NAVSEA
STANDARD ITEM

FY-25

ITEM NO: 009-12
DATE: ***01 OCT 2023***
CATEGORY: II

1. SCOPE:

1.1 Title: Weld, Fabricate, and Inspect; accomplish

2. REFERENCES:

2.***1*** MIL-STD-1689, Fabrication, Welding, and Inspection of Ships Structure

2.***2*** American Bureau of Shipping (ABS) Rules for Building and Classing Steel Vessels

2.***3*** 0900-LP-060-4010, Fabrication, Welding, and Inspection of Metal Boat and Craft Hulls

2.***4*** S9074-AQ-GIB-010/248, Requirements for Welding and Brazing Procedure and Performance Qualification

2.***5*** 0900-LP-001-7000, Fabrication and Inspection of Brazed Piping Systems

2.***6*** S9074-AR-GIB-010/278, Requirements for Fabrication Welding and Inspection, and Casting Inspection and Repair for Machinery, Piping, and Pressure Vessels

2.***7*** MIL-STD-22, Welded Joint Design

2.***8*** MIL-STD-2035, Nondestructive Testing Acceptance Criteria

2.***9*** T9074-AS-GIB-010/271, Requirements for Nondestructive Testing Methods

2.***10*** DOD-STD-2185, Requirements for Repair and Straightening of Bronze Naval Ship Propellers

2.***11*** S9221-C1-GTP-010/020, Main Propulsion Boilers; Repair and Overhaul

2.***12*** S9AA0-AB-GOS-010, General Specifications for Overhaul of Surface Ships (GSO)

2.***13*** MIL-STD-2191, Repair, Welding, Weld Cladding, Straightening, and Cold Rolling of Main Propulsion Shafting

2.***14*** S9CG0-BP-SRM-010/CG-47CL, Inspection, Testing, Fabrication, and Welding for Aluminum Superstructures During Repair, Alteration, and Modernization, for CG-47 Class Ships

2.***15*** TO300-AU-SPN-010, Fabrication, Welding and Inspection of Small Boats and Craft, Aluminum Hulls

2.***16*** S9086-RK-STM-010/CH-505, Piping Systems

2.***17*** S9LCS-BF-SRM-010/LCS-2, Inspection, Testing, Fabrication, and Welding for Structural Repair, Alteration, and Modernization, for LCS-2 Variant Ships

2.***18*** ***S9LCS-BG-SRM-010/LCS-1 CL, Inspection, Testing, Fabrication, and Welding for Structural Repair, Alteration, and Modernization, for LCS-1 Variant Ships***

3. REQUIREMENTS:

3.1 Utilize specific requirements of 2.***1*** through 2.***11*** and 2.***15*** listed in Tables One, 2, 3, and 4 of this item for determining the welder and brazer qualifications, electrodes, weld design, welding requirements, brazing requirements, welding procedures, brazing procedures, welding parameters and controls, inspection standards, and acceptance criteria.

3.1.1 Maintain a Welding Workmanship Program and a Welding Surveillance Inspection Program if conducting structural and fabrication work in accordance with 2.***1***.

3.1.2 Maintain a Welding Training Program in accordance with 2.***4***.

3.1.3 Maintain a Brazing Process Inspection in accordance with 2.***5***.

3.2 Weld bell-end fittings in accordance with Section 505c8 of 2.***12***. Nondestructive testing inspection must comply with Class P-2 piping systems as defined by 2.***6***.

3.3 Ground welding machines, for purposes of providing a return path for welding current, using a grounding bar or lead which must be connected directly from the machine ground return connection to the ship's hull, sized on the basis of 1,000,000 Circular Mils per 1,000 amps per 100 feet, but in no event using less than a Number One cable (85,037 Circular Mils).

3.3.1 Welding machines used for welding on machinery, pressure vessels, or piping, rotating ordnance, electronic, or fire control equipment must have the ground return connection in the immediate vicinity of the work to ensure that current does not flow through bearings, pipe hangers, or other areas where arcing or high resistance paths exist. For ships constructed of non-magnetic materials, the ground return cables must be connected directly to the component being welded - as close to the weld zone as feasible.

3.3.2 Shipboard power distribution system must not be used as the power source for welding equipment unless approved by the SUPERVISOR. External power source must be used.

3.4 Process Control Procedure (PCP) for the specific welding, brazing, and inspection operations in 3.4.1 through 3.4.9 must be in accordance with NAVSEA Standard Items (See Note 4.1) and the following:

3.4.1 Class A-F, A-1, A-2, A-3, A-LT, P-1, P-LT, M-1, and T-1 welding, as defined by 2.6. These procedures must include, as a minimum, the information required by Paragraph 4.1.3 of 2.***6*** and supporting data such as a sketch of the weld repair areas and associated ship components. Joint numbers must not be duplicated on ship during the availability.

3.4.2 Class P-3a special category silver brazing, as defined by 2.***5***. The procedure must include, as a minimum, the information required by Sections 4 of 2.***4***.

3.4.2.1 All brazing of steam piping must conform to 2.***5***, Class P-3a special category, including ultrasonic inspection, for all pipe sizes .840 inch outer diameter or grater including

any (existing) copper to (new) copper-nickel transition joints. Brazed joints must not be used in steam pipe sizes less than .840 inch outer diameter.

3.4.2.2 In steam systems, where brazed piping and fittings are to be reused, or piping has to be sized to achieve proper fit-up, the option for a 5X visual inspection for cracks listed in Sections 5.5.3, 5.10.1, and 5.10.2 of 2.***5*** must not be used; liquid penetrant inspection must be required.

