Guard drawings and TP 3907 as guidance.

3.8.4.1 Disassemble the actuators as necessary, to facilitate renewal of the actuator seals.

3.8.4.2 Install the new rod eye bearing assembly in accordance with Vosper Thornycroft Technical Bulletin No. 49.

3.8.4.3 To ensure the clearance of the tiller trunnion to the rod eye bearing threads, inspect each new rod eye bearing and its fit with the corresponding tiller trunnion. Ensure the minimum distance between the center of the rod eye bearing and the leading thread is 1-13/16 inches; cut back threads as required to meet minimum distance.

3.8.4.4 If a Change Request is released and approved by the KO, the Contractor shall renew the lower fin stock bearing.

3.8.5 Reinstallation. Reinstall each fin assembly, with new Contractor-furnished seals, gaskets, and other various seals to the cover and housing respectively. In the presence of the COR, before the packing is set, rotate the fin and stock assemblies through their full range of travel and check for freedom of movement. Submit a CFR.

3.8.5.1 Packing renewal. Install new packing material, part number: USCG-FSK6-05.08, as shown on Coast Guard Drawing 110C WPB 565-001, following manufacturer's installation procedures.

3.8.5.2 Refilling. Furnish and replenish each hydraulic system with approximately 18 gallons required fluid, from sealed containers. Renew the system hydraulic fluid in accordance with SFLC Std Spec 5000, Appendix C, Paragraph C2.1 (Fluids) and references in section 2. Submit fluid conformance documentation to the COR via CFR for approval. Employ handling and filling techniques that do not introduce contaminants into the system or degrade the purity of the fluid when filling the system. Renew all hydraulic system filters (pressure and suction).

3.8.5.3 Hydraulic System Flushing. The Contractor shall flush the hydraulic system in accordance with SFLC Std Spec 5000, Appendix C, Paragraph C2.8.1 (Flushing).

3.9 Fin assembly renewal option. The Contractor shall be aware that the Government reserves the right to provide a new fin assembly for installation in place of a removed one, at no additional cost to the Government. When the Government exercises this right, the Contractor shall accomplish the following:

3.9.1 Removal. The Contractor shall remove and turn over the existing Fin Stabilizer assembly to the Coast Guard PA as a MTI item.

3.10 Bearing housing renewal option. The Contractor shall be aware that the Government reserves the right to furnish a spare bearing housing or housings to be installed in-place of the housing(s) removed from the vessel. When the Government exercises this right, the Contractor shall use the existing housing(s) to template the flange bolt, bearing set screw holes, and alignment pin holes to the new housing(s).

3.11 Post-installation free movement inspection. The Contractor shall, before reinstalling the tiller bolts and reconnecting the actuator rams to the tillers, rotate the fin and stock assemblies through their full

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range of travel and check for freedom of movement in the presence of the Coast Guard Inspector. Submit a CFR.

3.12 System test and adjustments. After completion of all work, the Contractor shall schedule the vessel for sea trials and perform an operational test (see 4.1 (Equipment operation)). All testing and adjustments to the stabilizing fin system shall be in accordance with TP 3907.

3.10 Touch-up preservation. The Contractor shall prepare and coat all new and disturbed exterior and interior surfaces to match existing adjacent surfaces, in accordance with SFLC Std Spec 6310, Appendix A (Cutter and Boat Exterior Painting Systems) and Appendix B (Cutter and Boat Interior Painting Systems), respectively, and as applicable.

3.13 Tooling and instrument calibration. All tooling and instruments shall be in good working condition, be properly calibrated, and have a current calibration certificate issued by a third party calibration laboratory. Tooling and instruments to be calibrated, includes, but is not limited to: torque wrenches, voltmeters, ohmmeters, pressure and temperature gauges, and weight scales.

4. NOTES

4.1 Equipment operation. Coast Guard personnel will operate all shipboard machinery and equipment during all tests.

4.2 Hardware identified in the record drawings may require a long lead time up to three to four weeks.

WORK ITEM 32: Grey Water Holding Tank(s), Clean and Inspect**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank(s):

TABLE 1 – TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (Gallons)	LOW SUCTION (Gallons)
Aft Grey Water	3-28-0-W	144	5
Fwd Grey Water (uncoated SS tank)	3-23-0-W	80	5

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

ASTM International (ASTM) D1330, 2015, Standard Specification for Rubber Sheet Gaskets

3. REQUIREMENTS

3.1 General.

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3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Plug all inlet and outlet piping in the tank(s) to prevent contaminants from entering. Use plugs with an attached lanyard, ring or other system that will ensure plugs are not lost in the pipe openings. Maintain a plug accountability log outside the tank to prevent any of the installed temporary plugs from being lost inside the tank or forgotten inside at tank closure. Submit this log to the Coast Guard Inspector after completion of work item.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Piping.
- Pump(s).
- TLI.
- Suction bell.
- Sewage ejector.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.2 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.3 Cleaning. The Contractor shall accomplish the following for the tank(s) listed. The Contractor shall refer to Coast Guard Drawing 110B WPB 528-002 for guidance.

3.3.1 Content removal. Remove and dispose of all contents, fluids, and/or residues in accordance with all applicable Federal, state, and local regulations

3.3.2 Cleaning requirements. Remove manhole cover(s). Clean all tank structure's interior surfaces free of all foreign materials, sediment, and sludge. Remove all persistent residues, taking care not to damage the tank coating system. Remove cleaning media and residues continuously from the tank during the washing process. Remove any residual wash media and wipe up residual moisture with clean lint-free cloths. Collect, contain, and dispose of all wash media, residues, and cleaning materials in accordance with all Federal, state, and local regulations. Clean all tank vent lines. Remove and clean the eductors and level switches inside of the tank(s). Reinstall the eductors and level switches upon completion of tank cleaning. Use new gaskets and o-rings to install/reinstall all removed/disturbed components.

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3.4 Inspection. The Contractor shall visually inspect all interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit the Tank and Void Inspection Form, and a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas.
- Condition of tank coating, including measurements taken, percentage, location, and type of coating failure (not applicable for stainless steel tanks).
- Tank level indicator (TLI), vacuum and/or float switch condition.
- Suction and discharge piping and vent line condition.
- Fastener material (stainless steel) and condition.
- Zinc anode condition (remaining percentage).

3.5 Control Panel Assembly. The Contractor shall open and vacuum clean the control panel assembly. Inspect the control panel assembly for any indications of overheating or loose wiring or connections. Submit a CFR

3.6 Closing. The Contractor shall notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector, and completion of all authorized repairs, close the manhole cover(s) with new gasket material conforming to ASTM D1330.

3.6.1 Chase threads on studs to ensure even installation of the access covers. Renew any damaged or missing fasteners. Existing undamaged fasteners may be reused. For purpose of bid, assume 10% of existing fasteners will require renewal. Renew all nylon insert/nylock nuts.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.7 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all items or shipboard devices that have been disturbed, used, repaired, altered, or installed to be in satisfactory operating condition. Submit a CFR.

3.7.1 The Contractor shall adjust the set point on each of the vacuum pressure switches (as applicable) to the set points noted previously.

3.7.2 The Contractor shall verify operation of the low and high level switches/alarms and that the pumps cycle from lead to lag status during operation. Demonstrate proper operation of tank TLIs to prove satisfactory operating condition.

3.7.3 Upon completion of testing and, in the presence of the Coast Guard Inspector, the Contractor shall pump tank(s) to the limit of the ship's installed pumps.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 33: Grey Water Piping, Clean And Flush

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to clean the grey water piping system.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics

Coast Guard Drawing 110B WPB 526-001, Rev M; Scuppers & Deck Drains Piping Arrangement

Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

OTHER REFERENCES

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

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3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Grey water pumps

3.2 Contamination prevention. The Contractor shall take all precautions to prevent contamination of personnel and spaces in accordance with all applicable Federal, state, and local regulations.

3.3 Personnel qualification. The Contractor shall ensure that personnel accomplishing this work are qualified and experienced in operating the pressurized water system and handling the chemicals. For each operator/cleaning technician, submit documentation of applicable experience and training obtained within the last twelve months along with the Cleaning Plan (see paragraph 3.5.2 (Plan Submittal)).

3.4 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.5 Piping hydrojet cleaning. The Contractor shall perform the following work:

3.5.1 The Contractor shall clean and flush the entire grey water piping system including condensate drains, shown on Coast Guard Drawings 110B WPB 501-001, 110B WPB 526-001 and 110B WPB 528-001

3.5.2 Using the referenced Coast Guard drawings as guidance, hydro blast the internal surfaces of all of the plumbing drain piping. Hydro blast pressure shall be at least 2500 psig at the discharge nozzle in all piping to ensure removal of all salts and scale from piping internal surfaces.

3.5.2.1 Ship's force will provide an assistant to the Contractor to show the Contractor the location of clean-out connections within the plumbing drain system.

3.5.2.2 Open each of the clean out connections as required to clean and hydro blast all of the internal piping within the system. Catch any fluid that drains from the clean out connections when it is opened and clean up any spills using bleach to disinfect the spill after cleaning.

3.5.3 Clean until all of the following conditions are met:

- All visible calcium carbonate deposits, solid deposits and build-up are removed from pipe walls.
- Discharge water from the piping being cleaned is free of all visible scale and deposits.

3.5.3.1 Inspect the piping interior using a borescope in the presence of the COR, to verify that all solid deposits visible to the unmagnified eye have been removed. Continue the cleaning process until all visible solid deposits are removed from the pipe walls.

3.5.4 In the event that hydro blasting alone does not clean piping to required conditions, Contractor shall use chemical cleaning methods.

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3.5.4.1 Ensure that chemical cleaners do not damage the environment, heat exchanger or the vessel.

3.5.4.2 Submit the written plan for chemical cleaning to the COR for approval. The procedure shall include products to be used, safety precautions, disposal requirements, sequence of events, etc.

CAUTION

Submit a MSDS to the COR for all chemicals proposed for use.

3.5.4.3 Chemical cleaning waste water disposal. Dispose of all cleaning fluids and debris in accordance with all applicable Federal, state, and local regulations. Remove all unused chemicals from USCG property immediately upon completion of work item. Do not drain any fluids (including fresh water) into any space, bilge, or exterior location.

