DEPARTMENT OF THE NAVY
NAVAL SEA SYSTEMS COMMAND
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IN REPLY REFER TO
4920
Ser 391/0181
20 Jun 19

From: Commander, Naval Sea Systems Command (PMS391)
To: Distribution

Subj: MOTHER SHIP (MOSHIP) CRITERIA MANUAL FOR U.S. NAVY SUBMARINE RESCUE, REV E, RELEASE OF

Ref: (a) PMS394 ltr 9070 Ser 394R/0165 of 22 Apr 11

Encl: (1) Mother Ship (MOSHIP) Criteria Manual for U.S. Navy Submarine Rescue, Rev E

1. **Background**: This letter approves and promulgates the revised Mother Ship (MOSHIP) Criteria Manual for U.S. Navy Submarine Rescue, Rev E, provided as enclosure (1).

2. **Discussion**: This manual is intended to be used by the U.S. Navy's Submarine Rescue Operations/Maintenance Contractor (SROMC) for pre-qualification of MOSHIPs worldwide and for MOSHIP selection on an emergent basis during rescue operations. Additionally, this manual may be used by foreign navies to help identify existing local vessels or as a design specification for new ships to support Submarine Rescue Diving and Recompression System (SRDRS) operations.

3. **Cancellation**: This letter supersedes reference (a).

4. The requirements of this letter do not authorize any change in the terms, conditions, delivery schedule or price or amount of the subject contract or any other Government contract. In the event you consider that these requirements represent a change for which you are entitled to an equitable adjustment, you are to comply with the requirements of the changes clause of the contract.

5. The point-of-contact for Global Rescue is Mr. Judd Southworth at george.southworth1@navy.mil or (202) 781-3021.

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Mother Ship (MOSHIP) Criteria Manual for U. S. Navy Submarine Rescue

REV E

THIS DOCUMENT SUPERSEDES SUBMARINE RESCUE DIVING AND RECOMPRESSION SYSTEM VESSEL OF OPPORTUNITY SPECIFICATION Revision D dated 27 April 2007

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List of Effective Pages

Dates of issue for original and changed pages are:

Original January 24, 2007

Revision E; June, 2019 Renamed, revised and reissued in its entirety.

Revision Table

REVISION	DATE	DESCRIPTION
-	01/24/2007	Internal release for comment.
A	02/09/2007	Initial release.
B	05/24/2007	Revised release.
C	10/20/2008	Revised release to clarify mandatory and desired requirements, and to add Barge requirements as Vessels of Opportunity.
D	04/27/2011	Incorporate AUWS/SRCFS MOSHIP Specification into document. Re-review of mandatory requirements. Incorporate new LARS Base requirements and deck flatness clarification.
E	06/2019	Renamed, revised and reissued in its entirety to match other international submarine rescue instruction formats. Update and correct deck loading specifications. Add a requirement for portable /tire crane loading for SRC when the vessel lacks a capable installed crane. Incorporated international rescue assets. Replaced ADS with ROV.

References

The latest revision of the following references, along with this document, form the complete SRDRS MOSHIP specification. The reference revisions cited below indicate the source of technical data herein.

(a) NAVSEA Drawing 7411191K, ICD, SRS to MOSHIP Deck Layout

(b) NAVSEA Drawing 594-7329708-, AUWS and Submarine Rescue Chamber VOO Deck Layout

(c) Submarine Rescue System Mission Scenarios, Operating Checklists & System Overviews 0A Procedures Manual, 0A-SRS-OVERVIEW&CL-PM-2-15

(d) NATO STANAG 4194, Edition 2, Standardized Wave and Wind Environments and Shipboard Reporting of Sea Conditions, AC/141(IEG/6) SG/5-D22, 31 Jan 1994

(e) Undersea Rescue Command INST 3120.26 Rev C, 20 Jul 2018

(f) NSRS MOSHIP Submarine Rescue Handbook, RRMP 32365 Issue 3, May 2012

(g) The Minimum NSRS Rescue MOSHIP Capabilities, Allied Nation Supplied Document

(h) Rolls-Royce PLC Raynesway Derby Drawing SUB3007421-, NSRS Generic Deck Plan

(i) Rolls-Royce PLC Raynesway Derby Drawing SUB3007419-, NATO Submarine Rescue System MOSHIP Deck Attachments

(j) Pressurized Rescue Module Navigation and Positioning System 2A1A18 Operating Manual, 2A1A18-NAV-OM-5-0

(k) Pressurized Rescue Module Auxiliary Systems 2A1A16 Operating Manual, 2A1A16-AUX-OM-5-3

(l) Pressurized Rescue Module Communications System 2A1A8 Operating Manual, 2A1A8-COMMS-OM-5-0

(m) Control Van Sonar System 2A5A8 Operating Manual, 2A5A8-SONAR-OM-6-0

(n) Pressurized Rescue Module System Transfer Skirt 2A10 Operating Manual, 2A10-TS-OM-4-1

(o) NAVSEA Technical Manual TM304394 Rev B, Submarine Rescue System Generator Van Technical Manual Volume III, 15 Jun 2016

(p) NAVSEA Drawing 7531232C, VOO Monitoring Station System Assembly (2A13A16A2)

(q) Pressurized Rescue Module System- Mission Support Equipment- Auxiliary Equipment Hydrophone Pole Assembly 2A13A16A1 Operating Manual, 2A13A16A1-HPA-OM-3-1

(r) Pressurized Rescue Module System – Ship Interface Template Set Operating Manual, 2A8-SITS-OM-2-0

(s) NAVSEA Document TM305130 Rev C, Structural Analysis for the SRS-LARS Base Load Spreading Engineering Change (LSEC)

(t) NAVSEA Drawing 7411789A, ICD, LARS to VOO Mounting Arrangement (Mechanical Envelope)

(u) NAVSEA Drawing 7412876B, LARS SITS LS Design General Arrangement

(v) NAVSEA Drawing 7411192C, ICD, SRS To VOO Structural Interface Draft

(w) NAVSEA Drawing 7412957-, VOO Minimum Ship Transversely Framed

(x) Ocean Works International Corp, Longitudinally Framed Minimum Ship Finite Element Analysis LARS Template Option 2, Rev C, File No. 06009.01, 26 Jan 2007

(y) NAVSEA Technical Manual TM304451 Rev A, Installation and Alignment Plan for the SRS-RCS Ship Interface Template Set (SITS), 20 Dec 2006

(z) NAVSEA Technical Manual TM305475 Rev -, Installation, Alignment and Accessibility Analysis for the SRS-TUP Submarine Decompression System (SDS) Ship Interface Template Set (SITS)/Modified Transfer Lock (MTL) Bases

(aa) NAVSEA Drawing 594-6394247C, Light Weight Mooring System

(bb) Deep Submergence Unit INST 3120.5E Light Weight Mooring System, 14 Apr 2008

(cc) NAVSEA Drawing 594-6395538-, Submarine Rescue Capsule Light Weight Mooring System 10 HP Capstan Assembly

(dd) Technical Manual for Modernized 850 Foot Submarine Rescue Chamber Operation and Maintenance, SS750-AA-MMA-010/850FT Rev 2

(ee) Scope of Certification Notebook for Submarine Rescue Chamber Fly-Away System, SS750-AB-SCB-010-SRC Rev 1 ACN 1-10

(ff) Schoellhorn-Albrecht Machine Co., Inc. Capstan Manual Model SA2424-40-20E, 20 Sep 2013

(gg) NAVSEA Drawing 594-7329809 Rev -, Submarine Rescue Chamber Back Haul Capstan

(hh) Multiquip Specification for DCA220SSJU4F2 MQ POWER Whisperwatt Series – Rev 0, 11 May 2018

(ii) Submarine Rescue Chamber Fly-Away System Light Tower Generator Set Operator's Manual, SS750-AC-OPI-010-SRC of Aug 1998

(jj) NAVSEA Drawing 594-6395525D, Submarine Rescue Chamber at Sea Tie Down Lashing

(kk) Submarine Rescue Chamber Cable Reel Description, Operation, and Maintenance Technical Manual, S9594-AF-MMA-010, 30 Jan 1986

(ll) Phoenix International Holdings Inc. document, Sibitzky ROV System Primer, 2017

(mm) Okeanus Science and Technology, LLC document, Skid Mounted LARS Reference Guide – Interface, Handling, and Maximum Capability Document, Model LRS-SMA-33-36L-25S Rev 02, 12 Dec 2017

(nn) Functional Requirements Document for Submarine Rescue Diving & Recompression System Remotely Operated Vehicle Intervention System, 11 Mar 2013

(oo) NAVSEA Drawing 594-7329762A, Side Look Sonar Winch Mounting Details

(pp) Willard Marine Inc. Drawing 7mRB-2892F, 7m RIB MK 3 Outboard Profile and Arrangement

Acronyms

ABS	American Bureau of Shipping
AUWS	Assessment/Underwater Work System
CHT	Collection, Holding and Transfer System
CO	Commanding Officer
COI	Certificate of Inspection
CV	Control Van
DC	Deck Cradle
DFS	Departure from Specification
DP	Dynamic Positioning
DPS	Dynamic Positioning System
HP	Horse Power
IACS	International Association of Classification Societies
ICD	Interface Control Drawing
IMO	International Maritime Organization
ISO	International Organization for Standardization
LARS	Launch and Recovery System
LCD	Liquid Crystal Display
LWMS	Light Weight Mooring System
MOBARGE	Mother Barge of Opportunity as MOSHIP
MOSHIP	Mother Ship
NAVSEA	Naval Sea Systems Command
NSRS	NATO Submarine Rescue System
NVIC	Navigation and Vessel Inspection Circulars
PDU	Power Distribution Unit
PLARS	Portable Launch and Recovery System
PMS	Program Manager Sea
PNTCS	Portable Navigation, Tracking and Communication Systems
PRM	Pressurized Rescue Module
PRMS	Pressurized Rescue Module System
REV	Revision
RHIB	Rigid Hull Inflatable Boat
RFI	Request For Information
ROV	Remotely Operated Vehicle
RWC	Radius Watch Circle
SILOS	Side Looking Sonar
SITS	Ship Interface Template Sets
SOLAS	Safety of Life at Sea
SRCFS	Submarine Rescue Chamber Flyaway System
SRDRS	Submarine Rescue Diving and Recompression System
SRS	Submarine Rescue System
SRS-RCS	Submarine Rescue System – Rescue Capable System
SRS-TUP	Submarine Rescue System – Transfer Under Pressure
SRV	Submarine Rescue Vehicle

SWL	Safe Working Load
TTFR	Time To First Rescue
TUP	Transfer Under Pressure
URC	Undersea Rescue Command
USCG	United States Coast Guard

Syntax Definitions

This specification uses specific syntax to differentiate between permissive, advisory, and mandatory statements. The concept of word usage and intended meaning that shall be adhered to in interpreting the meaning of this specification are as follows:

"***Required***" is used when the application of a requirement is mandatory

"***Shall***" is used when the application of a requirement is mandatory.