3.4.3 For bronze propellers, using 2.***10*** for guidance.

3.4.4 For propellers other than bronze, using 2.***6*** for guidance.

3.4.5 For propulsion shafting and rudder stocks, using 2.***13*** for guidance.

3.4.6 For titanium-based materials, using 2.***6*** for guidance.

3.4.7 Accomplish aluminum welding and nondestructive testing for superstructure of CG-47 Class ships in accordance with 2.***14***.

3.4.8 Accomplish fabrication, aluminum welding and nondestructive testing of aluminum structures for LCS-2 variant ships in accordance with 2.***17***.

3.4.9 Accomplish fabrication, aluminum welding and nondestructive testing of aluminum structures for LCS-1 variant ships in accordance with 2.***18***.

3.5 The use of a permanent backing strap in accordance with Section 11, Paragraph 11.1 of 2.***1*** is specifically prohibited for ships unless detailed in the original weld joint design or when authorized by the SUPERVISOR. The use of a permanent backing strap is acceptable for small boats and crafts, in accordance with 2.***3***and 2.***15***.

(I) or (I)(G) “NONDESTRUCTIVE TESTING”

3.6 Accomplish nondestructive testing in accordance with the following:

3.6.1 Manufacture, installation, and repair (welding, brazing, machining, or lapping) of Level I fittings or components:

3.6.1.1 Nondestructive Testing Visual Inspection - (I)

3.6.1.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant and Ultrasonic Testing (Final Only) - (I)(G)

3.6.1.3 Nondestructive Testing Radiographic - (I)

3.6.2 Welding/brazing of Class P-1, P-LT, P-3a piping systems or Class A-F, A-1, A-2, A-3, A-LT, M-1, T-1 welding, and Class P-2.

3.6.2.1 Nondestructive Testing Visual Inspection - (I)

3.6.2.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant and Ultrasonic Testing (Final Only) - (I)(G)

3.6.2.3 Nondestructive Testing Radiographic - (I)

3.6.2.4 Nondestructive Testing Visual Inspection (I)(G) materials S-51, S-52, S-53.

3.6.3 Welding on ship/craft listed in Attachment A hull or structure when required by the fabrication document:

3.6.3.1 Nondestructive Testing Visual Inspection - (I)

3.6.3.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant and Ultrasonic Testing (Final Only) - (I)(G)

3.6.3.3 Nondestructive Testing Radiographic - (I)

3.6.4 Weight handling equipment manufacture and repair:

3.6.4.1 Nondestructive Testing Visual Inspection - (I)

3.6.4.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant - (I)(G)

3.6.4.3 Ultrasonic Testing (Final Only) - (I)(G)

3.6.4.4 Nondestructive Testing Radiographic - (I)

3.6.5 Corrective maintenance within the certified boundaries of cranes (as defined in NSTM 589):

3.6.5.1 Nondestructive Testing Visual Inspection - (I)

3.6.5.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant - (I)(G)

3.6.5.3 Ultrasonic Testing (Final Only) - (I)(G)

3.6.5.4 Nondestructive Testing Radiographic - (I)

3.6.6 Maintenance on aircraft launch and recovery equipment:

3.6.6.1 Nondestructive Testing Visual Inspection - (I)

3.6.6.2 Nondestructive Testing Magnetic Particle, Liquid Penetrant and Ultrasonic Testing (Final Only) - (I)(G)

3.6.6.3 Nondestructive Testing Radiographic - (I)

3.6.7 Invocation of Operational Pressure Test Option for Piping Systems in accordance with 2.***16***:

3.6.7.1 Nondestructive Magnetic Particle and Liquid Penetrant testing accomplished to satisfy Operational Pressure Test Option requirements in accordance with 11.1.2.6 of 2.***16*** and not already required by 3.6.2.2. - (I)

(I)(G) "EVALUATION OF RT FILMS"

3.7 Accomplish RT film interpretation.

3.7.1 Provide the cognizant Government representative designated by the SUPERVISOR the evaluated radiographs and records within 2 days of the (G) point.

3.8 Provide and maintain a Welding Consumable Control System in accordance with 2.***1***, 2.***2***, 2.***3***, 2.***5***, 2.***6***, 2.***10***, 2.***11***, 2.***13***, 2.***14***, and 2.***15***, which covers the control and issuance of filler materials. The system must be described in a written procedure that must be submitted to the SUPERVISOR for review and approval prior to the initiation of production work. This procedure only requires a one-time submittal/approval unless the Standard Items change and/or references change or are updated. The Welding Consumable Control System must be subject to periodic conformity audits by the SUPERVISOR throughout the contract period.

3.9 Utilize Attachment A to define combatant and non-combatant vessels and applicable table.

3.10 Where requirements in the repair and testing instructions for propulsion boilers conflict, 2.12 must take precedence.

4. NOTES:

4.1 If a Process Control Procedure (PCP) for all specific welding, brazing, and inspection operations in 3.4.1 through 3.4.***9*** is required; the use of Category II Standard Item 009-09 "Process Control Procedure (PCP); provide and accomplish" of ***NAVSEA Standard Items*** will be specified in the Work Item.

4.2 For Navy boats and craft all paragraphs apply except the following: 3.4.2.1, 3.4.2.2, 3.4.3, 3.4.4, 3.4.5, 3.4.6, and 3.6.6.