- Sequence of each location that ensures all piping sections will be cleaned and all foreign debris removed.

3.6 Pumps and valves. The Contractor shall replace system tank valve(s) with temporary spool piece(s). Visually inspect system pumps and valve(s); and submit a CFR. Upon completion of work, reinstall the removed tank valve(s) with new gaskets.

3.7 Gasket renewal. The Contractor shall reinstall all removed valves and fittings with new gasket material conforming to applicable referenced drawings.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.8 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all items or shipboard devices that have been disturbed, used, repaired, altered, or installed to be in satisfactory operating condition. Submit a CFR.

3.8.1 Leak test. After all system components are reinstalled, the Contractor shall test all disturbed piping for leaks, as follows, and submit a CFR:

- Plug all system openings (except the highest) and fill system with water to the point of overflow. Ensure that the water level does not go down (without adding any water) for sufficient time to inspect the entire system (no less than 15 minutes).
- Closely monitor the system for leaks. Repair all leaks detected.
- Repeat test and inspection until no leaks are detected.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 34: Sewage Piping, Clean And Flush

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to clean the sewage piping system.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics

Coast Guard Drawing 110B WPB 526-001, Rev M; Scuppers & Deck Drains Piping Arrangement

Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

OTHER REFERENCES

ASTM International (ASTM) D1330, 2015, Standard Specification for Rubber Sheet Gaskets

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

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3.1.3 Protective measures. The contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Sewage pumps
- Toilets

3.2 Contamination prevention. The Contractor shall take all precautions to prevent contamination of personnel and spaces in accordance with all applicable Federal, state, and local regulations.

3.3 Personnel qualification. The Contractor shall ensure that personnel accomplishing this work are qualified and experienced in operating the pressurized water system and handling the chemicals. For each operator/cleaning technician, submit documentation of applicable experience and training obtained within the last twelve months along with the Cleaning Plan.

3.4 Operational test - initial. Prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of all items or shipboard devices to be disturbed, used, repaired, or altered, to demonstrate existing operational condition. Submit a CFR.

3.5 Cleaning plan. The Contractor shall establish a plan for cleaning the designated piping system, listing the step by step procedures necessary to ensure that all foreign debris is removed from the piping system.

CAUTION

Although the Coast Guard prefers pressurized water as the cleaning fluid, the Contractor may propose chemical cleaning as an alternative, providing that the proposed chemical cleaning agent is environmentally safe, suitable for use in marine sewage piping application, and pre-approved by the COR. The chemicals used in the cleaning (including cleaning chemicals, neutralizing compounds, and defoaming chemicals) shall not cause any significant detrimental effects to the sewage piping system or any other system components. Due to the fact that system piping has historically been difficult to clean by pressure washing only, chemical cleaning is usually required to successfully complete the cleaning process.

Submit a MSDS to the COR for all chemicals proposed for use.

3.5.1 Procedure requirements. The Contractor shall ensure that the procedure includes the following:

- Methods of cleaning.
- All safety precautions required during cleaning operations.
- List of qualified personnel who will operate machinery or handle chemicals (see paragraph 3.3 (Personnel qualification) herein).
- Locations in the sewage piping where cleaning will take place, and any additional fittings necessary.
- Sequence of each location that ensures all piping sections will be cleaned and all foreign

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debris removed.

3.5.2 Plan submittal. The Contractor shall submit the written plan to the COR for approval at least 48 hours prior to commencing cleaning operations.

3.6 Clean and flush. The Contractor shall clean and flush the entire sewage piping system, shown on Coast Guard Drawings 110B WPB 501-001, 110B WPB 526-001, and 110B WPB 528-002.

3.6.1 Pumps and valves. Replace system tank valve(s) with temporary spool piece(s) before cleaning. Visually inspect system pumps and valve(s); and submit a CFR. Upon completion of work, reinstall the removed tank valve(s) with new gaskets.

3.6.2 Cleaning. Continue cleaning until all of the following conditions are met:

- All visible calcium carbonate deposits, solid deposits and build-up are removed from pipe walls.
- Discharge water from the piping being cleaned is free of all visible scale and deposits.

3.6.3 Inspect the piping interior using a borescope in the presence of the COR, to verify that all solid deposits visible to the unmagnified eye have been removed. Continue the cleaning process until all visible solid deposits are removed from the pipe walls.

3.7 Waste disposal. The Contractor shall dispose of all cleaning fluids and debris in accordance with all applicable Federal, state, and local regulations. Remove all unused chemicals from USCG property immediately upon completion of work item. Do not drain any fluids (including fresh water) into any space, bilge, or exterior location.

3.8 Gasket renewal. The Contractor shall reinstall all removed valves and fittings with new gasket material conforming to ASTM D1330.

NOTE

Coast Guard personnel will operate all shipboard machinery and equipment.

3.9 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate all items or shipboard devices that have been disturbed, used, repaired, altered, or installed to be in satisfactory operating condition. Submit a CFR.

3.9.1 Leak test. After all system components are reinstalled, the Contractor shall test all disturbed piping for leaks, as follows, and submit a CFR:

- Plug all system openings (except the highest) and fill system with water to the point of overflow. Ensure that the water level does not go down (without adding any water) for sufficient time to inspect the entire system (no less than 15 minutes).
- Closely monitor the system for leaks. Repair all leaks detected.
- Repeat test and inspection until no leaks are detected.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 35: Tanks (Sewage Holding), Preserve “100%”**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to prepare and preserve 100% of the following tank(s):

TABLE 1 – TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (Gallons)	LOW SUCTION (Gallons)
Sewage	3-15.5-0-W	554	5

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018,
Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018,
Temporary Hull Accesses

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General. The Contractor shall refer to Coast Guard Drawing 110B WPB 528-002 for guidance.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 The Contractor shall plug all inlet and outlet piping in the tank(s) to prevent contaminants from entering. Use plugs with an attached lanyard, ring or other system that will ensure plugs are not lost in the pipe openings. Maintain a plug accountability log outside the tank to prevent any of the installed temporary plugs from being lost inside the tank or forgotten inside at tank closure. Submit this log to the COR after completion of work item.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Piping.
- Pumps.
- TLI.
- Sewage ejector assembly.

3.1.5 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

NOTE

Requirements for tank opening and closing, content disposal, and inspection are covered in the clean and inspect work items.

3.2 Surface preservation. The Contractor shall accomplish the following tasks for the tanks listed in paragraph 1.1 (Intent):

3.2.1 Remove and retain the tank manhole cover(s). Remove the sewage ejector and bulkhead packing gland assembly.

3.2.2 Prepare and coat all tank interior surfaces (including the interior and exterior bulkhead surfaces under the packing gland assembly and the internal surfaces of manhole cover(s), the manhole cover hull ring(s) extending outward to the weld line that ties the hull ring into the tank plating on the tank exterior),

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using the system specified for "Tanks and Voids (Grey Water, Sewage, and CHT Tanks), Option I", in SFLC Std Spec 6310, Appendix B (Cutters and Boat Interior Paint Systems). Select finish/top coat color to match existing.

3.2.3 Prepare and coat all manhole cover external surfaces to match existing adjacent surfaces, using the system specified for "Decks, Metal Interior and Non-Skid Areas (Steel and Aluminum Decks - Wet Areas, Food Preparation Areas, Exit Areas, and Areas Subject To Condensation)", in SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems). Select finish/top coat color to match existing adjacent surfaces.

3.3 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for "critical-coated surfaces"). Surfaces being preserved are considered "critical-coated surfaces".

4. NOTES

This section is not applicable to this work item.

WORK ITEM 36: Tanks (Grey Water Holding), Preserve “100%”**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to prepare and preserve 100% of the surfaces of the following tank(s):

TABLE 1 – TANKS

TYPE OF TANK	LOCATION	CAPACITY - 95% (Gallons)	LOW SUCTION (Gallons)
Aft Grey Water	3-28-0-W	144	5
Fwd Grey Water (uncoated SS tank)	3-23-0-W	80	5

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 528-002, Rev E, Sewage Piping Arrangement & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). The Contractor shall be aware that interferences in way of work include, but are not limited to the following:

- Piping
- Pump(s)
- TLI.
- Suction bell.
- Sewage ejector.

3.1.5 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

NOTE

Requirements for tank opening and closing, content disposal, and inspection are covered in the clean and inspect item.

3.2 Surface preservation. The Contractor shall accomplish the following tasks for the tanks listed in paragraph 1.1 (Intent), and refer to Coast Guard Drawing 110B WPB 528-002 for guidance in accomplishing this work item.

3.2.1 Remove and retain the tank manhole cover(s).

3.2.2 Prepare and coat all (100%) tank interior surfaces (including internal surfaces of manhole cover(s), manhole cover hull ring(s) extending outward to the weld line that ties the hull ring into the tank plating on the tank exterior), using the system specified for "Tanks and Voids (Grey Water, Sewage, and CHT Tanks), Option I", in SFLC Std Spec 6310, Appendix B (Cutters and Boat Interior Paint Systems). Select finish/top coat color to match existing.

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3.2.3 Prepare and coat all manhole cover external surfaces to match existing adjacent surfaces, using the system specified for “Decks, Metal Interior and Non-Skid Areas (Steel and Aluminum Decks)”, in SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems). Select finish/top coat color to match existing adjacent surfaces.

3.3 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

NOTE

Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 37: Tanks (Potable Water), Preserve "100%"**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to prepare and coat 100% of the surfaces of the following tank(s):

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)	LOW SUCTION (GALLONS)
Potable Water	3-12-1-W	470	25
Potable Water	3-12-2-W	470	25

1.2 Government-furnished property.

None.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 8636 (SFLC Std Spec 8636), 2018, Temporary Hull Accesses

OTHER REFERENCES

American National Standards Institute/NSF International (ANSI/NSF) 61, 2015, Drinking Water System Components - Health Effects

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American National Standards Institute/American Water Works Association (ANSI/AWWA)
C652, 2011, Disinfection of Water-Storage Facilities

3. REQUIREMENTS

3.1 General. The Contractor shall refer to Coast Guard Drawing 110B WPB 085-12 for guidance.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.1.5 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for "critical-coated" surfaces).

NOTE

Surfaces being preserved are considered "critical-coated surfaces".