"***Should***" is used when the application of a requirement is strongly recommended.

"***May***" and "***need not***" are used when a statement is discretionary.

"***Will***" is used only to indicate future intention; it does not indicate to any degree a mandatory requirement.

Section 1

1 Introduction and Overview

1.1 Purpose of MOSHIP Specification

1.1.1 The purpose of the Mother Ship (MOSHIP) / Mother Barge (MOBARGE) Survey is to document compliance with Submarine Rescue MOSHIP specification attributes, record key MOSHIP characteristics, and to provide the data to develop a mobilization plan as a rescue or intervention MOSHIP. While the ship configuration may change later, an important aspect is to develop an estimated timeline to remove equipment (if required) to support Assessment Underwater Work System (AUWS) or Submarine Rescue System (SRS) installation. Results of the survey shall be documented with a cover page from the surveyor or surveying agency, a filled out MOSHIP/MOBARGE checklist in accordance with (IAW) all appendices of this specification, any complimenting drawings, data, information, Objective Quality Evidence (OQE), or photographs. The completed package shall be provided to Naval Sea Systems Command Submarine Escape and Rescue Program Office (PMS391) and for entry into United States Navy MOSHIP/MOBARGE database.

Naval Sea Systems Command
Submarine Escape and Rescue Program Office (PMS391)
1339 Isaac HULL Ave SE,
Washington Navy Yard, DC 20376-7019

1.2 Survey Description and Actions

1.2.1 Identified MOSHIPs that have the potential to meet the submarine rescue and intervention specifications shall be evaluated by the surveyor or surveying agency. Recommendations for further survey or on-site evaluation will be presented to the Fleet. The surveyor or surveying agency may use e-mail or other appropriate communication methods to identify potential MOSHIPs for more urgent evaluation or for on-site evaluation. A pre-screening questionnaire shall be provided to the vessel owner and should be answered before conducting a survey. The surveyor or surveying agency shall ensure that the minimum MOSHIP requirements (deck strength, cargo deck area) are included in this questionnaire. No more than one site visit should be performed. Any points of contention should be adjudicated during the on-site survey, if possible.

1.3 Rescue and Intervention Systems Descriptions

1.3.1 This document provides the requirements specification for the United States Navy Submarine Rescue Diving and Recompression System (SRDRS). SRDRS is comprised of the AUWS and the SRS. Additionally, this document covers the requirements for installing the Submarine Rescue Chamber Flyaway System (SRCFS), which is used for shallow submarine rescue. It presents features that a vessel, including barges, should provide in order to be considered a suitable MOSHIP/MOBARGE to support and operate the as specified components. This document also supports certain allied submarine rescue systems as designated by the U.S. Navy. References and specifications pertaining to allied submarine rescue systems (i.e. NSRS) are not under U.S. Navy configuration control and should be validated current and accurate prior to final MOSHIP evaluation.

1.3.2 The SRS portion of SRDRS can be deployed in two configurations: The Rescue Capable System (SRS-RCS) and the Transfer Under Pressure system (SRS-TUP). SRS-RCS provides a rescue capability without transfer under pressure. SRS-TUP adds the transfer under pressure elements and provides a rescue capability from disabled submarines with an internal pressure up to 5 atmospheres. The Pressurized Rescue Module (PRM) is a tethered, manned, remotely operated vehicle utilized in both SRDRS configurations to shuttle personnel from disabled submarines with a maximum depth of 2000 feet (610 m) of sea water.

1.3.3 There are two SRS Launch and Recovery System (LARS) Base configurations. The Rev 0 configuration comprises two LARS Ship Interface Template Sets (SITS) that are attached to the deck via forward and aft brackets. This configuration requires ship structures to support the fore and aft point loads imparted by the rescue system LARS. Reference (r).

1.3.4 The Rev 1 LARS base configuration comprises an integrated LARS base that spreads the load out to accommodate ships with International Association of Classification Societies (IACS) classed deck strength of 1025 lbs/ft^2 (5 tonnes/ m^2) or greater. References (s) and (v).

1.3.5 The SRCFS is a rescue chamber capable of operations to 850 ft (259 m) seawater. A shipboard crane that has been classed by a maritime classification society is preferred. If the vessel does not have a shipboard crane capable of lifting the SRC a validation to verify adequate deck area, deck loading and deck strength shall be performed to verify the ship's capacity to load a portable/tire crane capable of launching the SRC.

1.3.6 The AUWS portion of SRDRS consists of the Remotely Operated Vehicle (ROV), its LARS, towed Side Looking Sonar (SILOS), AUWS mission support equipment, and the Light Weight Mooring System (LWMS). The ROV is rated for 2000 ft (610 m) seawater. The ROV is only capable of operations with its LARS. References (b), (c), and (nn).

1.3.7 The NATO Submarine Rescue System (NSRS) is a multi-national project to develop an international submarine rescue system. The system provides a rescue capability primarily to the partner nations of France, Norway and the UK but also to NATO and allied nations. The Submarine Rescue Vehicle (SRV) is a manned submersible that is 29.5 ft (9 m) long, weighs 29.8 short tons (27 tonnes) and has an all-steel, single piece hull. The craft is operated by a three-man crew (a pilot, a co-pilot and a rescue chamber operator). It can operate at depths between 65.6 ft (20 m) and 2000 ft (610 m) of sea water and can mate with the rescue hatch and seal at angles of up to 60 degrees in any direction. Reference (f).

1.3.8 The NSRS Intervention System comprises the vehicle, the launch and recovery system and the control module. The vehicle is based on the Perry Slingsby Systems Triton SP ROV which is in widespread commercial use and is fitted with variable vectored thrusting. It is capable of operating in depths of 3280 ft (1000 m) and is very mobile and compact.

1.3.9 The NSRS Rescue System comprises a combined SRV, catcher and stabilization system and Portable Launch and Recovery System (PLARS) and is designed for operation in high sea states (up to sea state 6). It uses a constant tension winch system for maintaining hawser tension in all sea states. This configuration requires ship structures to support the loads imparted by the PLARS, see section 2.7.3.8. Reference (f).

1.3.10 The NSRS TUP system is fully autonomous and provides full decompression and medical support. It comprises a reception chamber, two decompression chambers and a central

control position. It has a TUP capability of 72 rescuees and 12 NSRS staff at 6 bar. Reference (f).

1.4 Sea State Requirements

1.4.1 For purposes of this document, Sea States are defined using Table D-1 of reference (d).

Section 2

2 Specifications for MOSHIPs

2.1 Classification Society Information

2.1.1 The vessel ***should*** be classed by an International Association of Classification Society (IACS) member. If not classed by an IACS member, a review of DPS, deck structure, and, trim and stability calculations (with rescue system on deck) by ABS or the owner classification society is required.

2.1.2 The vessel classification ***should*** be current at the time of mobilization and deployment.

2.1.3 Vessel special classifications (manned diving, drilling, towing) or exceptions ***should*** be identified.

NOTE:
If MOSHIP is a barge, these requirements apply in addition to the requirements stated in section 3, Specifications for MOBARGEs.

2.2 Dynamic Positioning System (DPS)

2.2.1 For SRDRS the DPS ***shall*** be at least an International Maritime Organization (IMO) Class 2 equivalent system. Reference (c).

2.2.2 The location of any moving DPS machinery (thrusters, propellers, etc.) ***shall*** not be within 15 ft (4.6 m) of an installed submarine rescue system or its umbilical. Reference (c).

2.2.3 The DPS ***shall*** have the performance capabilities to operate safely in the environmental conditions existing for Sea State 4 with an objective of Sea State 5 (Sea State 6 for NSRS). References (c) and (f).

2.2.4 The DPS ***shall*** have at least 3 different positioning reference systems, with at least one system operating on a different principle. Reference (c).

2.2.5 If the DPS position reference system is taut wire, LASER or a fixed reference point system adjudication shall be provided. Taut Wire shall not interfere with the vehicle operations or its tether/umbilical. LASER or a fixed reference point system must have and will only be usable when in the area of a fixed unit from which to work. Reference (c).

2.2.6 The DPS ***shall*** be able to perform controlled vessel movements while the PRM is submerged. Reference (c).

2.2.7 The DPS ***shall*** have or be able to incorporate a SRS DP alert system that can notify the Rescue Element Commander in the case of a change in the DP status. Reference (c).