TABLE 1
WELDING, FABRICATION, AND INSPECTION OF PIPING, PRESSURE VESSELS, PROPELLERS, AND MACHINERY

LINE	COLUMN	A	B	C	D		E
	SITUATION EVOLUTION	CLASS P-1, P-2 AND P-LT PIPING	CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	HARD FACING VALVE PARTS	CLASS A PRESSURE VESSEL	** PROPULSION BOILERS	*PROPELLERS (BRONZE)
1	WELDER AND BRAZER QUALIFICATION	S9074-AQ-GIB-010/248, PARAGRAPH 5	0900-LP-001-7000, SECTION 4	S9074-AQ-GIB-010/248, PARAGRAPH 5		S9221-C1-GTP-010/020	
2	WELDING PROCEDURE	S9074-AQ-GIB-010/248, PARAGRAPH 4	NOT APPLICABLE	S9074-AQ-GIB-010/248, PARAGRAPH 4		S9221-C1-GTP-010/020	DOD-STD-2185, PARAGRAPH 4
3	BRAZING PROCEDURE	NOT APPLICABLE	0900-LP-001-7000, SECTION 4	NOT APPLICABLE			
4	WELDING REQUIREMENTS	S9074-AR-GIB-010/278, PARAGRAPH 6	NOT APPLICABLE	S9074-AR-GIB-010/278, PARAGRAPH 6			MIL-STD-2185, PARAGRAPH 5

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LINE	COLUMN	A	B	C	D		E
	SITUATION EVOLUTION	CLASS P-1, P-2 AND P-LT PIPING	CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	HARD FACING VALVE PARTS	CLASS A PRESSURE VESSEL	** PROPULSION BOILERS	*PROPELLERS (BRONZE)
5	FILLER MATERIAL	S9074-AR-GIB-010/278, PARAGRAPH 5	0900-LP-001-7000, SECTION 5	S9074-AR-GIB-010/278, PARAGRAPH 5		S9221-C1-GTP-010/020	DOD-STD-2185, PARAGRAPH 5
6	JOINT DESIGN	S9074-AR-GIB-010/278, PARAGRAPH 9 MIL-STD-22	0900-LP-001-7000, SECTION 5	NOT APPLICABLE	S9074-AR-GIB-010/278, PARAGRAPH 9 MIL-STD-22	S9221-C1-GTP-010/020	

TABLE 1
WELDING, FABRICATION, AND INSPECTION OF PIPING, PRESSURE VESSELS, PROPELLERS, AND MACHINERY

LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	D ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
7	HEAT TREATMENT	S9074-AR-GIB-010/278, PARAGRAPH 6	0900-LP-001-7000, SECTION 5	S9074-AR-GIB-010/278, PARAGRAPHS 6 AND 11.6	S9074-AR-GIB-010/278, PARAGRAPH 6	S9221-C1-GTP-010/020	S9074-AR-GIB-010/278, PARAGRAPH 6 DOD-STD-2185, PARAGRAPH 5
8	WORKMANSHIP REQUIREMENTS	S9074-AR-GIB-010/278, PARAGRAPH 7	0900-LP-001-7000, SECTION 5	S9074-AR-GIB-010/278, PARAGRAPHS 7 AND 11.6	S9074-AR-GIB-010/278, PARAGRAPH 7	S9221-C1-GTP-010/020	S9074-AR-GIB-010/278, PARAGRAPH 7

TABLE 1
WELDING, FABRICATION, AND INSPECTION OF PIPING, PRESSURE VESSELS, PROPELLERS, AND MACHINERY

LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	D ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
9	VISUAL INSPECT JOINT FIT-UP	S9074-AR-GIB-010/278, PARAGRAPH 9 MIL-STD-22	0900-LP-001-7000, SECTION 7	NOT APPLICABLE	S9074-AR-GIB-010/278, PARAGRAPH 9 MIL-STD-22	S9221-C1-GTP-010/020	DOD-STD-2185, PARAGRAPH 5
10	VISUAL INSPECTION	S9074-AR-GIB-010/278, PARAGRAPH 10 MIL-STD-2035, PARAGRAPH 4	0900-LP-001-7000, SECTION 7 AND 8	S9074-AR-GIB-010/278, PARAGRAPH 11.6.3 MIL-STD-2035, PARAGRAPH 4	S9074-AR-GIB-010/278, PARAGRAPH 10 MIL-STD-2035, PARAGRAPH 4		MIL-STD-2035, PARAGRAPH 4

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LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	D ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
11	RADIOGRAPHIC INSPECTION (RT)	S9074-AR-GIB-010/278 PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 3 MIL-STD-2035, PARAGRAPH 5 (NORMALLY ONLY P-1 AND P-LT)	NOT APPLICABLE		S9074-AR-GIB-010/278 PARAGRAPH 10 T9074-AS-GIB-010/271,PARAGRAPH 3 MIL-STD-2035, PARAGRAPH 5		NOT APPLICABLE

* - PARAGRAPH 3.4.4 APPLIES
** - PARAGRAPH 3.***10*** APPLIES

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TABLE 1
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LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	D ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
12	ULTRASONIC INSPECTION (UT)	NOT APPLICABLE	0900-LP-001-7000, SECTIONS 6,7,8 AND 9 FOR CLASS P-3a SPECIAL CATEGORY PIPING ONLY	NOT APPLICABLE			***S9245-AR-TSM-010/Prop Paragraph 5.6.5.2***

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LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	 ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
13	LIQUID PENETRANT INSPECTION (PT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7 (NORMALLY ONLY P-1 AND P-LT)	0900-LP-001-7000, SECTION 7 AND 8 FOR CLASS P-3a SPECIAL CATEGORY SEE 3.4.2.2	S9074-AR-GIB-010/278, PARAGRAPH 11.6.3 MIL-STD-2035, PARAGRAPH 7	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7		MIL-STD-2035, PARAGRAPH 7 T9074-AS-GIB-010/271, PARAGRAPH 5

TABLE 1
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LINE	COLUMN SITUATION EVOLUTION	A CLASS P-1, P-2 AND P-LT PIPING	B CLASS P-3a SPECIAL CATEGORY, OTHER CLASS P-3a, AND P-3b PIPING	C HARD FACING VALVE PARTS	D CLASS A PRESSURE VESSEL	 ** PROPULSION BOILERS	E *PROPELLERS (BRONZE)
14	MAGNETIC PARTICLE INSPECTION (MT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6 (NORMALLY ONLY P-1 AND P-LT)	NOT APPLICABLE		S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035 PARAGRAPH 6		NOT APPLICABLE