3.1.6 Temporary access openings. Due to limited access to work areas, the Contractor may, with express permission of the KO (via submission of a CFR), cut access holes to facilitate accomplishment of the work specified herein. Perform all work required to open and close the access openings in accordance with SFLC Std Spec 8636.

3.2 Surface preservation. The Contractor shall accomplish the following tasks for the tanks listed in paragraph 1.1 (Intent):

3.2.1 Remove and retain the tank manhole cover(s).

3.2.2 Prepare and coat all tank interior surfaces (including internal surfaces of manhole cover(s), manhole cover hull ring(s) extending outward to the weld line that ties the hull ring into the tank plating on the tank exterior), using the system specified for "Tanks and Voids (Potable Water Tanks)" in SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems). Select finish/top coat color to match existing.

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3.2.3 Prepare and coat all manhole cover external surfaces to match existing adjacent surfaces, using the system specified for “Decks, Metal Interior and Non-Skid Areas (Steel and Aluminum Decks - Wet Areas, Food Preparation Areas, Exit Areas, and Areas Subject To Condensation)”, in SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems). Select finish/top coat color to match existing adjacent surfaces.

3.2.4 Heated air shall be used if necessary to maintain the proper temperature during cure. Ventilation shall be a continuous airflow with a minimum of one complete air change every four (4) hours.

3.2.5 Fully coated tanks shall be cured in accordance with the manufacturer’s instructions for NSF/NEHC certification under the same conditions before being filled.

NOTE

Typical curing times are at least 7 days, and range up to 14 days (or longer), depending on the paint selected and environmental conditions. Curing time shall be based on paint manufacturer’s recommendations for the specific application.

3.2.6 Freshly painted potable water tanks shall be rinsed at least twice with freshwater before being disinfected and put into service.

3.3 Tank closing. The Contractor shall ensure that the tank(s) remain open for at least 24 hours after completion of the tasks specified above. Notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector and after all authorized repairs, accomplish the following:

- Inspect all TLIs, as applicable, to verify proper operation. Submit a CFR.
- Close tank manhole cover(s) with new gasket material conforming to ANSI/NSF 61 and new stud cotton grommets (where applicable).

3.4 Tank disinfecting. After all other work involving the potable water system and tank closing have been completed, the Contractor shall disinfect and treat the affected potable water tank(s) and associated disturbed piping and components, as necessary, to meet or exceed the requirements of AWWA C652. After tank disinfecting, remove and dispose of all treated water in accordance with all Federal, state and local regulations.

WARNING

Ensure that no one enters the tanks once disinfection is completed.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 38: Decks - Exterior, Preserve (“Non-Skid Broadcast Grit” System)

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve the following exterior deck surfaces:

- Aluminum deck portion of the main deck; including the Detacouple, walkways, soft patch, life raft foundation, P-100 foundation, capstan cofferdam, and gasoline can storage rack foundations.
- Aluminum flying bridge, bridge wing decks, open bridge ladder well step, and boat deck.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

Commercial Item Description (CID) A-A-59316, Abrasive Materials for Blasting

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall protect non-affected vessel's equipment, components, and spaces during surface preparation and coating application procedures, as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection). Specific areas/ equipment/ components to be protected include, but are not limited to:

- Adjacent vertical (beyond what is specified in paragraph 3.2.1 (System particulars)).
- Deck fittings.
- Deck equipment.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

- Life rafts
- Life jacket lockers
- Ammunition lockers
- Gun deck grate system
- Capstan

3.2 Preservation requirements particulars. The Contractor shall accomplish the following tasks. Use Coast Guard Drawing 110B WPB 085-012 as guidance.

3.2.1 Pre-surface preparation wash. Prior to accomplishing surface preparation, accomplish low-pressure (less than 5,000 psi) fresh water wash of all affected surfaces, to remove soluble chlorides and other surface contaminants. Capture, contain, and dispose of wash water for proper disposal in accordance with all Federal, state and local regulations.

3.2.2 Surface preparation and coating application. Prepare and coat the weather deck surfaces designated in paragraph 1.1 (Intent), including bitt and chock foundations, machinery rack guards and machinery foundations, hatches and hatch guards, stanchion sockets, vent pipes, angle coaming area, and approximately six inches up all adjacent vertical surfaces (as applicable); select and use the system specified for "Weather Decks Non-Skid, Broadcast Grit for Aluminum, Option I" in SFLC Std Spec 6310, Appendix A (Cutter and Boat Exterior Painting Systems).

3.2.2.1 Surface preparation optional methods. The Contractor shall have the option of using either high/ultrahigh pressure water Jetting, abrasive blasting, or a combination of the two, to achieve the required surface preparation. The Contractor may add abrasives to the waterjet stream, for one or both of the following reasons:

- Achieving greater productivity.
- Achieving the required surface profile.

NOTE

Water jetting without abrasive addition does not provide any additional anchor profile to the surface, beyond what was present after the previous surface preparation.

3.2.2.2 Substrate inspection. After completion surface preparation and before coating application, perform a visual inspection of the prepared substrate, and submit a CFR.

3.2.2.3 Color selection. Select and use authorized paint as specified in SFLC Std Spec 6310, Appendix A, note 28. Use Gray as the finish/top coat color.

3.2.2.4 Nonskid exclusion. Do not apply non-skid aggregate over vertical surfaces, and the following areas:

- Within two inches of deck fittings, hatches, welds, and protrusions.
- Within six inches of deck coaming, bulkheads, and deck edges.
- Within six inches of all deck edges and bulkheads.
- Within two inches of deck foundations (two inches measured from outermost portion of foundation, for example, foundation brackets on anchor windlass).
- Over deck fittings.
- Over waterways.
- Over welds.

NOTES

- 1. Surfaces being preserved are considered “critical-coated surfaces”.**
- 2. Unless a containment system is used to contain surface preparation dust and debris and coating application overspray during pier side/dockside preservation, the following must be adhered to:**
 - a. All surface preparation tools/equipment must vacuum-shrouded.**
 - b. Coatings must be applied by brushing or rolling.**

3.2.2.5 Non-skid surface appearance and texture. Ensure that the non-skid surface shall show continuous and reasonably uniform profile. Aggregate shall present a rough uniformly coarse appearance over the entire surface with no loosely bound clumps of particles.

3.3 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”).

4. NOTES

4.1 Definition of coaming. Vertical raised sections of deck plating around an opening that provide a frame and/or deflect water, such as around a hatch or gooseneck.

WORK ITEM 39: U/W Body, Preserve (“100%”) Used with Side Scan)

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to make preparations for a Side Scan Ultrasonic Survey Test and preserve the U/W body surfaces.

NOTE

U/W body surfaces are as defined in 4.1 (Definitions) and exclude areas covered by docking blocks, unless the vessel is fleetted for the express purpose of preserving blocked areas.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

Coast Guard Drawing 110B WPB 601-027, Rev F, Outboard Profile and Weather Decks

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018, Welding and Allied Processes

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General. The Contractor shall complete the following task using Coast Guard Drawings listed in Section 2 as reference.

3.1.1 CIR. The Contractor shall submit a CIR for the inspections listed in the following paragraph(s):

- 3.1.5.1 Fairing inspection.
- 3.5.3 Post-surface preparation cleaning and inspection.

3.1.2 Tech Rep.

- Not Applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Apply protective measures as specified in SFLC Std Spec 0000, paragraph 3.3.3 (Vessel component, space, and equipment protection) to the following components, spaces and equipment:

- All scuppers and overboard discharges.
- Waterline area where U/W body coating system interfaces with freeboard coating system (unless u/w body surfaces are also being preserved).
- Exhaust ports.
- Impressed current system and associated dielectric shield.
- Fathometer transducer surfaces.
- Sea valve openings.
- Propeller shaft bearings and seals.
- Rudder bearings.
- Propellers.
- Fin stabilizer bearings.
- Fathometer transducer surfaces.
- Zinc anodes (unless anodes are being renewed).

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Sea chest grating.
- Capastic fairing.

3.1.5 Initial inspection. Prior to removing the existing coating system, the Contractor shall inspect and verify whether or not all draft marks have permanent markings (weld beads or impressions), showing their location on the hull. Submit a CFR.

3.1.5.1 Fairing inspection. Prior to preservation preparation, inspect the capastic fairing condition. Submit a CIR.

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3.1.5.2 Substrate visual inspection. After completion of surface preparation and before applying primer coat, the Contractor shall perform a visual inspection of all exposed metal surfaces, looking for: pits, gouges, pinhole porosity in welds, eroded weld seams, unauthorized pad eyes, left over construction bars, dog ear marks, corrosion, erosion, or other mechanical attributes that undermine the structural integrity of the hull.

3.1.6 Water used in preparation and washing procedures. The Contractor shall ensure that water used in all surface preparation tasks, including pre-surface preparation wash and water jetting, is of sufficient purity and quality that it does not prevent the surface being cleaned from achieving the required degree of surface cleanliness or non-visible contamination criteria.

3.1.6.1 Ensure that surface preparation water does not contain sediments or other impurities that are destructive to the proper functioning of the cleaning equipment.

3.1.6.2 Ensure that all water used in any surface preparation or cleaning procedures is captured, contained, and all spent water disposed of in accordance with all Federal, state and local regulations.

3.1.7 Surface preparation optional methods. The Contractor has the option of using either high/ultrahigh pressure water jetting or abrasive blasting to achieve the required surface preparation, prior to application of the coating system specified in 3.5 (Preservation requirements). The Contractor may add abrasives to the water jet stream, for one or both of the following reasons:

- Achieving greater productivity.
- Achieving the required surface profile.

NOTES

1. Existing coating system on the U/W body surfaces may have a nominal thickness in excess of that which was originally installed, because of “patch-coats” applied during past dry-dock availabilities.

2. Water jetting without abrasive addition does not provide any additional anchor profile to the surface, beyond what was present after the previous surface preparation.

3.2 Ultrasonic hull survey. After the U/W body primer coat has cured, the Contractor shall provide access for the side scan contractor survey team to perform a side-scan ultrasonic survey of the hull surfaces. The Contractor shall abide by the following guidance, to facilitate the ultrasonic survey:

3.2.1 Ensure that all surface preparation and primer coat application tasks are completed within 10 days of lifting the vessel.