2.2.8 The DPS positioning reference systems ***shall*** not interfere with SRS operations by operating in the same frequency bands of the equipment used. Reference (c).

SRS System	Frequency
Acoustic Positioning System. Reference (j).	22.5 kHz 21.5 kHz
Directional Listening Hydrophone. Reference (j).	3.5 kHz
Transponder / Responder Drop Beacons. Reference (k).	17 kHz 19 kHz 25 kHz 28 kHz
Underwater Telephone. Reference (l).	8.0875 kHz
Scanning Sonars (FWD/AFT) Reference (m).	330 kHz
Bottom Profiling Sonar. Reference (m).	675 kHz
Doppler Velocity Log. Reference (j).	1200 kHz
Skirt Altimeters. Reference (n).	500 kHz
Downward Looking Altimeter. Reference (j).	500 kHz

2.2.9 A waiver ***shall*** be submitted to NAVSEA PMS391 if a DPS Class of less than 2 is used or if a MOSHIP with a Class 2 rating has its system capabilities diminished from the requirements of this section. For instance, if the ship has taut wire, LASER or a fixed reference point system as part of its Class 2 rating and they cannot be used when the PRM is in operation, then the MOSHIP must remove those items as capabilities thus changing the scope of capabilities that gave them the Class 2 rating. For a MOSHIP vessel with DPS Class 2 rating, CO URC (Commanding Officer of Undersea Rescue Center) shall determine the acceptability of operating with the DPS if the MOSHIP does not meet any requirements from 2.2.4 through 2.2.8.

2.3 Mooring

2.3.1 The MOSHIP station keeping watch circle position above the disabled submarine ***shall*** be maintained within a radius proportional to a 500 ft (152.4 m) radius at a disabled submarine depth of 2000 ft (609.6 m). Reference (c),

Rwc = (500 x DD) / 2000
Where: Rwc = Radius Watch Circle
DD = Depth disabled submarine

2.3.2 If supporting AUWS the MOSHIP maximum watch circle ***shall*** be 400 ft. Reference (c).

2.3.3 If supporting the SRS-RCS or SRS-TUP and the vessel is not Dynamic Positioning DPS-2 capable, the vessel ***shall*** be capable of entering and maintaining a 4-point moor in depths up to 2000 ft (610 m). Reference (c).

2.3.4 If supporting the ROV and the vessel is not Dynamic Positioning DP-0 capable or greater, the vessel ***shall*** be capable of entering and maintaining a 4-point moor in depths up to 2000 ft (610 m). Reference (c).

2.3.5 If supporting the SRCFS and the vessel is not Dynamic Positioning DPS-2 capable, the vessel ***shall*** be capable of entering and maintaining a 4-point moor in depths up to 850 ft (260 m). Reference (dd).

2.3.6 If the vessel's inherent mooring system is not capable of supporting the above requirements, the vessel ***should*** be capable of taking on and deploying an external mooring system such as the U.S. Navy LWMS. References (aa) and (bb).

2.4 Operational Capabilities

NOTE:

For all operating scenarios (including the worst case scenarios), the MOSHIP with any submarine rescue or intervention system installed, ***shall*** comply with all intact and damage stability criteria required by the MOSHIP's Flag Administration and Classification Society's Rules. Prior to installation, the Navy ***shall*** provide a copy of the applicable SRS Weights and Centers of gravity tables to the Ship Master and Ship Engineer for review and calculations. Reference (a).

NOTE:

For all operating scenarios (including the worst case scenarios), the MOSHIP with any submarine rescue or intervention system installed, ***shall*** be able to conduct aft deck and launch and recovery operations in and up to the Sea States specified below. Reference (a).

2.4.1 The vessel ***should*** have an installed ballasting and trim system to allow the vessel to obtain required trim, list and drafts required for stability and operational requirements. Reference (a).

2.4.2 Maximum freeboard ***should*** be 10 ft (3.1 m). The MOSHIP may be ballasted to achieve this maximum freeboard, provided it does not violate USCG or Classification Society regulations regarding stability. For freeboards greater than 10 ft (3.1 m), see crash mat requirements in Section 2.7.5. Reference (a).

2.4.3 Vessel with SRS-RCS w/ LARS Base Rev 0 ***shall*** be able to conduct aft deck and launch and recovery **operations** with 166 short tons (150 tonnes) system installed in up to Sea State 4 with an objective of Sea State 5. References (a) and (c).

2.4.4 Vessel with SRS-RCS w/LARS Base Rev 0 ***shall*** maintain ship **survivability** with 166 short tons (150 tonnes) system in up to Sea State 6 with an objective of Sea State 7. References (a) and (c).

2.4.5 Vessel with SRS-RCS w/ LARS Base Rev 1 ***shall*** be able to conduct aft deck and launch and recovery **operations** with 165 short tons (150 tonnes) system installed in up to Sea State 4 with an objective of Sea State 5. References (a) and (c).

2.4.6 Vessel with SRS-RCS w/LARS Base Rev 1 ***shall*** maintain ship **survivability** with 165 short tons (150 tonnes) system (SRS-RCS) in up to Sea State 6 with an objective of Sea State 7. References (a) and (c).

2.4.7 Vessel with SRS-TUP w/ LARS Base Rev 1 ***shall*** be able to conduct aft deck launch and recovery **operations** with 253 short tons (230 tonnes) (expected weight of the configuration) system installed in up to Sea State 4 with an objective of Sea State 5. References (a) and (c).

2.4.8 Vessel with SRS-TUP w/ LARS Base Rev 1 ***shall*** maintain ship **survivability** with 253 short tons (230 tonnes) (expected weight of the configuration) system installed in up to Sea State 6 with an objective of Sea State 7. References (a) and (c).

2.4.9 Vessel with ROV LARS configuration ***shall*** be able to conduct launch and recovery operations with 30 short tons (27 tonnes) system installed in up to Sea State 4 with an objective of Sea State 5. References (ll), (mm), and (nn).

2.4.10 Vessel with SRCFS configuration ***shall*** be able to conduct aft deck launch and recovery **operations** with 60 short tons (54 tonnes) system installed in up to Sea State 3 with an objective of Sea State 4. References (dd) and (ee).

2.4.11 Vessel with SILOS configuration ***shall*** be able to conduct launch and recovery **operations** with 23 short tons (21 tonnes) installed in up to Sea State 4 with an objective of Sea State 5. Reference (b).

2.4.12 Vessel with NSRS RESCUE SYSTEM / TUP **w/** NSRS INTERVENTION SYSTEM configuration ***shall*** be able to conduct launch and recovery **operations** with 465 short tons (421 tonnes) installed in up to Sea State 6. Reference (f).

2.4.13 Vessel with NSRS RESCUE SYSTEM / TUP **w/o** NSRS INTERVENTION SYSTEM configuration ***shall*** be able to conduct launch and recovery **operations** with 382 short tons (347 tonnes) installed in up to Sea State 6. Reference (f).

2.4.14 Vessel with NSRS INTERVENTION SYSTEM configuration ***shall*** be able to conduct launch and recovery **operations** with 103 short tons (93 tonnes) installed in up to Sea State 6. Reference (f).

NOTE:
The NSRS INTERVENTION SYSTEM weight can be reduced to 87 short tons (80 tonnes) if the MOSHIP provides the required electrical power.

2.4.15 Vessel with LWMS configuration at 53 short tons (48.1 tonnes) installed ***shall*** be able to transit, conduct deployment **operations** and stabilize in the moor in up to Sea State 4 with an objective of Sea State 5. References (b), (aa), and (bb).

2.5 Electrical Power Requirements

2.5.1 For SRS, the vessel ***should*** provide 350 kW of 480 VAC, 3-phase, Delta, 60 Hz, 400 amps backup electric power per bus to the GV, in event of GV engine failure. Reference (o).

2.5.2 ROV **Main** power supply ***requires*** 3 phase 440-480 VAC (nominal), at 60 Hz and 200 amps. Reference (ll) and (mm).

2.5.3 ROV **Secondary** power supply ***requires*** 3-phase 440-480 VAC (nominal), at 60 Hz and 200 amps. Reference (ll) and (mm).

2.5.4 SRCFS ***requires*** separate electrical power supplies consisting of: 1. 110 - 125 VAC, 1-phase, 60 Hz, 15 amps (Control console, SRC). 2. 440 - 480 VAC, 3-phase, 60 Hz, 47 amps (SRC umbilical backhaul capstan). References (dd) and (ff).

2.5.5 SILOS ***requires*** separate electrical power supplies consisting of: 1. 440 – 480 VAC, 3-phase, 60 Hz, 120 amps. 2. 440 – 480 VAC, 3-phase, 60 Hz, 120 amps.

2.5.6 For NSRS RESCUE SYSTEM / TUP, the vessel ***should*** provide 440 VAC, 3-phase, 60 Hz, 920 amps backup electric power per bus in the event of Rescue Portable Generator System failure. Reference (f).

2.5.7 For the NSRS Battery Charging Module, the vessel ***should*** provide 440 VAC, 3-phase, 60 Hz, 90 amps. Reference (f) and (g).

2.5.8 NSRS Portable Navigation, Tracking and Communication System (PNTCS) Command Console ***requires*** 1 phase 230 VAC (nominal), at 60 Hz and 40 amps. Reference (f).

2.5.9 NSRS INTERVENTION SYSTEM the vessel ***should*** provide 3 phase 440 VAC (nominal), at 60 Hz and 400 amps in the event of Intervention Portable Generator System failure.