TABLE 1
WELDING, FABRICATION, AND INSPECTION OF PIPING, PRESSURE VESSELS, PROPELLERS, AND MACHINERY

LINE	COLUMN	F	G	H	I	J
	SITUATION EVOLUTION	MACHINERY CLASS M	TURBINE PARTS	CASTINGS	FORCED DRAFT BLOWERS	REDUCTION AND STEAM TURBINE DRIVEN AUXILIARY GEARS
1	WELDER AND BRAZER QUALIFICATIONS	S9074-AQ-GIB-010/248, PARAGRAPH 5				
2	WELDING PROCEDURE	S9074-AQ-GIB-010/248, PARAGRAPH 4				
3	BRAZING PROCEDURE	NOT APPLICABLE				
4	WELDING REQUIREMENTS	S9074-AR-GIB-010/278, PARAGRAPH 6				
5	FILLER MATERIAL	S9074-AR-GIB-010/278, PARAGRAPH 5				
6	JOINT DESIGN	S9074-AR-GIB-010/278, PARAGRAPH 9, AND MIL-STD-22				
7	HEAT TREATMENT	S9074-AR-GIB-010/278, PARAGRAPHS 6 AND 8				
8	WORKMANSHIP REQUIREMENTS	S9074-AR-GIB-010/278, PARAGRAPH 7				
9	VISUAL INSPECT JOINT FIT-UP	S9074-AR-GIB-010/278, PARAGRAPH 10, AND MIL-STD-22				
10	VISUAL INSPECTION	S9074-AR-GIB-010/278, PARAGRAPH 10 MIL-STD-2035, PARAGRAPH 4	S9074-AR-GIB-010/278, PARAGRAPH 14	S9074-AR-GIB-010/278, PARAGRAPH 13 MIL-STD-2035, PARAGRAPH 4	S9074-AR-GIB-010/278, PARAGRAPH 16	S9074-AR-GIB-010/278, PARAGRAPH 15

TABLE 1
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LINE	COLUMN	F	G	H	I	J
	SITUATION EVOLUTION	MACHINERY CLASS M	TURBINE PARTS	CASTINGS	FORCED DRAFT BLOWERS	REDUCTION AND STEAM TURBINE DRIVEN AUXILIARY GEARS
11	RADIOGRAPHIC INSPECTION (RT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 3 MIL-STD-2035, PARAGRAPH 5	S9074-AR-GIB-010/278, PARAGRAPH 14 T9074-AS-GIB-010/271, PARAGRAPH 3 MIL-STD-2035, PARAGRAPH 5	S9074-AR-GIB-010/278, PARAGRAPH 13	S9074-AR-GIB-010/278, PARAGRAPH 16 T9074-AS-GIB-010/271, PARAGRAPH 3 MIL-STD-2035, PARAGRAPH 5	NOT APPLICABLE

TABLE 1
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LINE	COLUMN	F	G	H	I	J
	SITUATION EVOLUTION	MACHINERY CLASS M	TURBINE PARTS	CASTINGS	FORCED DRAFT BLOWERS	REDUCTION AND STEAM TURBINE DRIVEN AUXILIARY GEARS
12	ULTRASONIC INSPECTION (UT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 6 MIL-STD-2035, PARAGRAPH 8	S9074-AR-GIB-010/278, PARAGRAPH 14	S9074-AR-GIB-010/278, PARAGRAPH 13	S9074-AR-GIB-010/278, PARAGRAPH 16	S9074-AR-GIB-010/278, PARAGRAPH 15
13	LIQUID PENETRANT INSPECTION (PT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7	S9074-AR-GIB-010/278, PARAGRAPH 14 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7	S9074-AR-GIB-010/278, PARAGRAPH 13 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7	S9074-AR-GIB-010/278, PARAGRAPH 16 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7	S9074-AR-GIB-010/278, PARAGRAPH 15 T9074-AS-GIB-010/271, PARAGRAPH 5 MIL-STD-2035, PARAGRAPH 7

TABLE 1
WELDING, FABRICATION, AND INSPECTION OF PIPING, PRESSURE VESSELS, PROPELLERS, AND MACHINERY

	COLUMN	F	G	H	I	J
LINE	SITUATION EVOLUTION	MACHINERY CLASS M	TURBINE PARTS	CASTINGS	FORCED DRAFT BLOWERS	REDUCTION AND STEAM TURBINE DRIVEN AUXILIARY GEARS
14	MAGNETIC PARTICLE INSPECTION (MT)	S9074-AR-GIB-010/278, PARAGRAPH 10 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6	S9074-AR-GIB-010/278, PARAGRAPH 14 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6	S9074-AR-GIB-010/278, PARAGRAPH 13 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6	S9074-AR-GIB-010/278, PARAGRAPH 16 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6	S9074-AR-GIB-010/278, PARAGRAPH 15 T9074-AS-GIB-010/271, PARAGRAPH 4 MIL-STD-2035, PARAGRAPH 6

TABLE 2
WELDING, FABRICATION, AND INSPECTION OF SURFACE SHIP HULLS (COMBATANT)