3.2.2 Allow a minimum of 7 days for the survey team to complete its required tasks, including submission of a CFR.

3.2.3 Provide a continuous supply of fresh water and 110 VAC electrical power, and scaffolding or other suitable means of access to the u/w hull surfaces.

3.2.4 After completion of the hull survey, and authorized hull repairs, complete the u/w hull preservation process by applying the second coat of the anti-corrosive coating system, and all anti-fouling paint coats.

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3.2.5 Prior to resumption of u/w body coating system application/upon completion of hull survey, the Contractor shall strictly abide by the coating manufacturer's recommended practices in regards to over coating the initial primer coat within or beyond the over coating window, as applicable.

3.3 Option for U/W hull plating renewal. If a Change Request is released and approved by the KO, the Contractor shall perform plating renewal, based on the CFR for the side-scan ultrasonic survey, in accordance with SFLC Std Spec 0740.

3.4 Option for re-priming. If a Change Request is released and approved by the KO, the Contractor shall completely remove the primer coat, and re-prime the U/W hull surfaces after completion of the hull survey.

3.5 Preservation requirements. The Contractor shall accomplish the following tasks:

3.5.1 Surface preparation and coating application. Pre-surface preparation wash. Accomplish low-pressure (less than 5,000 psi) fresh water wash of all affected surfaces, to remove soluble chlorides and other surface contaminants. Refer to SSPC-SP 1, for guidance.

3.5.2 U/W body and appendages.

3.5.2.1 Prepare the U/W body and appendage surfaces using the system specified for “Underwater Water (U/W) Body and Boot-Top (U/W Body and Boot-Top, Steel Hulls (Up to 12 Years), in Salt Water”, in SFLC STD SPEC 6310, Appendix A (Cutter and Boat Exterior Painting Systems”).

3.5.2.2 Coat the U/W body and appendage surfaces as specified below, and otherwise in accordance with SFLC Std Spec 6310, Appendix A (Cutter and Boat Exterior Painting Systems).

- First coat, MIL-PRF-24647 Anticorrosive Epoxy, Grade A or B (Red) at 5-6 mils, DFT.
- Second coat, MIL-PRF-24647 Anticorrosive Epoxy, Grade A or B (Gray) at 5-6 mils, DFT.
- Third coat, MIL-PRF-24647 Non-copper Ablative, Type I, Class 2, Applications 1 & 4 (Red) at 5-6 mils, DFT (while epoxy beneath is still tacky).
- Fourth coat, MIL-PRF-24647 Non-copper Ablative, Type I, Class 2, Applications 1 & 4 (Black) at 5-6 mils, DFT.
- Fifth coat, MIL-PRF-24647 Non-copper Ablative, Type I, Class 2, Applications 1 & 4 (Red) at 5-6 mils, DFT.
- Boot-top area only, apply an additional coat - MIL-PRF-24647 Non-copper Ablative, Type I, Class 2, Applications 1 & 4 (Black) at 5-6 mils, DFT.

3.5.3 Post-surface preparation cleaning and inspection. After completion of surface preparation and prior to coating application, accomplish the following tasks and Submit a CIR.

3.5.3.1 Perform a visual inspection of the prepared U/W body steel substrate.

3.5.3.2 Perform DFT measurements of the dielectric shield material, using a DFT measurement, standard DFT gauge that is cable measuring within the specified range for the dielectric shield thickness which is about 22-100 mils.

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3.5.3.3 Perform solvent cleaning of all prepared surfaces, in accordance with SSPC-SP 1. Capture, contain, and dispose of all wastes from solvent cleaning, in accordance with all Federal, state and local regulations.

NOTE

Lists of all authorized coating materials and suppliers, and coating colors are listed in SFLC Std Spec 6310, Appendix C (Cutter and Boat Authorized Coatings). U/W body coating system individual color coat schemes are provided in COMDTINST M10360.3, Chapter 11 (Cutter and Boat Colors Exterior and Interior).

3.5.3.4 The Contractor shall ensure the three initial AF color coats shall be as follows: Red/Black/Red, and the two additional AF coats over the boot-topping as follows: Black/Black.

3.6 Draft mark painting. The Contractor shall paint all draft marks with two coats of a “Polysiloxane” or “Silicone Alkyd Enamel” coating, at 2.0-3.0 mils DFT, white (17925).

3.7 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces). Surfaces being preserved are considered “critical-coated surfaces”.

4. NOTES

4.1 Definitions.

4.1.1 U/W Body. The underwater body is defined as the areas from the bottom of the keel to the upper edge of the boot-topping, as shown on Coast Guard Drawing 110 WPB 601-002, including rudders, fins, transducer hull rings, sea chests, bilge keels, struts, skegs, gratings, and rope guards.

WORK ITEM 40: Superstructure, Preserve “100%”

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to preserve the aluminum surfaces.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 085-012, Rev B, Booklet of General Drawings (Supersedes 110B-WPB-085-7)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

Federal Standard (FED-STD) 595, 2008, Colors Used in Government Procurement

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

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3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.3.1 Equipment/components to be protected include, but are not limited to:

- Life lines.
- Bulkheads.
- Windows.
- Deck surfaces.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Electrical/electronic equipment.
- Junction boxes.
- Fire stations.

NOTE

Existing coating system on the Superstructure surfaces may have a nominal thickness in excess of that which was originally installed, as a result of “patch-coats” applied during past availabilities.

3.2 Substrate inspection. After completion surface preparation and before coating application, the Contractor shall perform a visual inspection of the prepared substrate, and submit a CFR.

3.3 Pre-surface preparation wash. The Contractor shall accomplish low-pressure (less than 5,000 psi) fresh water wash of all affected surfaces, to remove soluble chlorides and other surface contaminants. Capture, contain, and dispose of wash water for proper disposal in accordance with all Federal, state and local regulations.

3.4 General preservation requirements. The Contractor shall prepare and coat the superstructure surfaces, using the system specified for “Freeboard/Superstructure/Mast (Freeboard/Superstructure), in SFLC Std Spec 6310, Appendix A (Cutter and Boat Painting Systems).

3.4.1 The Contractor shall select “Option I” system, for the applicable metal substrate.

3.4.2 The Contractor shall select White (17925) as the finish/top coating color.

3.4.3 The Contractor shall color coat all miscellaneous details and fittings in accordance with the Table 1 below, as applicable.

TABLE 1 - COLORS FOR MISCELLANEOUS DETAILS

COMPONENT	*TOP COLOR COAT
Awning Ridgepoles	White (17925)
Bitts, towing	Spar (10371) except where line lays and runs; do not paint.

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Chocks, brass/bronze	Uncoated
Chocks, bulwark	Match bulwark color
Chocks, except bulwark and roller type	Spar (10371)
Chocks, Roller	Black (17038)
Handrails and Lifeline Stanchions	White (17925)
Hatch coamings	Spar (10371) or Blue Grey (16099) if deck mounted
Knife edges on watertight doors and hatches	Do not paint.
Name Plates	No coating.
Spray shield on bridge, inboard	White (17925) or Blue Gray (16099); Commanding Officer prerogative.
Ventilators, all types, including gooseneck pipe vents, not attached or immediately adjacent to the superstructure.	Spar (10371)
Fire fittings, valves, stations, etc.	Red (11105)

***Numbers indicated are FED-STD-595 colors.**

3.5 In-process quality control measures. The Contractor shall abide by all the safety, preservation, and quality control requirements specified in SFLC Std Spec 0000, paragraph 3.2.4.2 (In-process QC measures for “critical-coated surfaces”). Surfaces being preserved are considered “critical-coated surfaces.”

4. NOTES

4.1 Definition of superstructure. For the purposes of this item, superstructure surfaces are defined as exterior vertical and horizontal surfaces (excluding deck, mast, and stack surfaces), from the Main Deck Level up, including, but not limited to the following: exterior shell, bulkheads, and all attachments secured or bracketed to bulkheads, doors, stacks, ladders, metallic rails, stanchions, stand-offs, brackets, piping, stuffing tubes, vent ducting, goosenecks, structural tees, angles, and gussets, forward side of the deck house (extending above the main deck), and the undersides of all overhangs and overheads. The six-inch dado where the superstructure joins the deck is not included in the definition of superstructure; it is normally preserved with the deck surfaces.

4.2 Unit's responsibility. Unit crew will install new superstructure DC decals, compartment check-off holders, and name plates, after the completion of work.

WORK ITEM 41: Cathodic Protection System (Bilge and Sea Chest), Renew

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to renew all zinc anodes in the bilge and sea chest.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 163-002, Rev C, Chest Detail

Coast Guard Drawing 110B WPB 633-001, Rev A, Cathodic Protection Plan & Details

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

NAVSEA Drawing 803-921865, Rev P; Cathodic Protection Hull Zinc Anodes

3. REQUIREMENTS

3.1 General

3.1.1 CIR.

None.

3.1.2 Removal. The Contractor shall remove and scrap all existing zinc anodes from the port and starboard auxiliary sea chest: 2 per sea chest and from the Engine Room bilge FR 22.5: 1- zinc. Refer to

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Coast Guard Drawings 110B WPB 163-002 and 110B WPB 633-001 and the applicable figures in Section 4 (Notes) for guidance.

3.2 Fastener inspection. The Contractor shall clean all studs to bright metal and examine all fasteners for corrosion and soundness of material before installing the new anodes. Submit a CFR.

3.2.1 Verify the quality of the zinc anode stud weldment to the hull by tapping on the nutted stud with a rubber hammer. After sounding all studs in this manner chase all threads. Submit a CFR.

3.3 Anode renewal. The Contractor shall install new Contractor-furnished zinc anodes in accordance with NAVSEA Drawing 803-921865. Renew all zincs with new stainless steel nuts (316) and lock washers (316). If studs require renewal, renew in accordance with NAVSEA Drawing 803-921865 using a stainless steel, type 316 studs. Protect studs and anodes from damage, paint, and abrasives during the dry-docking period. Remove this protection before undocking. The area under the zinc anodes shall be completely dry before anode installation.