2.5.10 LWMS ***requires*** electrical power 440 – 480 VAC, 3-phase, 60 Hz, 72 amps. Reference (cc).

NOTE:
For ROV, SRCFS, SILOS and LWMS, portable generators are available as Main and/or Secondary Power Supplies from URC if MOSHIP is unable to provide. An additional 11.9 ft x 4.3 ft area (3.6 m x 1.3 m) will be required per unit. Reference (hh).

NOTE:
Two light tower generators sets are available for SRCFS and deck lighting or service power for the LWMS mooring capstans . An additional 9.8 ft x 3.5 ft area (3.0 m x 1.1 m) will be required per unit. References (b) and (ii).

2.6 Personnel Support and General Amenities

2.6.1 Vessel ***should*** provide sufficient life-saving equipment to meet local regulatory and Safety of Life At Sea (SOLAS) requirements for all embarked SRS personnel and rescuees SRS-RCS (31), SRS-TUP (91), ROV LARS (29), SRCFS (41), SILOS (17), LWMS (27), NSRS SRV TUP (90) or NSRS INTERVENTION SYSTEM (16). References (e) and (f).

2.6.2 If insufficient SOLAS equipment is on board, the MOSHIP ***shall*** provide sufficient storage for additional life-saving equipment provided by the SRS Operations and Maintenance Contractor for all embarked SRS personnel and rescuees. SRS-RCS (31), SRS-TUP (91), ROV LARS (29), SRCFS (41), SILOS (17), LWMS (27), NSRS SRV TUP (90) or NSRS INTERVENTION SYSTEM (16). References (e) and (f).

2.6.3 Vessel ***shall*** provide fire-fighting coverage of all SRDRS/NSRS elements on deck using the vessel's existing firefighting equipment, as well as a 2.5 in (63.5 mm) fire hose connection for the portable foam firefighting unit that is used if foam capability does not exist on board.

2.6.4 Vessel ***should*** have fire main connections and firefighting equipment in the area of the installed submarine rescue equipment that can be used to fight a fire on any SRS component.

2.6.5 Vessel ***shall*** be capable of 10 days unreplenished operation to support the following number of embarked personnel (#personnel): SRS-RCS (31), SRS-TUP (91), ROV LARS (29), SRCFS (41), SILOS (17), LWMS (27), NSRS SRV TUP (90) or NSRS INTERVENTION SYSTEM (16). References (e) and (f). This includes:

- Berthing
- Mess
- Potable Water
- Fresh Water
- Trash Removal
- Gray Water and Black Water storage treatment
- Fuel

2.6.6 Vessel ***should*** provide a small boat / Rigid Hull Inflatable Boat (RHIB) with a tow point and at least an 80 HP motor and associated launch and recovery equipment for use during emergency recovery of the PRM or ROV and to support with LWMS deployment. If not available see small boat requirements in section 2.7.2.13.

2.6.7 Vessel ***should*** provide sufficient space and power to accommodate the Remote MOSHIP Monitoring Control Station. This includes voice communications with SRS personnel on deck, and video monitoring of SRS cameras. MOSHIP Monitoring Station is contained in a 34.9 in X 27 in X 27.9 in (88.7 cm X 68.6 cm X 70.9 cm) hardcase. One of the 19 in (48.2 cm) Liquid Crystal Display LCD monitors extends outside the hardcase when the system is in use. Requires 110-120 VAC, 60 hz, 3 phase. Reference (p).

2.6.8 Vessel ***shall*** provide or ***shall*** have the capability to transfer fuel from a support vessel, the following quantities of cleaned and polished No. 2 Diesel fuel:

- 20,500 gallons (77,600 liters) for the SRS Generator Van (GV)/NSRS SRV.
- 500 gallons (1,893 liters) for the ROV generators, SRCFS Air Compressors, SILOS and the LWMS RHIB.

2.6.9 Vessel ***should*** provide approximately 2000 gallons (7571liters) of potable or non-potable freshwater to the fantail for wash down of PRM/ROV/SRCFS/NSRS and equipment, as well as for filling PRM ballast bags/SRC ballast cans.

2.6.10 Vessel ***should*** provide workshop-quality compressed air at the working deck / fantail for tools such as air driven wrenches. This will speed system installation and allow for increased efficiency.

2.6.11 Vessel ***should*** provide a Helicopter deck to expedite the transfer of personnel to and from the MOSHIP.

2.6.12 Vessel ***should*** have an installed transducer deployment system or an acoustic tracking system. This provides additional capability to track the vehicles once in the water. If installed, the acoustic system ***shall*** not interfere with SRS operations by operating in the same frequency bands of the equipment used, see section 2.2.8.

2.6.13 Vessel ***should*** have a well-equipped sick bay.

2.6.14 The machinery spaces ***shall*** be relatively clean with no excessive corrosion, leaks or fluids on deck.

2.7 Working Deck Configuration

2.7.1 Deck General

2.7.1.1 For all SRS installations the deck, deck attachment points and retractable deck equipment ***shall*** not have damage or cracking, cracked welds, excessive pitting or corrosion.

2.7.1.2 The decking area to be used for SRS installation ***shall*** be steel that is flat, clear of obstructions and ready for welding.

2.7.1.3 The deck area may require welding of attachment points to support installation of SRS systems and support equipment.

NOTE:

All deck no weld or no hot work zones that will require welding for system installation will ***require*** approval by the IACS or ships force prior to commencement of any welding on no weld or no hot work zones.

NOTE:

If MOSHIP is a barge, see section 3.0 Specifications for MOBARGE for additional requirements.

NOTE:

For SRS-RCS and SRS-TUP, deviations to the notional deck configuration ***shall*** be concurred to by the attending ABS Surveyor (NAVSEA approval is required for major departures).

2.7.2 Deck Areas

2.7.2.1 SRS-RCS configuration requires a clear aft deck area of 2904 ft^2 (269.8 m^2) threshold, 3432 ft^2 (318.8 m^2) objective. The minimum required length is 88 ft (26.8 m). The threshold width requirement is 33 ft (10.1 m). The objective width requirement is 39 ft (11.8 m). Reference (a).

2.7.2.2 SRS-TUP configuration requires a clear aft deck area of 3332 ft^2 (309.6 m^2) threshold, 3920 ft^2 (364.1 m^2) objective. The minimum required length is 98 ft (29.9 m). The threshold width requirement is 34 ft (10.4 m). The objective width requirement is 40 ft (12.2 m). Reference (a).

NOTE:

The threshold value is the minimum acceptable value for the parameter; which is the maximum width/length of the system. The objective value is the reasonable width/length for operations. Objective values permit personnel to walk outboard of the system using ladders and having the ability to transport a stretcher. Threshold values will require alternative means of passage fore and aft of system such as building ladder, and walkways across the top of the vans.

2.7.2.3 For ROV LARS the vessel ***shall*** have a clear deck area of 1050 ft^2 (97.5 m^2), 25 ft x 42 ft (7.62 m x 12.8 m). References (ll) and (mm).

2.7.2.4 For SRCFS the vessel ***shall*** have a clear deck area of 2001 ft^2 (186 m^2), 48 ft (14.6 m) in length and 42 ft (12.8 m) in width. Reference (b).

NOTE:

The SRCFS can be installed in various configurations and if space requirements are not met the vessel ***should*** be evaluated for other possible installation configurations.

2.7.2.5 For SRCFS, if there is not an installed crane to support handling the SRC, there shall be a minimum area of 728 ft^2 (67.6 m^2), 28 ft (8.5 m) x 26 ft (7.9 m) for a mobile crane within the SWL arc to support deploying the SRC over the side. Reference (b).

2.7.2.6 The SRCFS and ROV LARS ***requires*** 3051 ft^2 (283.5 m^2), 74 ft x 42 ft (22.5 m x 12.8 m) of clear deck space. References (b), (ll), and (mm).

NOTE:

The SRCFS can be installed in various configurations and if space requirements are not met the vessel ***should*** be evaluated for other possible installation configurations.

2.7.2.7 For LWMS the vessel ***shall*** have a clear deck area of 2717 ft^2 (252.4 m^2). This is the amount of space occupied by all LWMS components. This space includes 1500 ft^2 (139.4 m^2) of open space for anchor recovery, which must be within reach of crane. This space is not required if anchor recovery to be performed by a separate vessel following operations. Reference (b).

2.7.2.8 For SILOS the vessel ***shall*** have a clear aft deck area of 182 ft^2 (16.9 m^2). For typical SILOS installation, 1578 ft^2 (146.6 m^2); 55 ft 8 in x 28 ft 4 in (17.0 m x 8.6 m). Reference (b).

2.7.2.9 For SRCFS, ROV, LWMS and SILOS; the vessel ***shall*** have in addition to the deck space requirements specified above, an additional 131 ft^2 (12.2 m^2) 22.5 ft x 5.8 ft (6.9 m x 1.8 m) for generators and fuel on MOSHIPs that cannot provide the required electrical power. Reference (b).

NOTE:

The SRCFS can be installed in various configurations and if space requirements are not met the vessel ***should*** be evaluated for other possible installation configurations.

2.7.2.10 For NSRS RESCUE SYSTEM w/ NSRS INTERVENTION SYSTEM configuration ***requires*** a clear deck area of 6120 ft^2 (568 m^2), 170 ft (51.6 m) in length and 36 ft (11 m) in width. References (f) and (g).

2.7.2.11 For NSRS RESCUE SYSTEM w/o NSRS INTERVENTION SYSTEM configuration ***requires*** a clear deck area of 4306 ft^2 (400 m^2), 131.2 ft (40 m) in length and 32.8 ft (10 m) in width. References (f), (g), and (h).