LINE	COLUMN	A	B	C	D	E	F
	MATERIAL EVOLUTION	CARBON STEEL (MS), ORDINARY STRENGTH STEEL(OS), AND HIGHER STRENGTH STEEL (HSS)	* (HY-80/100, HSLA-80 AND STS)	ALUMINUM ALLOY	CHROMIUM NICKEL STEEL (STAINLESS)	COPPER AND/OR NICKEL BASE ALLOYS	SILICONE BRONZE ALUMINUM BRONZE
1	WELDER QUALIFICATION	S9074-AQ-GIB-010/248, PARAGRAPH 5					
2	WELDING PROCEDURE	S9074-AQ-GIB-010/248, PARAGRAPH 4					
3	ELECTRODE	MIL-STD-1689, PARAGRAPH 10 TABLE X	MIL-STD-1689, PARAGRAPH 10 TABLE XI	MIL-STD-1689, PARAGRAPH 10 TABLE XVI	MI-STD-1689, PARAGRAPH 10 TABLES XII AND XIII	MIL-STD-1689, PARAGRAPH 10 TABLES XIV AND XV	S9074-AR-GIB-010/278, TABLE II
4	JOINT DESIGN	MIL-STD-22 MIL-STD-1689, PARAGRAPH 11					
5	WELDING REQUIREMENTS	MIL-STD-1689, PARAGRAPH 13					
6	WORKMANSHIP REQUIREMENTS	MIL-STD-1689, PARAGRAPHS 12 AND 14					
7	VISUAL	MIL-STD-1689, PARAGRAPHS 6, 7, AND 8 MIL-STD-2035, PARAGRAPH 4 T9074-AS-GIB-010/271, PARAGRAPH 8					

**** PARAGRAPH 3.8 Applies***

TABLE 2
WELDING, FABRICATION, AND INSPECTION OF SURFACE SHIP HULLS (COMBATANT)

LINE	COLUMN MATERIAL EVOLUTION	A CARBON STEEL (MS), ORDINARY STRENGTH STEEL(OS), AND HIGHER STRENGTH STEEL (HSS)	B * (HY-80/100, HSLA-80 AND STS)	C ALUMINUM ALLOY	D CHROMIUM NICKEL STEEL (STAINLESS)	E COPPER AND/OR NICKEL BASE ALLOYS	F SILICONE BRONZE ALUMINUM BRONZE
8	RADIOGRAPHIC INSPECTION (RT)	MIL-STD-1689, PARAGRAPHS 6, 7, AND 8 MIL-STD-2035, PARAGRAPH 5 T9074-AS-GIB-010/271, PARAGRAPH 3					
9	ULTRASONIC INSPECTION (UT)	MIL-STD-1689, PARAGRAPHS 6, 7, AND 8 MIL-STD-2035, PARAGRAPH 8 T9074-AS-GIB-010/271, PARAGRAPH 6					
10	LIQUID PENETRANT INSPECTION (PT)	MIL-STD-1689, PARAGRAPHS 6, 7, AND 8 MIL-STD-2035, PARAGRAPH 7 T9074-AS-GIB-010/271, PARAGRAPH 5					
11	MAGNETIC PARTICLE INSPECTION (MT)	MIL-STD-1689, PARAGRAPH 6 MIL-STD-2035, PARAGRAPH 6 T9074-AS-GIB-010/271, PARAGRAPH 4	NOT APPLICABLE				

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**** PARAGRAPH 3.8 Applies***

TABLE 3
WELDING, FABRICATION, AND INSPECTION OF SURFACE SHIP HULLS (NON-COMBATANT) * **

LINE	COLUMN	A	B	C	D	E	F
	MATERIAL EVOLUTION	CARBON STEEL (MS), ORDINARY STRENGTH STEEL(OS), AND HIGHER STRENGTH STEEL (HSS)	*** (HY-80/100)	ALUMINUM ALLOY	CHROMIUM NICKEL STEEL (STAINLESS)	COPPER AND/OR NICKEL BASE ALLOYS	SILICONE BRONZE ALUMINUM BRONZE
1	WELDER QUALIFICATION	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
2	WELDING PROCEDURE	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
3	ELECTRODE	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
4	JOINT DESIGN	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
5	WELDING REQUIREMENTS	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
6	WORKMANSHIP REQUIREMENTS	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
7	VISUAL	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
8	RADIOGRAPHIC INSPECTION (RT)	ABS RULES, PART 2, CHAPTER 4, SECTION 1					

TABLE 3
WELDING, FABRICATION, AND INSPECTION OF SURFACE SHIP HULLS (NON-COMBATANT) * **

LINE	COLUMN	A	B	C	D	E	F
	MATERIAL EVOLUTION	CARBON STEEL (MS), ORDINARY STRENGTH STEEL(OS), AND HIGHER STRENGTH STEEL (HSS)	*** (HY-80/100)	ALUMINUM ALLOY	CHROMIUM NICKEL STEEL (STAINLESS)	COPPER AND/OR NICKEL BASE ALLOYS	SILICONE BRONZE ALUMINUM BRONZE
9	ULTRASONIC INSPECTION (UT)	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
10	LIQUID PENETRANT INSPECTION (PT)	ABS RULES, PART 2, CHAPTER 4, SECTION 1					
11	MAGNETIC PARTICLE INSPECTION (MT)	ABS RULES, PART 2, CHAPTER 4, SECTION 1		NOT APPLICABLE			

* - IDENTIFICATION OF "SURVEYOR" IN ABS RULES SIGNIFIES SUPERVISOR OF SHIPBUILDING (SUPERVISOR) ACTION. THE SUPERVISOR MAY USE MIL-STD-1689 FOR GUIDANCE WHERE ADDITIONAL DIRECTION IS NECESSARY. SUCH GUIDANCE MAY BE USED TO: ESTABLISH NDT REQUIREMENTS, ESTABLISH

WELDING/NDT PROCEDURE AND PERSONNEL QUALIFICATION REQUIREMENTS, OR TO DEFINE OTHER ATTRIBUTES LISTED IN THE "MATERIAL EVOLUTION" LINE OF TABLE 3.