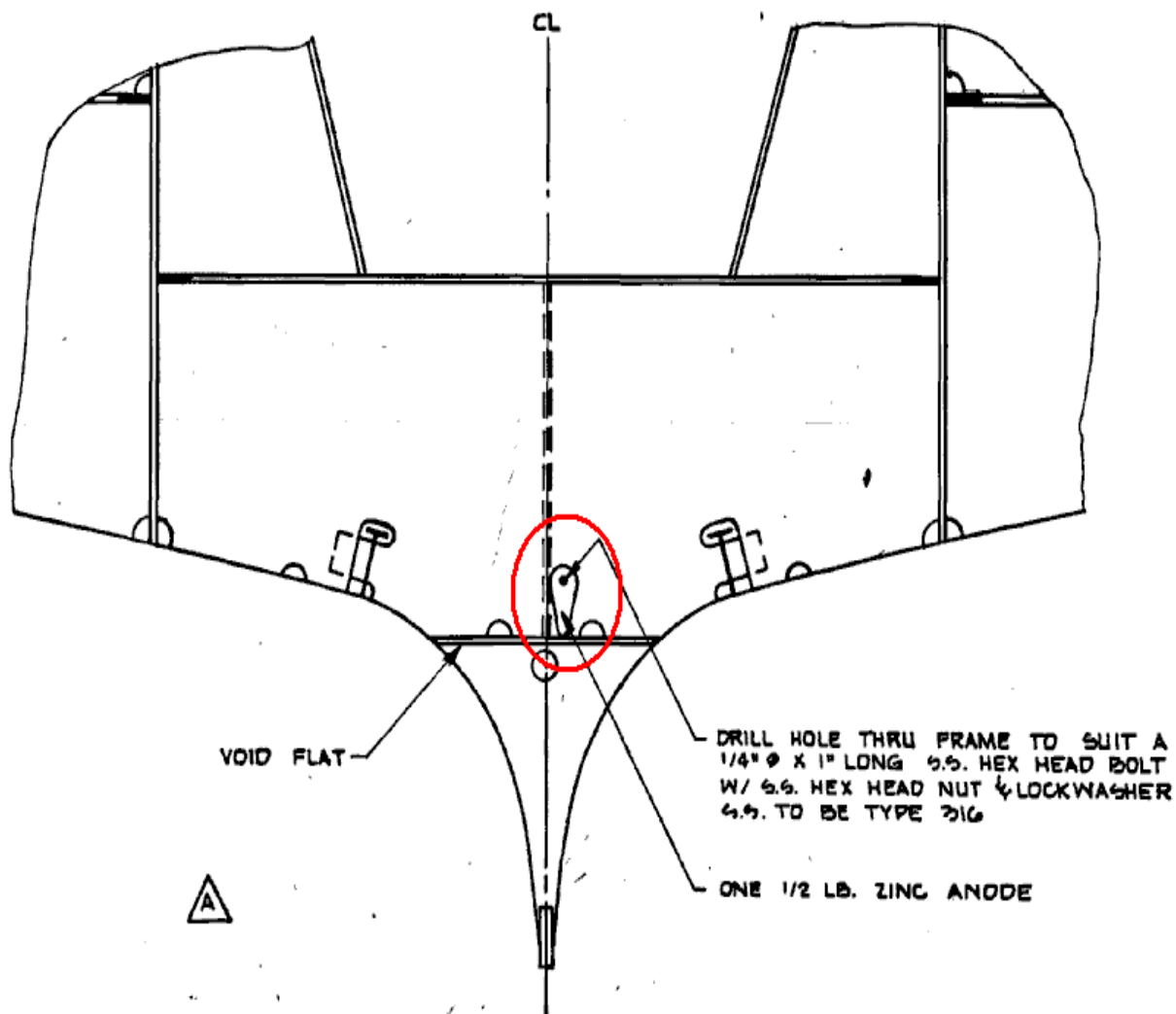
3.3.1 The Contractor shall perform an electrical continuity check of the renewed zinc anodes to confirm that they are electrically coupled to the hull and will provide cathodic protection of the hull.

3.4 Touch-up preservation. The Contractor shall prepare and touch-up coat all disturbed surfaces to match existing adjacent surfaces in accordance with SFLC Std Spec 6310, Appendix B (Cutter and Boat Interior Painting Systems).

4. NOTES

4.1 Sketches. The following sketches are to provide clarifying information for the contractor.

SFLC-BILGE-ANODE



FRAME 22 1/2 SHOWN LKG AFT
ENGINE ROOM BILGE ANODE



WORK ITEM 42: Impressed Current Cathodic Protection System, Inspect and Maintain

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to inspect and maintain the impressed current cathodic protection (ICCP) system.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 633-001, Rev A, Cathodic Protection Plan & Detail
Coast Guard Drawing 110B WPB 633-002, Rev C, Cathodic Protection Install Schematic & Layout

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements
Coast Guard Technical Publication (TP) 4655, Sep 2007, Cathodic Protection System

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR. Submit a CIR for the inspections listed in the following paragraphs:

- 3.3.1.4 (Cleaning and visual inspection)
- 3.3.2.2.5 (Reference electrode testing)
- 3.3.2.3.7 (Anode testing)

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3.1.2 Tech Rep. Provide the services of a certified Technical Representative, who is familiar with the Impressed Current Cathodic Protection System, to accomplish the following tasks on site:

- Provide manufacturer's proprietary information, software, and tools pertinent to the maintenance, testing, modernization, and repair of the Impressed Current Cathodic Protection System.
- Assist with proper repair methods, and ensure compliance with manufacturer's procedures and standards during disassembly, inspection, repair, modification, calibration, testing, and reassembly of the Impressed Current Cathodic Protection System.

3.1.2.1 Ensure that the technician is a Certified Representative of EVOQUA Water Technologies (formerly Siemens Water Technologies).

3.1.2.2 Submit the Tech Rep's name and résumé to the COR at the Arrival Conference.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.1.5 The Contractor shall perform all inspections and tests in the presence of the Coast Guard Inspector. Submit all findings and data to the Coast Guard Inspector on a Condition Found Report within one day of test completion.

3.2 Operational test - initial. While waterborne in saltwater and prior to commencement of work, the Contractor shall witness Coast Guard personnel perform an initial operational test of the impressed current cathodic protection system, to demonstrate existing operational condition. Submit a CFR documenting initial condition and include the following measurements:

3.2.1 The Contractor shall measure and record the potential difference between each reference electrode (positive) and the hull (negative) using a high impedance voltmeter. With impressed current cathodic protection system power secured, the expected potential is 0.30 to 0.65 volts. A narrower range may be listed in TP 4655 for the particular reference cell chemistry and water salinity.

3.2.2 The Contractor shall measure the potential difference between the un-energized anode power lead and the hull using a high impedance voltmeter. The expected potential is 0.5 to 2.0 volts with the anode being positive with respect to the hull. A narrower range may be listed in TP 4655 for the particular anode noble metal and water salinity.

3.3 Inspection and maintenance requirements. The Contractor shall accomplish the following, while dry docked, using Coast Guard TP 4655, as well as Coast Guard Drawings 110B-WPB 633-1 and 110B-WPB 633-2, as guidance, for each anode and reference electrode assembly. The frame number is the location of the gland penetration. Anode designs with rectangular geometry extend well beyond the gland under the hull.

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3.3.1 Cleaning and Inspection. Hand clean the anodes (Table 1) and reference electrodes (Table 2) of all marine growth.

TABLE 1 – ANODES

ID	FRAME	SIDE	COMPARTMENT
F2	22¼	Stbd	Engine Room (3-22-0-E)
F3	22¼	Port	Engine Room (3-22-0-E)

TABLE 2 – REFERENCE CELLS

ID	FRAME	SIDE	COMPARTMENT
5	30½	Stbd	Strut Cofferdam (3-30-1-V)
7	13½	Port	Auxiliary Machinery Space (3-13-0-E)

3.3.1.1 Sand or lightly sandblast (protect anodes and electrodes) the dielectric shield that extends from the anodes to remove all marine growth and loose paint.

3.3.1.2 Wash all anodes and reference electrodes with fresh water to remove salt accumulation. Allow washed areas to dry thoroughly before proceeding with electrical tests of the anodes and reference electrodes.

3.3.1.3 Visually inspect all anode, electrode, and dielectric shield surfaces for pitting, dissolution, voids, corrosion, and other damage. Submit a CIR.

3.3.2 Electrical Checks.

3.3.2.1 Ground Connection Testing:

3.3.2.1.1 Verify that all power and signal grounding connections to external cables in the cathodic protection system controller(s) are tight and free of corrosion. Verify that all such cables are also tight and free of corrosion at the hull termination. Correct any deficiencies.

3.3.2.1.2 Measure and record the resistance between each power ground terminal in the cathodic protection system controller and the hull using a four-wire micro-ohmmeter. Maximum acceptable resistance is 0.05 ohm.

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3.3.2.1.3 Measure and record the resistance between each signal ground terminal in the cathodic protection system controller and the hull using a four-wire micro-ohmmeter. Maximum acceptable resistance is 0.5 ohm.

3.3.2.2 Reference Electrode Testing:

3.3.2.2.1 For each accessible reference electrode gland listed in Table 2 above, inspect the housing for leaks, condensation, and corrosion. Remove connection box or anode cofferdam covers as needed to gain access. Tighten any loose packing gland nuts to the proper value. Electrode glands are considered accessible when they can be reached from compartments that are normally open to personnel or from normally closed tanks or voids that are opened and certified safe for personnel by other definite work items in this package.

3.3.2.2.2 Inspect each cable for deterioration of insulation.

3.3.2.2.3 Inspect the exterior surface of each reference electrode for damage or deterioration.

3.3.2.2.4 Measure and record the insulation resistance between each reference electrode plus cable and the hull using a high impedance multimeter. Minimum acceptable resistance is 10 kilo ohms.

3.3.2.2.5 Submit a CIR with results of above reference electrode inspection and testing.

3.3.2.2.6 Reconnect each reference electrode cable to the cathodic protection system controller.

3.3.2.2.7 Seal each reference electrode gland housing, applying paraffin and/or reinstalling cover if directed by the above references.

3.3.2.3 Anode Testing:

3.3.2.3.1 For each accessible anode gland listed in Table 1 above, inspect the housing for leaks, condensation, and corrosion. Remove connection box or anode cofferdam covers as needed to gain access. Tighten any loose packing gland nuts to the proper value. Anode glands are considered accessible when they can be reached from compartments that are normally open to personnel or from normally closed tanks or voids that are opened and certified safe for personnel by other definite work items in this package.