2.7.2.12 For NSRS INTERVENTION SYSTEM the configuration ***requires*** a clear deck area of 1808 ft^2 (168.0 m^2), 45.9 ft (14 m) in length and 39.4 ft (12 m) in width. Reference (f).

2.7.2.13 RHIB and associated launch and recovery equipment ***requires*** 214 ft^2 (19.9 m^2), 23.8 ft x 9.0 ft (7.3 m x 2.7 m) inflated, 23.4 ft x 7.2 ft (7.2 m x 2.2 m) deflated, 9.9 ft (3.0 m) tall (keel to console, not on cradle). Reference (pp).

NOTE:

RHIB *must* be within the SWL crane reach arc.

2.7.3 Deck Loading

2.7.3.1 SRS configuration ***requires*** a deck loading capacity of 1025 lb/ft^2 (5 tonnes/m^2). Reference (v).

2.7.3.2 SRS LARS Base Rev 1 only - Transom ***shall*** be a minimum of 3/8" (9 mm) shell plating. References (s) and (w).

2.7.3.3 SRS LARS Base Rev 0 only – ***requires*** a longitudinally framed vessel with transverse structural bulkheads having a minimum thickness of 7/16" (11.1 mm) and a minimum vertical bulkhead stiffener angle size of 6" x 4" x 3/8" (152.4 mm x 101.6 mm x 9.5 mm). The maximum vessel longitudinal girder spacing ***shall*** be no more than 10.0 feet (3.0 m) and center to center transverse stiffener spacing ***shall*** be no more than 24" (609.6 mm), or structural equivalent. References (v) and (x).

NOTE:

If the MOSHIP does not meet the SRS-RCS LARS Base Rev 0 deck requirements listed above, other scantling configurations can be qualified using the procedure outlined in Navigation and Vessel Inspection Circulars (NVIC) 1-98 and an ultimate strength of 21.3 klb/in^2 (146,858 kPa) per reference (x). Use the equipment locations, weights, and centers as defined in reference (v) to verify the structural adequacy of the deck to support SRS-RCS LARS.

2.7.3.4 The ROV LARS ***requires*** a deck loading capacity 1025 lb/ft^2 (5 tonnes/m^2). Reference (mm).

2.7.3.5 The SRCFS Deck ***requires*** a deck loading capacity of 942 lb/ft^2 (4.6 tonnes/ m^2), which consists of the weight of the SRC and the At Sea Stand and is based on using 1.0'' minimum thickness interface plates that are 33 in x 33'' (0.84 m x 0.84 m) worst case. The 942 lb/ft^2 (4.6 tonnes/ m^2) will be decreased if larger interface plates are used. Reference (jj).

NOTE:

The SRC stand footers have many configurations to meet the (4.6 tonnes/m^2);33'' x 33'' plates must be used as a minimum.

2.7.3.6 SILOS ***requires*** a deck loading capacity of: 985 lb/ft^2 (4.8 tonnes/m^2). Reference (oo).

2.7.3.7 NSRS RESCUE SYSTEM / TUP ***requires*** a deck loading capacity of 1025 lb/ft^2 (5 tonnes/m^2). Reference (g).

2.7.3.8 NSRS PLARS is to be mounted over three bulkheads which are (1) the transom bulkhead, (2) a bulkhead no less than 6000 mm (19.7 ft) from the ship's transom, (3) a bulkhead no more than 12000 mm (39.3 ft) from the ship's transom. References (g) and (i).

2.7.3.9 NSRS INTERVENTION SYSTEM ***requires*** a deck loading capacity of 1025 lb/ft^2 (5 tonnes/m^2). Reference (g).

2.7.3.10 LWMS ***requires*** a deck loading capacity of: 746 lb/ft^2 (3.7 tonnes/m^2).

2.7.4 Deck Flatness

2.7.4.1 For SRS installations; the deck forward of the transom ***shall*** be coplanar with a maximum deviation of 2.0 in (5.08 cm) when measured from the transom to 38 ft (11.6 m) forward of the transom for SRS-RCS, 68 ft (20.7 m) for SRS-TUP. Deck hardware ***shall*** be removed in way of the SITS and LARS Bases if vertical height is 2.0 in (5.08 cm) from the deck. This includes retractable deck equipment. Height differences between components is allowed and limited only by hose and cable length restrictions. Shimming to meet 2.0 in (5.08 mm) requirement is acceptable. Transom area must be clear without stern roller or other components that would interfere with the welding of the SITS to the deck within one foot of the transom. References (a), (y), and (z).

2.7.4.2 For ROV, SRCFS, SILOS and LWMS installations; the deck flatness ***shall*** be within 1.0 in (2.54 cm) in all directions and ***shall*** be free of obstructions where each individual component is to be placed. Height differences between components is allowed and limited only by hose and cable length restrictions. Shimming to meet 1.0 in (2.54 cm) requirement is acceptable.

2.7.4.3 For NSRS RESCUE SYSTEM, TUP and NSRS INTERVENTION SYSTEM installations; the deck flatness ***shall*** be within 1.97 in (5 cm) in all directions and ***shall*** be free of obstructions where components are to be placed.

2.7.5 Sea Access and Bulwark Openings

2.7.5.1 Freeboards higher than 10 ft (3.1 m) will ***require*** protection (fenders, collision pads, etc.) at the transom in way of the PRM launch and recovery envelope. Reference (a).

2.7.5.2 For SRS with LARS Base Rev 0, vessel ***shall*** provide sufficient opening of any bulwark/walls to provide for the unobstructed over-boarding of the LARS. A minimum opening of 22 ft (6.7 m) is ***required***. MOSHIPs with bulwark/walls greater than 3 ft (0.9 m) in height, the opening ***shall*** be 32 ft (9.7 m) to clear the LARS winches. Reference (a).

2.7.5.3 For SRS with LARS Base Rev 1 vessel ***shall*** provide sufficient opening of any bulwark/wall to provide for the unobstructed over-boarding of the LARS. A minimum opening of 34 ft (10.4 m) is ***required***. Reference (a).

2.7.5.4 SRCFS ***should*** have protection (fenders, collision pads, etc.) for all freeboard heights at the boarding positions.

2.7.5.5 SRCFS ***shall*** have a direct line of sight from the CAPSTAN to the overboarding bulwark with an opening in the bulwark of 48'' or the capacity to mount the overboarding roller to the bulwark so personnel can work the umbilical over the side.

2.7.5.6 For ROV LARS the vessel ***shall*** have an 11 ft (3.4 m) opening in the bulwark. ROV LARS placement is subject to access for deploying of the ROV. Reference (mm).

NOTE:

For ROV LARS installation, objects protruding from the hull (bumpers, thrusters, fin stabilizers, etc.), or any protrusion on the ship's hull itself ***shall*** be factored into determining where the unit is to be secured to maximize the distance between the over boarding position of the ROV and the vessel's propellers, rudders, and thrusters to avoid entanglement issues. The minimum recommended separation between the ROV launch position and DP thrusters is 15 feet. Best case installations provide that the hull wall is vertical to the waterline or angled towards the ship's centerline as viewed from the deck.

2.7.5.7 SILOS over boarding sheave ***should*** be mounted as close to transom as possible. SILOS winch ***shall*** be placed in-line with over boarding sheave. SILOS depth sounding davit ***shall*** be placed adjacent to gunwale. Reference (b).

2.7.5.8 NSRS RESCUE SYSTEM SRV vessel ***shall*** provide sufficient opening of any stern wall to provide for the unobstructed over-boarding of the LARS. A minimum of a 34 ft (10.4 m) opening is required. Reference (h).

2.7.5.9 NSRS INTERVENTION SYSTEM vessel ***shall*** provide sufficient opening of any side wall to provide for the unobstructed over-boarding of the LARS. A minimum of a 10 ft (3 m) opening is required. Reference (f).

2.7.5.10 For LWMS the MOSHIP bulwark ***shall*** be capable of supporting 3,400 lb (1542.2 kg) anchors and 3,000 lb (1360.8 kg) anchor chain I-beams in the area of installation. Reference (b).

2.7.5.11 For LWMS there ***shall*** be a 4 ft x 8 ft (1.2 m x 2.4 m) clear deck area around capstans and bitts to allow safe line handling. Reference (b).

2.7.5.12 For LWMS there ***shall*** be a 4 ft x 7 ft (1.2 m x 2.1 m) clear deck area inboard of mounted LWMS anchors to allow for release lines and working area. Reference (b).

2.7.5.13 For LWMS capstans and bitts are ***required*** fore and aft for line handling and establishing a 4-point moor. The LWMS capstans and bitts may not be necessary depending on equipment installed on the MOSHIP. Reference (b).

2.7.5.14 For LWMS the installation ***shall*** maximize fore-aft and athwart ships separation of mooring points on vessel. Reference (b).

2.7.5.15 For LWMS there ***shall*** be sufficient space to allow the anchor chain I-beams to be placed aft of each anchor and each anchor / I-beam setup ***requires*** 20 ft (6.1 m) of gunwale. Reference (b).

2.7.6 Deck Configuration Systems Requirements

2.7.6.1 The ROV LARS, SRCFS, LWMS capstan and SILOS may be mounted to standard 1.0'' diameter Baxter Bolt receivers spaced on 24 in (61 cm) centers available on working deck. (Minimum pullout strength of 10,000 lb (4535.9 kg)) Baxter bolt inserts ***shall*** accept 1-8 Unified National Coarse (UNC) bolts with minimum thread engagement of 1.0 in (2.54 cm). Inserts ***should*** be flush with the deck. References (cc), (gg), (jj), and (oo).