** - THE SUPERVISOR MAY ALSO ALLOW THE SHIPBUILDER TO CHOOSE FROM THE FOLLOWING OPTIONS, PROVIDING:

- THE SHIPBUILDER'S UTILIZATION OF THE FOLLOWING OPTIONS MUST RESULT IN NO ADDITIONAL COST TO THE GOVERNMENT.
- THE SHIPBUILDER MUST UTILIZE THE FABRICATION DOCUMENT SELECTED FOR THE ENTIRE AVAILABILITY AND MUST NOT SWITCH BACK AND FORTH BETWEEN DOCUMENTS.
- THE SHIPBUILDER MUST NOTIFY THE SUPERVISOR OF WHICH FABRICATION DOCUMENT HAS BEEN SELECTED.

OPTIONS:

A) MIL-STD-1689 MAY BE UTILIZED BY THE SHIPBUILDER AT THE SHIPBUILDER'S DISCRETION. THE REQUIREMENTS OF TABLE 2 ABOVE WOULD THEN APPLY.

B) FOR DETERMINATION OF NDT METHOD(S) AND EXTENT OF NDT INSPECTION WHEN REPAIRS ARE TO BE ACCOMPLISHED, THE SHIPBUILDER MAY REQUEST TO UTILIZE THE SAME NDT REQUIREMENTS THAT WERE INVOKED IN CONSTRUCTION OF THE VESSEL. IN SUCH CASES, THE SHIPBUILDER MUST BE RESPONSIBLE TO DETERMINE THE ORIGINAL NDT REQUIREMENTS AND SUBMIT EVIDENCE SUCH AS DRAWINGS OR SPECIFICATIONS WHICH DETAIL THE REQUIREMENTS TO THE SUPERVISOR ALONG WITH A REQUEST FOR APPROVAL.

C) THE SHIPBUILDER MAY REQUEST TO UTILIZE PRE-ESTABLISHED WELDING AND/OR NDT PROCEDURES AND PERSONNEL QUALIFICATION PROGRAM(S) WHICH HAVE BEEN PREVIOUSLY UTILIZED IN THE PERFORMANCE OF SIMILAR ABS-ACCEPTED WORK. IN SUCH CASES, THE SHIPBUILDER MUST SUBMIT EVIDENCE OF SUCH ABS ACCEPTABILITY TO THE SUPERVISOR ALONG WITH DESCRIPTIVE DETAILS AND SUPPORTING DOCUMENTATION FOR THE PROPOSED PROGRAM(S). SUCH DOCUMENTATION MUST INCLUDE THE WELDING/NDT PROCEDURES AND METHODS OF WELDING/NDT PERSONNEL QUALIFICATION THAT WERE UTILIZED IN FORMER ABS-ACCEPTED WORK. THE SHIPBUILDER MUST ALSO SUBMIT OTHER SUPPORTING EVIDENCE THAT MAY BE REQUESTED BY THE SUPERVISOR TO

ESTABLISH THAT THE PROPOSED PROGRAMS HAVE BEEN PREVIOUSLY UTILIZED FOR SIMILAR ABS-ACCEPTED WORK.

*** - PARAGRAPH 3.8 APPLIES.

TABLE 4
WELDING, FABRICATION, AND INSPECTION OF
METAL BOAT AND CRAFT HULLS* ****

LINE	COLUMN	A	B	C	D	E	F
	MATERIAL EVOLUTION	CARBON STEEL (MS)	** (HY-80/100)	ALUMINUM ALLOY	CHROMIUM NICKEL STEEL (STAINLESS)	COPPER AND/OR NICKEL BASE	SILICON E BRONZE ALUMIN
1	WELDER QUALIFICATION	S9074-AQ-GIB-010/248, SECTION 5		TO300-AU-SPN-010. SECTION 3.3	S9074-AQ-GIB-010/248, SECTION 5		
2	WELDING PROCEDURE QUALIFICATION	S9074-AQ-GIB-010/248, SECTION 4		TO300-AU-SPN-010. SECTION 3.2	S9074-AQ-GIB-010/248, SECTION 4		
3	ELECTRODE/FILLER MATERIAL	0900-060-4010, SECTION 10, TABLE 10-1	0900-060-4010, SECTION 10, TABLES 10-2 AND 10-3	TO300-AU-SPN-010, TABLES I AND II***	0900-060-4010, SECTION 10, TABLE 10-4	0900-060-4010 SECTION 10, TABLES 10-5 AND 10-6	S9074-AR-GIB-010/278, TABLE II
4	JOINT DESIGN	MIL-STD-22 0900-060-4010, SECTION 11		TO300-AU-SPN-010, SECTION 8 AND APPENDIX A AND APPENDIX B	MIL-STD-22 0900-060-4010, SECTION 11		
5	WELDING REQUIREMENTS	0900-060-4010, SECTION 13		TO300-AU-SPN-010, SECTION 10	0900-060-4010, SECTION 13		
6	WORKMANSHIP REQUIREMENTS	0900-060-4010, SECTIONS 12 AND 14		TO300-AU-SPN-010, SECTION 11	0900-060-4010, SECTIONS 12 AND 14		
7	VISUAL	0900-060-4010, SECTIONS 6, 7, AND 8 T9074-AS-GIB-010/271, SECTION 8		TO300-AU-SPN-010, SECTIONS 3.5.2.1, 5.4.1, 6.2, AND 7.2	0900-060-4010, SECTIONS 6, 7, AND 8 T9074-AS-GIB-010/271, SECTION 8		
8	RADIOGRAPHIC INSPECTION (RT)	0900-060-4010, SECTION 6, TABLE 6-1 AND SECTIONS 7 AND 8 T9074-AS-GIB-010/271, SECTION 3		TO300-AU-SPN-010, SECTIONS 3.5.2.4, 5.4.3, 6.4, AND 7.4	0900-060-4010, SECTION 6, TABLE 6-1 AND SECTIONS 7 AND 8 T9074-AS-GIB-010/271, SECTION 3		