3.3.2.3.2 Inspect each anode cable for insulation deterioration.

3.3.2.3.3 Inspect the exterior surface of each anode for damage or deterioration. Inspect the condition of the dielectric shield fairing compound and coating.

3.3.2.3.4 Electrically isolate each anode from the controller electronics. In many cases, such can be accomplished without disconnecting cables by opening circuit breakers or removing fuses. Refer to the circuit schematic in the technical publication.

3.3.2.3.5 Measure and record the resistance between each anode face and its associated cable termination at the controller using a four-wire micro-ohmmeter. Maximum acceptable resistance is 0.05 ohm.

3.3.2.3.6 Measure and record the insulation resistance between each anode and the hull using a 150 VDC tester. Minimum acceptable resistance is 10 kilo ohms.

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3.3.2.3.7 Submit a CIR with results of above anode inspection and testing.

3.3.2.3.8 Seal each anode gland housing, applying paraffin and/or reinstalling cover if directed by the above references.

3.3.2.3.9 Restore continuity between each anode and the controller electronics.

3.3.2.4 Propeller Shaft Grounding Assembly:

3.3.2.4.1 Clean the contact surface on each propeller shaft and verify that the band clamps are tight.

3.3.2.4.2 Clean and inspect the rigging, brushes and shunts. Remove the brushes from the brush holders and clean out dirt and other foreign debris.

3.3.2.4.3 Renew any brush with less than 25% of the original length remaining. Sand new brushes to fit slip ring contour. Blow out any dust or abrasive.

3.3.2.4.4 Inspect brush shunt connections for tightness and corrosion. Apply conductive grease to prevent corrosion and torque all shunt fasteners.

3.3.2.5 Rudder Stock:

3.3.2.5.1 Inspect the bonding strap between each rudder stock and the ship's structure for corrosion and continuity. Straps are to be a minimum of No. 8 AWG flexible copper cable and shall be brazed to cable lugs on the rudder stock and fixed ship's structure.

3.3.2.5.2 Apply conductive grease to all connections to prevent corrosion and torque all fasteners.

3.4 Operational test – post repairs. After completion of work, the Contractor shall thoroughly test, in the presence of the Coast Guard Inspector and demonstrate the impressed current cathodic protection system to be in satisfactory operating condition. Submit a CFR.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 43: Drydock**1. SCOPE**

1.1 Intent. This work item describes the requirements for the Contractor to drydock the vessel, undock the vessel, and perform various dry-docking-related tasks.

1.2 Government-furnished property.

MTI	ITEM DESCRIPTION	NSN/PN	QTY	ESTIMATED COST (\$/UNIT)
Y	*Transducer Cover Plate	N/A	1 ea.	50.00

*Government-loaned property, which shall be returned to the vessel upon completion of the availability.

2. REFERENCES**COAST GUARD DRAWINGS**

Coast Guard Drawing 110 WPB 085-002, Rev 2, Docking Plan

Coast Guard Drawing 110 WPB 085-010, Rev C, Docking Plan

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 8634 (SFLC Std Spec 8634), 2018, Drydocking

OTHER REFERENCES

None.

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

- Anchor assembly
- Load conditions
- U/W body appendages

3.2 Key personnel. The Contractor shall determine key personnel and require their presence during all dry-docking phases as required by SFLC Standard Spec 8634.

3.3 Docking and undocking. The Contractor shall perform drydock and undock in accordance with SFLC Std Spec 8634, using a cradle built as shown on Coast Guard Drawings 110 WPB 085-002 or 110 WPB 085-010, as applicable (see "NOTES" under paragraph 3.4.2).

NOTE:

When a cradle is not available and only on a case-by-case basis, the Contractor may submit a blocking proposal to the KO for approval for docking via a floating, graving, or vertical lift dry dock. Blocking shall be in accordance with Coast Guard Drawing 110 WPB 085-010.

Due to the 110 hull sensitivity to deformation, docking via cradle is the preferred method when a cradle is available. A cradle shall be used when using a travel lift or crane lift.

This note supersedes the mandatory cradle use note under paragraph C2.4 of SFLC Standard Spec 8634, 2018. All other requirements of SFLC Std Spec 8634 shall apply. Blocking calculations shall be provided for the blocking proposal.

3.4 Cutter conditions. The Contractor shall use the Full Load Condition, values listed below all in inches, for purposes of performing Pre-Award calculations as described in Appendix A (Requirements for Calculations) of SFLC Std Spec 8634.

- Displacement (LT): 169.65.
- VCG (FT ABL): 8.93.
- LCG (FT aft of amidships): 5.15.

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- Length Over All (FT): 110.0.
- Length of supported keel (FT): NA

3.4.1 **Blocking.** The Contractor shall facilitate docking the vessel in block position by arranging keel and side blocks and ensuring minimum block heights as shown on the vessel's docking plan.

TABLE 1 - BLOCKING

Pos. #	BLOCK HEIGHT ABOVE DOCKING FACILITY DECK				Steel Plate	Situation Awareness	Fin Stabilizers	Additional
	Min.	Rudder Removal	Propeller Removal	Shaft Removal				
1	18"	NA	NA		NA	NA	NA	Refer to the docking plan for all necessary information required herein.

NOTES:

Many of the cradles used to dock the 110's were built to the early drawing 085-002. The newer cradles have been built to 085-010. The drawings show minor variations in dimensions. It should be noted that while the Standard Spec calls for the cradle to be built just to 085-010, a cradle built to 085-002 is acceptable.

There is a discrepancy between the SFLC STD Spec 8634 and the CG Drawing 110WPB-085-002 concerning drydock block thickness. SFLC STD Spec 8634 requires a minimum thickness of 2 inches, while the drawing has the block thickness at 1.5 inches. The Contractor shall disregard the 1.5-inch thickness shown on the drawing, and use the 2-inch thickness as specified in SFLC STD Spec 8634.

CG Drawing 110 WPB 085-002, Sheet 3, Section F-F (Position 2, only) the height above blocking line at 2'-0" from center line should be 3' and 3-3/32".

3.4.2 **Cable, sling, or strap tension calculation.** If the Contractor plans to use a vertical lift, crane, or travel/mobile lift to haul out the vessel, the Contractor shall submit the cable, sling, or strap tension calculation specified in Table A1 and paragraph A2.7.2.7 of SFLC Std Spec 8634 with the Pre-Award calculations, using the loading condition specified in paragraph 3.4.

3.5 **Pre-award calculations.** The Contractor shall provide to the KO a set of pre-award calculations, as described in SFLC Std Spec 8634 Appendix A.

3.5.1 The Contractor shall provide vertical side/bilge block offsets for any side blocks placed in a location where vertical offsets are not already defined by the docking plan.

3.5.2 The Contractor shall submit an alternate blocking arrangement, as part of the pre-award calculation submission, to compensate for any changes from the docking plan.

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3.5.2.1 If the alternate blocking arrangement interferes with U/W hull plate inspection or 100% preservation of the U/W body surfaces required under separate work items in this specification package, the Contractor shall include a plan of how inspection/preservation will be accomplished. Plan shall include any modifications necessary to the prescribed docking plan including removing, shifting, repositioning blocks, or fleeting the vessel at no additional cost to the Government.

NOTE

1. The USCG has established several approved alternate docking plans for each vessel-class, to facilitate complete access to the entire U/W body structure, for periodic comprehensive inspection and/or 100% preservation. This inspection and preservation pattern and periodicity is a configuration management concern that is a vital requirement of the contract. Intention to deviate from these plans (fewer blocks, block spacing, additional blocks, etc.) shall be identified on pre-award calculations (Paragraph 3.5.2); an alternate docking plan and mitigation strategy shall be provided to maintain preservation and inspection configuration.

2. Pre-award calculations may be deemed unsatisfactory - and may adversely affect contract award if they are submitted with the following detrimental factors:

a. No methods have been proposed that meet the requirements for the specified docking plan.

b. Proposed block shifting or fleeting risk-mitigating plan may result in delays in period of performance.

c. Proposed alternate docking plan violates USCG configuration management policies."

3.6 Planned availability, immediate work and routine inspections. The Contractor shall perform designated routine dry-docking work, in accordance with SFLC Std Spec 8634, paragraph 3.5.4 (within twenty four hours after docking).

3.6.1 Upon the COR convening the Coast Guard Underwater Hull Inspection Board (UWHIB), the Contractor shall facilitate and participate in the UWHIB inspections of the underwater hull. The Contractor shall provide a designated hull repair supervisor to accompany the UWHIB and mark on the hull proposed repairs areas, as necessary.

NOTES

1. The COR will convene the UWHIB as soon as possible after the vessel has been dry-docked and the hull has been cleaned. No other work shall take place until the UWHIB completes their inspections.

3.7 Fleeting. Not required.

3.8 Fluid removal and disposal.

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3.8.1 The Contractor shall drydock the cutter with all tanks empty.

3.8.2 The Contractor shall empty all tanks in order to fulfill the drydock requirements shown on Coast Guard Drawing 110 WPB 085-010. Dispose of all fluids in accordance with Federal, State, and local regulations.

4. NOTES

4.1 Arrival conditions. The COR will advise the Contractor of the actual tank and draft readings when the vessel arrives, and will discuss with the Contractor any liquid loading changes necessary.

4.2 Tanks. The tanks identified in Table 1 below require fluid offload.

TABLE 1 – TANK INFORMATION

TYPE OF TANK	LOCATION	CAPACITY (GALLONS)
Fuel	3-17-1-F	2,560
Fuel	3-17-2-F	2,560
Fuel	3-17-0-F	2,350
Fuel	3-28-1-F	1,162
Fuel	3-28-2-F	1,162
Dirty oil	3-26.5-1-F	155
Oily Water	3-26.5-2-F	155
Sewage	3-16-0-W	554
Forward Grey Water	3-23-0-W	70
Aft Grey Water	3-27.5-0-W	144
Potable Water	3-12-1-W	438
Potable Water	3-12-2-W	438

4.3 Potable water pumping. Ship's Force will pump the potable water overboard prior to dry-docking in lieu of requiring the Contractor offload the potable water.