2.7.6.2 SRCFS items ***shall*** be installed to maintain the maximum allowed distance between: Control console to either air rack – 80 ft (24.4 meters) Air rack to compressor – 75 ft (22.9 m) Air rack to air rack – 30 ft (9.14 m). Items can be installed in many configurations to include mounting on different decks as long as the distance requirements are met. Reference (b).

2.7.6.3 Vessel ***should*** provide sufficient access on the PORT or STBD side of the MOSHIP to mount the 32 ft (9.7 m) SRS Transponder Pole wherein when the pole is deployed it will extend a minimum of 3 ft (.91 m) below the MOSHIP keel. Reference (q).

2.7.6.4 Equipment placement for ROV installations ***shall*** meet the following restrictions: MAX distance ROV LARS to PDU is 110 ft (33.5 m), CV to LARS 50ft (15.2 m) and PDU to CV 90ft (27.4 m).

NOTE:

Some ROV vans are fitted with standard ISO container attachments, and may be secured to the deck with any standard attachment method, including existing ISO twist-locks on the MOSHIP deck. Other acceptable methods include chaining and using tie down plates with ISO quick-connect fittings and Baxter bolts.

2.7.6.5 CONEX Boxes ***shall*** be secured to the deck with standard attachment methods, including existing ISO twist-locks on the MOSHIP deck (vans are fitted with standard ISO container attachments). Other acceptable methods include chaining and using tie down plates with ISO quick-connect fittings and Baxter bolts are permitted.

2.8 Cranes

2.8.1 For SRCFS the shipboard mounted crane ***shall*** have a minimum SWL capacity of 12.5 short tons (11.8 tonnes) at the maximum reach (typically 15 ft (4.6 m) over the side) to lift the SRC from the SRC staging area to the water. SRCFS Rescue Chamber Cable Reel deployment requires a shipboard mounted crane or davit with a minimum SWL capacity of 1500 lbs (680.3 kg), at the maximum reach (typically 10 ft (3.04 m) over the side) to lift the Rescue Reel while deploying to and from the rewind stand. References (b) and (kk).

2.8.2 LWMS ***requires*** a shipboard mounted crane with minimum SWL capacity of 6,000 lb (2721.6 kg), at the maximum reach (typically 15 ft (4.6 m) over the side) to lift the anchor from the water to the anchor recovery area. References (b) and (aa).

2.8.2.1 RHIB and Cradle ***requires*** a shipboard crane with a minimum SWL capacity of 5700 lbs (2585.5 kg), at the maximum reach (typically 15 ft (4.6 m) over the side) to lift the RHIB while deploying to and from the stowage cradle. References (b) and (pp).

Section 3

3. Specifications for MOBARGEs

3.1 Safety Equipment for Manned Operations

3.1.1 The preferred method of operating submarine rescue is from a vessel of opportunity, but in those cases where a vessel is not available as a last resort it may be necessary to use a barge of opportunity. In this case all the general requirements for a VOO would apply in addition to the following barge specific items.

3.1.2 The Barge ***shall*** be certified for Open Ocean Manned Operations per applicable USCG and/or ABS regulations. The following list of equipment may be required based upon the number of crew embarked on the barge, barge configuration and barge outfitting as required by USCG and ABS regulations Pub 10 "Steel Barges" and Pub # 193 "Portable Accommodation Modules"

3.1.2.1 Emergency alarm system and panel (fire, man overboard, general, flooding, abandon ship alarms).

3.1.2.2 Fire alarm pull stations.

3.1.2.3 Man overboard alarm pull stations.

3.1.2.4 Alarm speakers.

3.1.2.5 Fire, smoke, heat, and flooding sensors.

3.1.2.6 Emergency lighting.

3.1.2.7 Emergency gear locker.

3.1.2.8 Lifesaving equipment and associated launch equipment to accommodate all embarked personnel. SRS-RCS (31), SRS-TUP (91), ROV LARS (29), SRCFS (41), SILOS (17), LWMS (27), NSRS SRV TUP (90) or NSRS INTERVENTION SYSTEM (16)

3.1.2.9 Life rafts to accommodate all embarked personnel. SRS-RCS (31), SRS-TUP (91), ROV LARS (29), SRCFS (41), SILOS (17), LWMS (27), NSRS SRV TUP (90) or NSRS INTERVENTION SYSTEM (16)

3.1.2.10 Intercom/general announcing system.

3.1.2.11 Safety rails or lines.

3.1.2.12 Fire pump and associated firefighting equipment.

3.1.2.13 Portable firefighting equipment and mountings.

3.1.2.14 Black water tank/pollution abatement equipment.

3.1.2.15 Navigation and warning lights. Installation of equipment to support Manned Operations shall be accompanied by an up-to-date USCG Certificate of Inspection (COI) or Temporary COI.

3.1.2.16 Boarding ladder access.

3.2 On-Site Tug Support

3.2.1 The barge shall be accompanied by a vessel that is capable of maneuvering and towing at all times during operations.

3.3 Deck Area

3.3.1 The barge ***shall*** have sufficient deck area for the installation of four capstans, associated fairleads, and cabling to support the LWMS in 2,000 ft (609.6 m) of water.

3.3.2 The barge ***should*** have deck area of 800 ft^2 to accommodate portable accommodations modules for at least 100 rescuees.

3.3.3 The barge ***should*** have deck area of 200 ft^2 to accommodate portable accommodations modules for infirmary equipment and treatment room.

3.3.4 The barge ***should*** have deck area of 400 ft^2 to accommodate portable office modules for 2 offices and meeting rooms.

3.3.5 The barge ***should*** have deck area of 400 ft^2 to accommodate two workshop sized containers.

3.3.6 The barge ***should*** have deck area of 400 ft^2 to accommodate portable galley, refrigerator and freezer modules. NOTE: The area can be either on the barge or on a support vessel. (Additional cargo deck area and auxiliaries such as power, Collection, Holding and Transfer System (CHT), and water)

3.3.7 The barge ***should*** have deck area of 100 ft^2 to be able to install portable lighting capable of illuminating the deck for night operations.

3.4 Operational Capabilities

3.4.1 If a barge is to be used, the Barge's Certificate of Inspection ***shall*** be updated to reflect acceptable use of lifting equipment over the side and stern if not already present.

3.4.2 Ship-to-ship and ship-to-shore voice communications ***shall*** be provided as required by ABS and local regulatory agencies. This capability ***may*** be installed as a portable installation upon SRS embarkation.

NOTE:
Navy communication package fits within an 8 ft X 10 ft (2.4 m X 3.1 m) CONEX Box.

Appendix A
Vessel Scoring System

A1. SRDRS MOSHIP/MOSHIP Grading and Criteria Table

SRDRS MOSHIP/MOSHIP GRADING and CRITERIA Table	
1.	**Gold:** MOSHIP has been surveyed by the United States and deemed satisfactory for their system or has previously embarked the system and proven at sea operations. Note: Survey data is only completely valid at the time of survey or upon update from the vessel management authority.
2.	**Silver:** MOSHIP of the same design and class of a gold ship with accurate substantiating data from the vessel l management authority. Mandatory criteria: 1) Shall be of the same class/standard design as a surveyed vessel. AND 2) Shall be an IACS classed vessel. AND 3) Shall have a review of vessel management authority documentation indicating no significant difference from surveyed vessel (installation of a stern roller, interfering crane or A-frame etc.). Desirable criteria: 1) Should have documentation from the vessel management authority in the form of a Request For Information (RFI) response indicating no changes from original build and that the vessel meets basic SRDRS requirements as specified in the RFI.
3.	**Bronze:** MOSHIP that should embark the system. Mandatory criteria: 1) Shall be of the same class/standard design as a gold vessel but only documentation is minimal as in current photos of vessel. OR 2) Shall have online documentation from vessel management authority or IACS indicating vessel meets basic SRDRS requirements of: a) deck size of 88 ft x 33 ft, b) Deck strength of $5T/M^2$, c) Vessel Tonnage of 250 tonnes, d) Deck clear without significant interferences, e) Dynamic Positioning II or Mooring capable installed system or space for the Light Weight Mooring System.
4.	**Tin/Red:** MOSHIP that is *not likely* to embark the system. A vessel survey or review of data from the vessel management authority documentation indicating not meeting one or all of the following SRDRS minimum criteria: a) deck size of 88 ft x 33 ft, b) Deck strength of $5T/M^2$, c) Vessel Tonnage of 250 tonnes, d) Deck clear without significant interferences, e) Dynamic Positioning II or Mooring capable installed system or space for the Light Weight Mooring System.

A2. SRCFS MOSHIP/MOSHIP Grading and Criteria Table

SRCFS MOSHIP/MOSHIP GRADING and CRITERIA Table	
1.	**Gold:** MOSHIP has been surveyed by the United States and deemed satisfactory for their system or has previously embarked the system and proven at sea operations. Note: All survey data is only completely valid at the time of survey or upon update from the vessel management authority.
2.	**Green:** MOSHIP of the same design and class of a gold ship with accurate substantiating data from the vessel management authority. Mandatory criteria: 1) Shall be of the same class/standard design as a surveyed vessel. AND 2) Shall be an IACS classed vessel. AND 3) Shall have a review of vessel management authority documentation indicating no significant difference from surveyed vessel (installation of a stern roller, interfering crane or A-frame etc.). Desirable criteria: 1) Should have documentation from the vessel management authority indicating no changes from original build and that the vessel meets basic SRCFS requirements as specified in the RFI.
3.	**Blue:** MOSHIP that should embark the system. Mandatory criteria: 1) Shall be of the same class/standard design as a gold vessel but only documentation is minimal as in current photos of vessel OR 2) Shall have documentation from vessel management authority or IACS indicating vessel meets basic SRCFS requirements of: a) deck size of 48 ft x 42 ft, b) Deck strength of $5T/M^2$, c) Deck clear without significant interferences, d) Dynamic Positioning II or Mooring capable installed system or space for the Light Weight Mooring System, e) installed crane capable of 25,000 lbs at 15 feet over the side.
4.	**Tin/Red:** MOSHIP that is *not likely* to embark the system. A vessel survey or review of data from the vessel management authority documentation indicating not meeting one or all of the following SRCFS minimum criteria: a) deck size of 48 ft x 42 ft, b) Deck strength of $5T/M^2$, c) Deck clear without significant interferences, d) Dynamic Positioning II or Mooring capable installed system or space for the Light Weight Mooring System, e) installed crane capable of 25,000 lbs at 15 feet over the side.