9	ULTRASONIC INSPECTION (UT)	T9074-AS-GIB-010/271, SECTION 6 T9074-AS-GIB-010/271, SECTION 6		
10	LIQUID PENETRANT INSPECTION (PT)	0900-060-4010, SECTIONS 6, 7, AND 8 T9074-AS-GIB-010/271, SECTION 5	TO300-AU-SPN-010 SECTIONS 3.5.2.2, 5.5.3.4, 6.3, AND 7.3	0900-060-4010, SECTIONS 6, 7, AND 8 T9074-AS-GIB-010/271, SECTION 5
11	MAGNETIC PARTICLE INSPECTION (MT)	0900-060-4010, SECTION 6 T9074-AS-GIB-010/271, SECTION 4	NOT APPLICABLE	

*- STRUCTURAL FABRICATION AND NON DESTRUCTIVE TESTING REQUIREMENTS FOR PATROL COASTAL (PC) CRAFT (PC-2 THRU PC-14) ARE ADDRESSED IN A SEPARATE TECHNICAL REPAIR STANDARD INVOKED IN STATEMENTS OF WORK (SOW) FOR PC REPAIRS AND MODIFICATIONS.

** PARAGRAPG 3.8 APPLIES.

***- SOME CRAFT ARE ORIGINALLY PROCURED WITH 6061 PLATING AND STRUCTURAL MEMBERS IN THE WELDED CONDITION. MODIFICATIONS TO SUBJECT CRAFT INVOLVE WELDING 5000 SERIES TO 6000 SERIES ALUMINUM AND ARE NOT ADDRESSED IN THE REFERENCED DOCUMENTS IN THIS STANDARD ITEM.

******** ***THE SUPERVISOR MAY ALSO ALLOW THE CONTRACTOR TO CHOOSE FROM THE FOLLOWING OPTIONS, PROVIDING; UTILIZATION OF THE FOLLOWING OPTIONS MUST RESULT IN NO ADDITIONAL COST TO THE GOVERNMENT, THE CONTRACTOR SHALL SELECT THE WELDING STANDARD SELECTED FOR THE ENTIRE AVAILABILITY AND MUST NOT SWITCH BACK AND FORTH BETWEEN DOCUMENTS. THE CONTRACTOR MUST NOTIFY THE SUPERVISOR OF WHICH WELDING STANDARD HAS BEEN SELECTED.***

OPTION A) MIL-STD-1689 MAY BE UTILIZED AT THE CONTRACTORS DISCRETION. THE REQUIREMENTS OF TABLE 2 ABOVE WOULD THEN APPLY.

OPTION B) THE CONTRACTOR MAY REQUEST TO UTILIZE THE SAME WELDING & NDT REQUIREMENTS THAT WERE INVOKED IN CONSTRUCTION OF THE VESSEL. IN SUCH CASES, THE CONTRACTOR MUST BE RESPONSIBLE TO DETERMINE THE ORIGINAL NDT REQUIREMENTS AND SUBMIT EVIDENCE SUCH AS DRAWINGS OR SPECIFICATIONS WHICH DETAIL THE NEW REQUIREMENTS TO THE SUPERVISOR ALONG WITH A REQUEST FOR APPROVAL.

OPTION C) THE CONTRACTOR MAY REQUEST TO UTILIZE PRE-ESTABLISHED (I.E. ABS, AWS, ASME, ETC.) WELDING AND/OR NDT PROCEDURES AND PERSONNEL QUALIFICATION PROGRAM(S) WHICH HAVE BEEN PREVIOUSLY UTILIZED IN THE PERFORMANCE OF SIMILAR GOV-ACCEPTED WORK. IN SUCH CASES, THE CONTRACTOR MUST SUBMIT EVIDENCE OF SUCH GOV ACCEPTABILITY TO THE SUPERVISOR ALONG WITH DESCRIPTIVE DETAILS AND SUPPORTING DOCUMENTATION FOR THE PROPOSED PROGRAM(S). SUCH DOCUMENTATION MUST INCLUDE THE WELDING/NDT PROCEDURES AND METHODS OF WELDING/NDT PERSONNEL QUALIFICATION THAT WERE UTILIZED IN FORMER ACCEPTED WORK. THE CONTRACTOR MUST ALSO SUBMIT OTHER SUPPORTING EVIDENCE THAT

MAY BE REQUESTED BY THE SUPERVISOR TO ESTABLISH THAT THE PROPOSED PROGRAMS HAVE BEEN PREVIOUSLY UTILIZED FOR SIMILAR ACCEPTED WORK

ATTACHMENT A
COMBATANT SURFACE SHIPS

WARSHIPS		TABLE
Aircraft Carriers:		
Aircraft Carrier	CV.	2
Aircraft Carrier (nuclear propulsion)	CVN.	2
Surface Combatants:		
Guided Missile Cruiser	CG.	2
Guided Missile Destroyer	DDG.	2
Guided Missile Frigate	FFG.	2
Littoral Combat Ship	LCS.	2
Patrol Combatants:		
Patrol Coastal	PC.	4
AMPHIBIOUS WARFARE SHIPS		
Amphibious Command Ship	LCC.	2
Amphibious Assault Ship (general purpose)	LHA.	2
Amphibious Cargo Ship	LKA.	2
Amphibious Transport Dock	LPD.	2
Dock Landing Ship	LSD.	2
Amphibious Assault Ship (general purpose)	LHD.	2
AUXILIARY SHIPS		
Oiler	AO.	2
Fast Combat Support Ship	AOE.	2
MINE WARFARE SHIPS		
Mine Countermeasures Ship	MCM.	2

NON-COMBATANT SURFACE SHIPS

AUXILIARY SHIPS		
Auxiliary Crane Ship	ACS	3
Missile Range Instrumentation Ship	AGM.	3
Oceanographic Research Ship	AGOR.	3
Ocean Surveillance Ship	AGOS.	3
Surveying Ship	AGS.	3
Hospital Ship	AH.	3
Cargo Ship	AK.	3
Auxiliary Cargo Barge/Lighter Ship	AKB.	3