4.4 Cutters normally operate at a minimum 75% fuel capacity during hurricane season and 50% off season.

WORK ITEM 44: Temporary Services, Provide - Cutter

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to provide temporary services to the Cutter, during the performance of this availability.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

None

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 8635 (SFLC Std Spec 8635), 2014,
Temporary Services

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against

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contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Temporary service particulars. The Contractor shall provide the below listed temporary services, in accordance with SFLC Std Spec 8635.

TABLE 1 - SERVICE SELECTION

*SUB-PARAGRAPH	TITLE	Y/N
3.3.1	Office space	Y
3.3.2	Telephone and internet access	Y
3.3.3	Parking	Y
3.3.4	Duty section berthing: 1 male, 1 female. Duty section berthing shall be provided for up to 7 days	Y
3.3.5	Electrical power (including all requirements in associated sub-paragraphs) Shore tie voltage requirements 450VAC 400A 3 PH 60Hz ungrounded	Y
3.3.6	Hull grounding straps (not applicable when cutter is waterborne)	Y
3.3.7	Compressed air (including all requirements in associated sub-paragraphs)	Y
3.3.8	Hazardous material/hazardous waste disposal (see Tables 2 and 3 below)	Y
3.3.9	Heavy lift equipment: 5 day(s)	Y
3.3.10	Water supply	
3.3.10.1	Potable water: unlimited gallons per day, at 35 psig.	Y
3.3.10.2	Hot-circulating water	N
3.3.10.3	Cooling water	N
3.3.10.4	Firemain system (including all requirements in associated sub-paragraphs)	Y
3.3.11	Steam (including all requirements in associated sub-paragraphs)	N
3.3.12	Refuse disposal	N
3.3.13	Sewage and grey water disposal (including all requirements in associated sub-paragraphs)	Y
3.3.14	Storage – General (including all requirements in associated sub-paragraphs):	
3.3.14	Dry stores.	Y
3.3.14	Paint and flammable stores.	Y
3.3.14	Refrigerated stores.	N
3.3.15	Small boat storage (including all requirements in associated sub-paragraphs)	Y

*Each sub-paragraph number relates directly to the identical sub-paragraph number in SFLC Std Spec 8635.

TABLE 2 - HAZARDOUS WASTE DISPOSAL – LIQUIDS (GALLONS)

PAINT THINNERS	ENGINE COOLANT	BILGE WATER
0	5	50

TABLE 3 - HAZARDOUS WASTE DISPOSAL – SOLIDS

OILY FILTERS	OILY RAGS (LBS)	EMPTY 1-GAL CONTAINER*	EMPTY 5-GAL CONTAINER*	EMPTY 55-GAL CONTAINER*
22	10	5	5	1

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***Previously housed hazardous materials.**

3.2 Extended temporary services. If the performance period of the contract is extended by the KO, the contractor shall continue to provide all temporary services as specified herein for the extension period.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 45: Sea Trial Performance, Support, Provide

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to provide support for the performance of pre-overhaul and post-overhaul sea trials.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

None

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

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3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences).

3.2 Trial applicability. The Contractor shall provide support to the vessel crew to perform sea trials for all work items that require conducting operational tests while the vessel is waterborne or underway, prior to the item certification as being complete. The Contractor shall be responsible for ensuring all test procedures are prepared, approved, and distributed for the sea trials, and shall be responsible for recording test data and submitting CFRs to the COR.

3.3 Sea trial agenda. The Contractor shall prepare an agenda that details the Contractor's plans for ensuring completion of the required sea trials.

3.3.1 Agenda contents. The Contractor shall ensure the agenda consists of chronological list of administrative events, inspection events and test events. Events shall be arranged to permit expeditious conduct with minimum interference between concurrent events.

NOTE

Mutually compatible events may be scheduled simultaneously.

3.3.1.1 The Contractor shall ensure the agenda identifies installation of any test equipment or component modification that could impact the normal operation of equipment or systems during performance of the trials.

3.3.1.2 The Contractor shall ensure the agenda identifies any operating instructions or special test procedures that could impact the normal operations of equipment or systems.

3.3.1.3 The Contractor shall ensure the agenda includes the full name, title, security clearance, home address, home telephone number and name of next of kin of each Contractor-personnel scheduled to ride the ship during performance of the trials.

3.3.2 Agenda submission requirements. The Contractor shall submit four legible copies of the sea trial agenda to the COR two days prior to the scheduled trials. The Contractor shall coordinate both the planning and conduct of the pre-overhaul and post-overhaul ship trials with the ship's force (see 4.1 (Equipment operation)).

3.4 Environmental compliance. The Contractor shall abide by the below-listed rules, in addition to all other Federal, state, and local rules governing the overboard discharge of garbage and oil in the water.

3.4.1 Discharge of garbage.

TABLE 1 – GARBAGE RULES

GARBAGE TYPE	RULE
Plastics, including synthetic ropes, fishing nets, and plastic bags	Prohibited in all areas
Floating dunnage, lining and packing materials	Prohibited less than 25 miles from nearest land
Food waste, paper, rags, glass, metal, bottles, crockery and similar refuse	Prohibited less than 12 miles from nearest land
Comminuted or ground food waste, paper, rags, glass, etc...	Prohibited less than 3 miles from nearest land

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3.4.2 Discharge of oil. The Contractor shall be aware that the Federal Water Pollution Control Act prohibits the discharge of oil or oily waste upon or into any navigable waters of the U.S. The prohibition includes any discharge that causes a film or discoloration of the surface of the water or causes a sludge or emulsion beneath the surface of the water.

CAUTION

Violators are subject to substantial civil and/or criminal sanctions including fines and imprisonment.

3.5 Dock trials. The Contractor shall conduct dock trials to demonstrate the material readiness of the ship for post-overhaul sea trials. Additionally, all onboard tests conducted after installation and prior to sea trials to prove proper installation and satisfactory operation of equipment shall be conducted in accordance with the requirements specified in the work items designated in paragraph 3.1 (Trial applicability). Ensure that the dock trials are begun no later than 12 hours prior to the scheduled post overhaul sea trials.

3.5.1 The Contractor shall provide a pier facility (or allow the cutter to move to a Coast Guard pier) in order to support dock trials. Dock trials may not be conducted while the cutter remains floating inside the dry-dock (not touching the blocks).

3.5.2 During dock trials, the Contractor shall ensure the Contractor's personnel observe tests under their cognizance and make such adjustments and repairs, as required.

3.6 Sea trials. As soon as possible after completion of the dock trials, the Contractor shall coordinate performance of the post-overhaul sea trials, based on the operational tests, as required in the applicable work items, for the following purpose:

- Performing tests that could not be performed while the ship was moored.
- Serving as final step in proving the success of the overhaul/repair tasks required in the designated work items, and ensuring that Contractor and COR are both satisfied that the ship is in all respects ready for final acceptance.

3.6.1 The Contractor shall have representatives on board the cutter to observe the trials for the purpose of observing whether or not the repairs are satisfactory.

3.6.2 The Contractor shall ensure the sea trials are carried out in free route, away from other shipping, as designated by the COR.

3.7 Post-trial examination. After the completion of the sea trial, the Contractor shall perform a careful and thorough examination of parts of the repaired machinery, as designated by the COR. If any part of the ship or its equipment fails to meet contractual requirements during trials, perform additional trials after corrective measures have been taken.

NOTES

1. Examples of dock trials include conducting cold (pre-light off) and hot checks, cycling machinery (rudders, BPU, turning gear, fin stabilizers), and conducting any post-docking shaft alignment verification checks. This time may also be used to on-load fuel, if needed for operations.

- 2. The conditions of the trials will be determined largely by the character of the work that has been performed in each case, and as designated by the COR. A full power trial should be run at this time unless the COR elects to defer this run until all new machinery parts are run-in or the training status of the crew permits full power operation without undue hazard.**
- 3. This examination may be conducted by the Engineer Officer of the ship, in which case he will report the results of the examination to the COR, fully describing any defects or improper conditions found.**
- 4. Representatives of manufacturers who have furnished ship components may be invited to witness trials subject to approval of the CO or OINC of the ship.**

4. NOTES

4.1 Equipment operation. Coast Guard personnel will operate all shipboard machinery and equipment during all tests.

WORK ITEM 46: Hull Plating (U/W Body), Ultrasonic Testing

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to perform up to 250 thickness measurements (UT shots) of hull plating and frames, by ultrasonic methods

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 111-003, Rev H, Shell Expansion

Coast Guard Drawing 110B WPB 085-010, Rev B, Docking Plan

Coast Guard Drawing 110C WPB 562-001, Rev G, Rudder Details (Stock & Blade Details)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 0740 (SFLC Std Spec 0740), 2018,
Welding and Allied Processes

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Technical Representative.

Not applicable.

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3.1.3 Protective measures - general. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Sea chest grates
- Tight interior spaces.

3.2 Measurements. Using Coast Guard Drawings listed in section 2 as guidance, the Contractor shall perform up to 250 UT measurements in locations designated by the Coast Guard Inspector in accordance with SFLC Std Spec 0740, Appendix C. Submit a CFR.

3.2.1 The Contractor shall create a sketch to show all locations selected for measurement and record all measurements in Table 1 (UT Measurements Summary Sheet) provided at the end of this item.

3.2.2 The Contractor shall provide a detailed sketch showing the UT measurements/locations and complete Table 1 and provide in the CFR. The CFR shall itemize all areas requiring repairs along with repair recommendations, including complete work scope proposal, for each area.

4. NOTES

4.1 UT Table. Table I provided below is for the recording of all UT measurements.

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TABLE I - UT MEASUREMENTS SUMMARY SHEET PORT/STBD SHELL

SHOT #	STRAKE # PLATE #	FWD/MID/AFT TOP/MID/BOT	ORIG PL THICKNESS	MEASURED PL THICKNESS	PERCENT WASTAGE	PASS FAIL

WORK ITEM 47: Tanks, (Sewage Holding) Clean and Inspect

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the following tank:

TYPE OF TANK	LOCATION	CAPACITY - 95% (GALLONS)
Sewage	3-17-0-W	496

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110 WPB 528-001, Rev B, Sewage Piping A&D (1301)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Coast Guard Technical Publication (TP) 4691, SWBS 593, Section E, December 1985, Sewage System

OTHER REFERENCES

ASTM International (ASTM) D1330, 2015, Standard Specification for Rubber Sheet Gaskets

3. REQUIREMENTS

3.1 General. The Contractor shall refer to Coast Guard Drawing 110 WPB 528-001 and (TP) 4691 for guidance.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

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Not applicable.