Appendix B
MOSHIP Survey Check List

Vessel Name:	Flag:
Vessel IMO Number:	Classification Society:
Vessel MMSI Number:	Vessel Type and Builders Design:
Date of Vessel Survey:	
Length of the Vessel:	Longitudinal Spacing:
Width of the Vessel:	Frame Spacing:
Draft / Main Deck Freeboard:	GT:

B1. Vessel Scoring Table

System	Gold	Silver / Green	Bronze / Blue	Tin / Red
SRS-RCS				
SRS-TUP				
SRC				
Intervention				
NSRS				

B2. Vessel Survey Table

NOTE:

Amplifying information ***shall*** be documented in the NOTES section 2.B2.9 at the back of the survey for any Yes or No questions that are answered **contrary** to the requirement.

B2.1 Classification Society Information

Step	Information Request/Specification/Notes	
B2.1.1	Which IACS Classification Society is the vessel classed by? Section 2.1.1	
B2.1.2	What is the date of the next Class survey? Section 2.1.2	Date:
B2.1.3	What special classifications or exceptions does the vessel carry (manned diving, drilling, towing)? Section 2.1.3	

B2.2 Dynamic Positioning

Step	Information Request/Specification/Notes			
B2.2.1	What is the vessel Dynamic Positioning (DP) classification? Section 2.2.1			
B2.2.2	What moving machinery (thrusters, propellers, etc.) are located within 15 feet (4.6 m) of an umbilical or launch location? Section 2.2.2 Annotate possible dangers by location in Figure A.			
B2.2.3	Can the vessel operate safely in: Attach a copy of the vessel DP Plot. Section 2.2.3	Sea State 3? Sea State 4? Sea State 5? Sea State 6?	Yes	No
B2.2.4	Positioning reference system details: Type / Manufacturer / Frequency Section 2.2.4 Annotate physical location of relevant sensors in Figure A.	1. _____ 2. _____ 3. _____ 4. _____		
B2.2.5	DP positioning underwater reference system frequencies are free from SRS system interference. Section 2.2.8		Yes	No
B2.2.6	Are there three (minimum) acceptable DP reference systems? Section 2.2.5		Yes	No
B2.2.7	What type of remote DP alert system does the vessel have? Section 2.2.7			

Step	Information Request/Specification/Notes		
B2.2.8	Does the vessel have the capability to maneuver on DP with a vehicle in the water column? Section 2.2.6	Yes	No
B2.2.9	MOSHIP meets the minimum criteria of specifications 2.2.4 thru 2.2.8 (does not require a waiver to be submitted to NAVSEA PMS391)? Section 2.2.9	Yes	No

B2.3 Mooring

Step	Information Request/Specification/Notes		
B2.3.1	How many installed mooring legs is the vessel's inherent mooring system capable of deploying and to what maximum depth? Section 2.3	# of Legs: _____ max depth: _____ (ft/m)	
B2.3.2	How many inherent mooring line attachment points are available? Section 2.3 Annotate attachment points in Figure A.		
B2.3.3	How many inherent capstans are available? What are their ratings? Section 2.3 Annotate capstan locations in Figure A.		
B2.3.4	Does the Vessel's inherent mooring system meet maximum watch circle limitations? Section 2.3.1	Yes	No
B2.3.5	Does the Vessel's inherent mooring system meet AUWS maximum watch circle limitations? Section 2.3.2.	Yes	No
B2.3.6	Does the Vessel's inherent mooring system meet 2000 FSW (609.6 m) mooring requirements (SRS-RCS, SRS-TUP, ROV LARS)? Sections 2.3.3, 2.3.4	Yes	No
B2.3.7	Does the Vessel's inherent mooring system meet 850 FSW (259.1260 m) mooring requirements (SRCFS)? Sections 2.3.1, 2.3.5	Yes	No
B2.3.8	Is the Vessel capable of taking on and deploying an external mooring system such as the U.S. Navy LWMS? Section 2.3.6	Yes	No

B2.4 Operational Capabilities

Step	Information Request/Specification/Notes	
B2.4.1	What is the **maximum** cargo load authorized for **operations** on the aft deck, and to what maximum sea state can it operate? Section 2.4	Max load: _____ short tons (tonnes) @ Max Sea State: _____

Step	Information Request/Specification/Notes		
B2.4.2	What is the **maximum** cargo load authorized for **survivability** on the aft deck, and to what maximum sea state can it operate? Section 2.4	Max load: _____ short tons (tonnes) @ Max Sea State: _____	
B2.4.3	What is the Minimum and Maximum freeboard? If freeboard is greater than 10 ft (3.1m) document in Notes section 2.B2.9. Section 2.4.2	Min: _____ Ft (m) Max: _____ Ft (m)	
B2.4.4	Does the vessel have an installed system to perform trimming and ballasting? Section 2.4.1	Yes	No
B2.4.5	Can the vessel support launch and recovery operations w/ SRS-RCS LARS Base Rev 0 load = 166 short tons (150 tonnes)? Minimum **Operation**- Sea State 4 / Goal - Sea State 5. Section 2.4.3	Yes	No
B2.4.6	Can the vessel maintain survivability w/ SRS-RCS LARS Base Rev 0 load = 166 short tons (150 tonnes)? Minimum **Survivable** - Sea State 6 / Goal - Sea State 7. Section 2.4.4	Yes	No
B2.4.7	Can the vessel support launch and recovery operations w/ SRS-RCS LARS Base Rev 1 load = 165 short tons (150 tonnes)? Minimum **Operation**- Sea State 4 / Goal - Sea State 5. Section 2.4.5	Yes	No
B2.4.8	Can the vessel maintain survivability w/ SRS-RCS LARS Base Rev 1 load = 165 short tons (150 tonnes)? Minimum **Survivable** - Sea State 6 / Goal - Sea State 7. Section 2.4.6	Yes	No
B2.4.9	Can the vessel support launch and recovery operations w/ SRS-TUP LARS Base Rev 1 load = 253 short tons (230 tonnes)? Minimum **Operation**- Sea State 4 / Goal - Sea State 5. Section 2.4.7	Yes	No
B2.4.10	Can the vessel maintain survivability w/ SRS-RCS LARS Base Rev 1 load= 253 short tons (230 tonnes)? Minimum **Survivable** - Sea State 6 / Goal - Sea State 7. Section 2.4.8	Yes	No
B2.4.11	Can the vessel support launch and recovery operations with the ROV LARS load = 30 short tons (27 tonnes)? Minimum Operation- Sea State 4 / Goal - Sea State 5. Section 2.4.9	Yes	No
B2.4.12	Can the vessel support launch and recovery operations using shipboard crane with the SRCFS load = 60 short tons (54 tonnes)? Minimum Operation- Sea State 3/ Goal - Sea State 4. Section 2.4.10	Yes	No
B2.4.13	Can the vessel support launch and recovery operations using a portable crane with the SRCFS load = 60 short tons (54 tonnes)? Minimum Operation- Sea State 3/ Goal - Sea State 4. Section 2.4.10	Yes	No

Step	Information Request/Specification/Notes		
B2.4.14	Can the vessel support launch and recovery operations with the SILOS load = 23 short tons (21 tonnes)? Minimum Operation- Sea State 4 / Goal - Sea State 5. Section 2.4.11	Yes	No
B2.4.15	Can the vessel support launch and recovery operations with the NSRS RESCUE SYSTEM SRV TUP W/ NSRS INTERVENTION SYSTEM load = 465 short tons (421 tonnes)? Minimum Operation- Sea State 6 Section 2.4.12	Yes	No
B2.4.16	Can the vessel support launch and recovery operations with the NSRS RESCUE SYSTEM SRV TUP W/O NSRS INTERVENTION SYSTEM load = 382 short tons (347 tonnes)? Minimum Operation- Sea State 6 Section 2.4.13	Yes	No
B2.4.17	Can the vessel support launch and recovery operations with the NSRS INTERVENTION SYSTEM load = 103 short ton (93 tonnes)? Minimum Operation- Sea State 6. Section 2.4.14	Yes	No
B2.4.18	Can the vessel support transit/deployment with the LWMS load = 53 short tons (48.1 tonnes)? Minimum Operation- Sea State 4 / Goal - Sea State 5. Section 2.4.15	Yes	No