ATTACHMENT A
(Con't)
NON-COMBATANT SURFACE SHIPS

TABLE

Auxiliary Cargo Float-On/Float-Off Ship	AKF.	3
Transport Oiler	AOT.	3
Barracks Craft	APL.	3
Cable Repairing Ship	ARC.	3
Salvage Ship	ARS.	3
Submarine Tender	AS.	3
Fleet Ocean Tug	ATF.	3
Aviation Logistic Support Ship	AVB.	3

SERVICE CRAFT TABLE

Small Auxiliary Floating Drydock (non-self-propelled)	AFDL	4
Barracks Craft (non-self-propelled)	APL	4
Medium Auxiliary Repair Drydock (non-self-propelled)	ARDM	4
Deep Submergence Rescue Vehicle (Self-Propelled)	DSRV	4
Deep Submergence Vehicle (Self-Propelled)	DSV	4
Fast Sea Frame (Self-Propelled)	FSF	4
Unclassified Miscellaneous	IX	4
Submersible Research Vehicle (Self-Propelled)	NR	4
Mobile Radar Platform (Self-Propelled)	SBX	4
Unclassified Miscellaneous Submarine (Self-Propelled)	SS	4
Open Lighter (non-self-propelled)	YC	4
Aircraft Transportation Lighter (non-self-propelled)	YCV	4
Floating Crane (non-self-propelled)	YD	4
Diving Tender (non-self-propelled)	YDT	4
Ferryboat or Launch (self-propelled)	YFB	4
Covered Lighter (non-self-propelled)	YFN	4
Large Covered Lighter (non-self-propelled)	YFNB	4
Drydock Companion Craft (non-self-propelled)	YFND	4
Lighter (Special Purpose) (non-self-propelled)	YFNX	4
Fuel Oil Barge (non-self-propelled)	YON	4
Oil Storage Barge (non-self-propelled)	YOS	4
Patrol Craft (self-propelled)	YP	4
Floating Workshop (non-self-propelled)	YR	4
Repair and Berthing Barge (non-self-propelled)	YRB	4
Repair, Berthing, and Messing Barge (non-self-propelled)	YRBM	4
Floating Drydock Workshop (Hull) (non-self-propelled)	YRDH	4
Floating Drydock Workshop (Machine) (non-self-propelled)	YRDM	4
Seaplane Wrecking Derrick (self-propelled)	YSD	4
Harbor Tug (self-propelled)	YT	4

Large Harbor Tug (self-propelled)	YTB	4
Small Harbor Tug (self-propelled)	YTL	4
Torpedo Trials Craft (self-propelled)	YTT	4
Water Barge (non-self-propelled)	YWN	4
Waste Oil Barge (non-self-propelled)	YWO	4

SEALIFT SUPPORT CRAFT TABLE

Causeway Ferry Power Module, INLS	CFPM	4
Combination/Docking Module, INLS	CM	4
Intermediate Module, INLS	IM	4
Ramp Module, INLS	RM	4
Light Warping Tug	LWT	4
Amphibious Warping Tug	WT	4
Side Loading Warping Tug	SLWT	4
Lighter, Amphibious Resupply, Cargo 5 Ton	LARC V	4
Offshore Petroleum Discharge System Utility Boat	OPDS UB	4
Maritime Prepositioning Force Utility Boat	MPFUB	4

COMBATANT CRAFT TABLE

Landing Craft, Air Cushion	LCAC	4
Landing Craft, Mechanized	LCM	4
Landing Craft, Personnel, Large	LCPL	4
Landing Craft, Utility	LCU	2
Combatant Craft Assault	CCA	4
Combatant Craft Heavy	CCH	4
Combatant Craft Medium	CCM	4
Special Operations Craft-Riverine	SOC-R	4
Surface Support Craft	SSC	4
Seal Delivery Vehicle	SDV	4
Shallow Water Combat Submersible	SWCS	4
Patrol Boat	PB	4
Riverine Assault Boat	RAB	4
Riverine Command Boat	RCB	4
Riverine Patrol Boat	RPB	4
Armored Troop Carrier	AT	4
Multi-Use EOD Response Craft	MERC	4

BOATS TABLE

Area Command Cutter	AC	4
Area Point Search	AP	4
Aircraft Rescue Boat	AR	4
Barrier Boat	BB	4

Boom Handling	BH	4
Boom Platform	BP	4
Boston Whaler	BW	4
Catamaran (Self-Propelled)	CA	4
Cabin Cruiser (Self-Propelled)	CC	4
Dive Support	DS	4
Dive Support Boat	DSB	4
Dive Workboat	DW	4
Hydrographic Survey Launch	HL	4
Force Protection (Harbor Security)	HS	4
Life Boat (Self-Propelled)	LB	4
Support Craft (High-value)	MC	4
Non-Standard (Self-Propelled)	ML	4
Marine Mammal Boat	MM	4
Missile Retriever Boat	MR	4
Non-Standard Boat	NS	4
Oil Pollution Skimmer Boat	OP	4
Personnel Boat	PE	4
Personnel, Light	PL	4
Plane Personnel Rescue Boat	PR	4
Parasail Training Boat	PS	4
Rigid Inflatable Boat	RB	4
Non-Standard Rigid Inflatable Boat (RIB)	RX	4
Support Craft	SC	4
Sail Training Craft	ST	4
Ships Non-Standard Boat	SX	4
Tender Life Boat	TL	4
Torpedo Retriever Boat	TR	4
Torpedo Weapons Retriever	TWR	4
Utility Boat	UB	4
Unmanned Craft	UC	4
Work Boat	WB	4
Work Platform Boat	WP	4