3.1.3 Protective measures. The Contractor shall plug all inlet and outlet piping in the tank(s) to prevent contaminants from entering. Use plugs with an attached lanyard, ring or other system that will ensure plugs are not lost in the pipe openings. Maintain a plug accountability log outside the tank to prevent any of the installed temporary plugs from being lost inside the tank or forgotten inside at tank closure. Submit this log to the COR after completion of work item.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Piping.
- Pumps.
- TLI.
- Suction bell.

3.2 Cleaning. The Contractor shall do the following for the tank(s) listed in paragraph 1.1 (Intent):

3.2.1 Operational test - initial. Prior to commencement of work, the Contractor shall witness an operational pre-test (by Coast Guard personnel) of all tank TLIs, to demonstrate existing operational condition. Submit a CFR.

3.2.2 Content removal. Tank content removal shall be completed in accordance with the “Dry Dock” work item.

3.2.3 Cleaning requirements. Remove manhole cover(s). Clean all tank structure’s interior surfaces free of all foreign materials, sediment, and sludge. Remove all persistent residues, taking care not to damage the tank coating system. Remove cleaning media and residues continuously from the tank during the washing process. Remove any residual wash media and wipe up residual moisture with clean lint-free cloths. Collect, contain, and dispose of all wash media, residues, and cleaning materials in accordance with all Federal, state, and local regulations. Clean all tank vent lines, from and including the tank penetration up to and including the final topside or hull penetration on the exterior of the cutter. Use new gaskets and o-rings to install/reinstall all removed/disturbed components.

3.2.4 Inspection. Visually inspect all interior surfaces, including, but not limited to bulkheads, floor and overhead plating, structural members, manhole cover surfaces, fasteners and gasket seating surfaces. Submit a CFR including the following, as applicable:

- Tank structural condition.
- Inaccessible areas.
- Condition of tank coating, including dry-film thickness measurements, percentage, location, and type of coating failure.
- Tank level indicator (TLI), vacuum and/or float switch condition.
- Suction and discharge piping and vent line condition.
- Fastener material and condition.

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3.2.5 Control Panel Assembly. Open and vacuum clean the control panel assembly. Visually inspect the control panel assembly for any indications of overheating or loose wiring or loose connections, check terminal connections for tightness. Submit a CFR

3.3 Closing. The Contractor shall notify the COR at least 24 hours prior to closing the tank(s). After satisfactory inspection by the Coast Guard Inspector, and completion of all authorized repairs, close the manhole cover(s) with new gasket material conforming to ASTM D1330. Chase threads on studs to ensure even installation of the access covers. The Contractor shall renew up to 10% of missing or damaged nuts and washers.

3.4 Operational test – post repairs. After completion of work, the Contractor shall accomplish the following in the presence of the Coast Guard Inspector using (TP) 4691 as reference, submit a CFR.

3.4.1 Adjust the set point on each of the vacuum pressure switches (as applicable).

3.4.2 Verify operation of the low and high level switches/alarms and that the pumps cycle from lead to lag status during operation. Witness an operational test (by Coast Guard personnel) of all designated tank TLIs to prove satisfactory operating condition.

3.4.3 Upon completion of testing and, in the presence of the Coast Guard Inspector, pump tank(s) to the limit of the ship's installed pumps.

4. NOTES

This section is not applicable to this work item.

WORK ITEM 48: Deck Covering, (Interior Wet/Dry), Renew

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to renew the interior deck covering system in various compartments.

1.2 Government-furnished property.

None.

2. REFERENCES

COAST GUARD DRAWINGS

None

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018,
General Requirements

Surface Forces Logistics Center Standard Specification 6341 (SFLC Std Spec 6341), 2018, Install
Interior Deck Covering Systems

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

3.1.3 Protective measures - general. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces in the vicinity of the work area against contamination during the performance of work. Upon completion of work, the

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Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the below-listed:

- Hatch.
- Toilet.
- Sink.
- Deck drain.
- Piping.
- Manhole access covers (2-16-0-X).
- Mess deck Tables/Benches
- Galley Equipment

3.2 Deck covering installation particulars. The Contractor shall perform all tasks specified in SFLC Std Spec 6341 and herein, to install a new covering system in the location specified in Table I below. Deck covering system renewal shall include all manhole access cover plates in below locations currently covered with the deck covering system material. Take precaution not to penetrate deck surfaces.

TABLE I - DECKING SYSTEM PARTICULARS

LOCATION	AREA (*SQF T)	DECK MTL (A/S**)	SYSTEM/APPENDIX (SFLC STD SPEC 6341)	***COVE BASE	SYSTEM COLOR	UNDERLAYMENT REQUIREMENT
Athwartship Passageway (1-18- 2-L)	100	A	Cosmetic Polymeric Epoxy Resin, Type III (One-Step Epoxy System)/Appendix A	Yes	Starlight Blue	None
Mess Deck/Galley (2-17-0-Q)	125	S	Cosmetic Polymeric Epoxy Resin, Type III (One-Step Epoxy System)/Appendix A	Yes	Starlight Blue	None
CPO Passageway (2-13-0-L)	50	S	Cosmetic Polymeric Epoxy Resin, Type III (One-Step Epoxy System)/Appendix A	Yes	Starlight Blue	None
FWD Head (2-8-0- L)	10	S	Cosmetic Polymeric Epoxy Resin, Type III (One-Step Epoxy System)/Appendix A	Yes	Starlight Blue	None
FWD Head Shower (2-8-0-L)	10	S	Cosmetic Polymeric Epoxy Resin, Type III (One-Step Epoxy System)/Appendix A	No	Starlight Blue	None

*Approximated.

**Note: A = Aluminum; S = Steel.

***See SFLC Std Spec 6341 for definition of cove base.

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3.3 Inspections. After surface preparation and before surface one step coating, the Contractor shall visually inspect the exposed deck top surfaces for metal fatigue, corrosion, and all other irregularities. Submit CFR.

3.4 Deck cover. During installation of the one-step deck covering, the Contractor shall ensure that the deck covering is applied in a manner to ensure proper drainage of liquids into deck drains. Ensure that the final deck covering surface located adjacent to deck drains is not below the edge of any deck drain.

4. NOTES

4.1 A properly installed wet deck will be "below" the rim at the base of the side panels. An improperly installed wet deck will 'fill' the gap under the side panels and extend 'above' the rim. When the wet deck is above the rim, water will back up into the panels and rot them out from the inside. The water that backs up into the side panels then drains out 'behind' the panel in the inaccessible space and causes a great deal of water damage.

WORK ITEM 49: Fuel Oil Service Return Piping, Clean and Inspect

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to clean and inspect the engine room return fuel lines from the ships service diesel generators to the fuel tanks.

1.2 Government-furnished property.

None

2. REFERENCES

COAST GUARD DRAWINGS

Coast Guard Drawing 110B WPB 261-001, Rev C, Fuel Oil Service Piping (A&D)

Coast Guard Drawing 110B WPB 501-001, Rev H, Piping System Schematics (Bilge & Fire Piping)

COAST GUARD PUBLICATIONS

Surface Forces Logistics Center Standard Specification 0000 (SFLC Std Spec 0000), 2018, General Requirements

Surface Forces Logistics Center Standard Specification 6310 (SFLC Std Spec 6310), 2018, Requirements for Preservation of Ship Structures

OTHER REFERENCES

None

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.

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3.1.3 Protective measures. The Contractor shall furnish and install all protective coverings to seal off and protect all non-affected vessel's components, equipment, and spaces near the work area against contamination during the performance of work. Upon completion of work, the Contractor shall remove all installed protective measures, inspect for the presence of contamination, and return all contaminated equipment, components, and spaces to original condition of cleanliness.

3.1.4 Interferences. The Contractor shall handle all interferences in accordance with SFLC Std Spec 0000, paragraph 3.3.5 (Interferences). Known interferences include, but are not limited to the following:

- Piping.
- Decking plates and framing.
- Electrical wiring.
- Fuel tanks.

3.2 Pipe cleaning and inspection. The Contractor shall clean and inspect approximately 75 linear feet of fuel oil return pipe runs, including associated valves, fittings, gages and hoses from the SSDG's back to the Fuel Oil Day Tanks. Refer to Coast Guard Drawing 110B WPB 501-001 and 110B WPB 261-001 for guidance.

3.2.1 Establish a plan for cleaning the designated piping system, listing the step by step procedures necessary to ensure that all foreign debris is removed from the piping system.

3.2.2 Inspect the piping interior using a borescope in the presence of the COR, to verify that all solid deposits visible to the unmagnified eye have been removed. Continue the cleaning process until all visible solid deposits are removed from the pipe walls. Submit a CFR.

3.3 Valves. The Contractor shall replace system tank valve(s) with temporary spool piece(s). Visually inspect system valve(s); and submit a CFR. Upon completion of work, reinstall the removed tank valve(s) with new gaskets.

WARNING

Do not drain any fluids including fresh water, into any space, bilge, or exterior location.

3.4 Pipe flushing. The Contractor shall flush all new and disturbed piping with clean fresh water until all debris is removed but no longer than five minutes. Ensure flushing fluid is directed to move scale and foreign debris away from installed machinery to prevent possible damage upon operational testing. Submit a CFR documenting date and time of flushing process and level of pipe cleanliness.

3.4.1 Dispose of flushing fluid in accordance with all applicable Federal, state, and local regulations.

3.4.2 Ensure all water is removed by blowing dry all flushed piping with dry, low-pressure air.

3.5 Hydrostatic test. After all authorized repairs, the Contractor shall hydrostatically test all new and disturbed piping and components of the fuel oil return piping system in accordance with SFLC Std Spec 0740, Appendix C, Hydrostatic Test. Ensure zero leakage from or permanent deformation of pressure-containing parts by repairing all leaks, deformations, and discrepancies. Submit a CFR.

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3.6 Touch-up preservation. The Contractor shall prepare and coat all new and disturbed surfaces to match existing adjacent surfaces in accordance with SFLC Std Spec 6310, paragraph 3.1.13 (Touch-ups and minor coating repairs.)

4. NOTES

This section is not applicable to this work item.