B2.5 Electrical Power Requirements

Step	Information Request/Specification/Notes		
B2.5.1	What electrical power is the support vessel capable of supplying? Section 2.5	Primary _____KW _____ VAC _____PH _____ Hz _____ Amp Secondary (Supplied by a separate bus) _____ KW _____ VAC _____ PH _____ Hz _____ Amp	
B2.5.2	Location and type of electrical service connections on deck.	Deck _____ Frame Number _____ Distance from centerline _____ p/s	
B2.5.3	For the SRS, is the vessel able to provide 350 KW of 480 VAC, 3-phase Delta, 60 Hz, 400 Amps backup electric power to the GV. Section 2.5.1	Yes	No
B2.5.4	For the ROV, is the vessel able to provide 440V-480V 3-Phase, 60Hz, 200A **Main** power supply? Section 2.5.2	Yes	No
B2.5.5	For the ROV, is the vessel able to provide an independent 440V-480V, 3-Phase, 60Hz, 200A **Secondary** power supply? Section 2.5.3	Yes	No

Step	Information Request/Specification/Notes		
B2.5.6	For the SRCFS, is the vessel able to provide 110 - 125 VAC, 1-phase, 60 Hz, 15 amps (Control console, SRC)? Section 2.5.4	Yes	No
B2.5.7	For the SRCFS, is the vessel able to provide 440 - 480 VAC, 3-phase, 60 Hz, 47 amps (SRC umbilical backhaul capstan)? Section 2.5.4	Yes	No
B2.5.8	For the SILOS, is the vessel able to provide 440 – 480 VAC, 3-phase, 60 Hz, 120 amps main power? Section 2.5.5	Yes	No
B2.5.9	For the SILOS, is the vessel able to provide 440 – 480 VAC, 3-phase, 60 Hz, 120 amps secondary power? Section 2.5.5	Yes	No
B2.5.10	For the NSRS RESCUE SYSTEM / TUP, is the vessel able to provide 440 VAC, 3-phase, 60 Hz, 920 amps backup electric power per bus to the GV? Section 2.5.6	Yes	No
B2.5.11	For the NSRS Battery Charging Module, is the vessel able to provide of 440 VAC, 3-phase, Delta, 60 Hz, 90 amps electrical power? Section 2.5.7	Yes	No
B2.5.12	For the NSRS PNTCS Command Console, is the vessel able to provide 230 VAC, 1-phase at 60 Hz and 40 amps electrical power? Section 2.5.8	Yes	No
B2.5.13	For the NSRS INTERVENTION SYSTEM, is the vessel able to provide 440 VAC, 3-phase at 60 Hz and 400 amps electrical power? Section 2.5.9	Yes	No
B2.5.14	For the LWMS, is the vessel able to provide 440 – 480 VAC, 3-phase, 60 Hz, 72 amps electrical power? Section 2.5.10	Yes	No
B2.5.15	Output and location of electrical lighting services.	Notes:	

B2.6 Personnel Support and General Amenities

Step	Information Request/Specification/Notes	
B2.6.1	What is the **maximum** number of personnel the vessel can embark? Section 2.6	#
B2.6.2	What is the **minimum** number of crew required and the **maximum** crew required (including any additional personnel i.e. DP operators, 24 hour messing, crane operators)? Section 2.6	Min # Max #
B2.6.3	What is the maximum number of day riders? Section 2.6	#

Step	Information Request/Specification/Notes		
B2.6.4	What is the number of lifesaving equipment the vessel carries? Section 2.6.1		
B2.6.5	With maximum number of personnel embarked and day riders, what is the number of days at sea the vessel can remain un-replenished (or is capable of replenishment of critical stores)? Section 2.6.5	# of days	
B2.6.6	How many permanent berths are onboard? Section 2.6.5		
B2.6.7	What is the potable water capacity and the capacity of any water makers? Section 2.6.5		
B2.6.8	What is the fresh water capacity? Section 2.6.5 and 2.6.9		
B2.6.9	What is the capacity of the sanitary tank, and is the system continuous processing? Section 2.6.5		
B2.6.10	Is 24 Hr messing and crew to operate the mess available? Section 2.6.5	Yes	No
B2.6.11	SRS-RCS: Does vessel carry sufficient lifesaving equipment for ship's crew + 31 rescue personnel? Section 2.6.2	Yes	No
B2.6.12	SRS-TUP: Does vessel carry sufficient lifesaving equipment for ship's crew + 91 rescue personnel? Section 2.6.2	Yes	No
B2.6.13	ROV LARS: Does vessel carry sufficient lifesaving equipment for ship's crew + 29 rescue personnel? Section 2.6.2	Yes	No
B2.6.14	SRCFS: Does vessel carry sufficient lifesaving equipment for ship's crew + 41 rescue personnel? Section 2.6.2	Yes	No
B2.6.15	SILOS: Does vessel carry sufficient lifesaving equipment for ship's crew + 17 rescue personnel? Section 2.6.2	Yes	No
B2.6.16	LWMS: Does vessel carry sufficient lifesaving equipment for ship's crew + 27 rescue personnel? Section 2.6.2	Yes	No
B2.6.17	NSRS SRV TUP: Does vessel carry sufficient lifesaving equipment for ship's crew + 90 rescue personnel? Section 2.6.2	Yes	No
B2.6.18	NSRS INTERVENTION SYSTEM: Does vessel carry sufficient lifesaving equipment for ship's crew + 16 rescue personnel? Section 2.6.2	Yes	No
B2.6.19	Does the vessels' firefighting equipment provide coverage at rescue vehicles on deck? Section 2.6.3	Yes	No

Step	Information Request/Specification/Notes		
B2.6.20	Is there an existing foam connection or a 2.5 in (63.5 mm) connection available for the portable foam firefighting unit? Section 2.6.3	Yes	No
B2.6.21	Does vessel have fire main connections and firefighting equipment in the area of all SRS components? Section 2.6.4	Yes	No
B2.6.22	Can vessel support un-replenished operations for 10 days with SRS-RCS for ship's crew + 31 rescue personnel? Section 2.6.5	Yes	No
B2.6.23	Can vessel support un-replenished operations for 10 days with SRS-TUP for ship's crew + 91 rescue personnel? Section 2.6.5	Yes	No
B2.6.24	Can vessel support un-replenished operations for 10 days with ROV-LARS for ship's crew + 29 rescue personnel? Section 2.6.5	Yes	No
B2.6.25	Can vessel support un-replenished operations for 10 days with SRCFS for ship's crew + 41 rescue personnel? Section 2.6.5	Yes	No
B2.6.26	Can vessel support un-replenished operations for 10 days with SILOS for ship's crew + 17 rescue personnel? Section 2.6.5	Yes	No
B2.6.27	Can vessel support un-replenished operations for 10 days with LWMS for ship's crew + 27 rescue personnel? Section 2.6.5	Yes	No
B2.6.28	Can vessel support un-replenished operations for 10 days with NSRS SRV TUP for ship's crew + 90 rescue personnel? Section 2.6.5	Yes	No
B2.6.29	Can vessel support un-replenished operations for 10 days with NSRS INTERVENTION SYSTEM for ship's crew + 16 rescue personnel? Section 2.6.5	Yes	No
B2.6.30	Does the vessel have a small boat / RHIB and associated launch and recovery equipment? Section 2.6.6	Yes	No
B2.6.31	What are the capabilities of the vessels inherent small boat / RHIB? Section 2.6.6		
B2.6.32	Does the Vessel have a small boat / RHIB with at least 80 HP motor? Section 2.6.6	Yes	No
B2.6.33	Does the Vessel have a small boat / RHIB with a tow point? Section 2.6.6	Yes	No
B2.6.34	Does the vessel have adequate space to accommodate the Remote MOSHIP Monitoring Control Station? MOSHIP Monitoring Station is contained in a 34.9 in X 27 in X 27.9 in (88.7 cm X 68.6 cm X 70.9 cm) hardcase. One of the 19 in (48.2 cm) LCD monitors extends outside the hardcase when the system is in use. Section 2.6.7	Yes	No
B2.6.35	Does the vessel have a 120 VAC outlet to accommodate the Remote MOSHIP Monitoring Control Station? Section 2.6.7	Yes	No

Step	Information Request/Specification/Notes		
B2.6.36	What type and how much filtered No. 2 diesel fuel is the vessel capable of providing to the deck? Section 2.6.8		
B2.6.37	Location of fueling stations: Section 2.6.8	Notes:	
B2.6.38	Is the vessel capable of transferring cleaned and polished diesel fuel from a support vessel? Section 2.6.8	Yes	No
B2.6.39	SRS-RCS, SRS-TUP, NSRS: Can the Vessel provide 20,500 gallons (77,600 L) of cleaned and polished No. 2 Diesel fuel accessible on the main deck for the Generator Van? Section 2.6.8	Yes	No
B2.6.40	SRCFS, ROV, SILOS, LWMS: Can the Vessel provide 500 gallons (1893 L) of filtered diesel fuel accessible on the main deck for the SRCFS Air Compressors and portable generators? Section 2.6.8	Yes	No
B2.6.41	Can the Vessel provide 2,000 gallons (7570.8 liters) of freshwater for wash down of PRM / SRC / ROV / NSRS and equipment and filling the PRM / SRC ballast bags / cans? Section 2.6.9	Yes	No
B2.6.42	Specify deck freshwater connection details. Section 2.6.9	Type / Locations:	
B2.6.43	Is the Vessel capable of providing workshop quality compressed air at the working deck / fantail for air-driven tools? Section 2.6.10	Yes	No
B2.6.44	Does the Vessel have a Helicopter Deck that would not be affected by the system load out? Section 2.6.11	Yes	No

Step	Information Request/Specification/Notes		
B2.6.45	Acoustic tracking system details: Type / Manufacturer / Frequency Section 2.6.12 Annotate physical location of relevant sensors in Figure A.	1. _____ 2. _____ 3. _____ 4. _____	
B2.6.46	Does the Vessel maintain an acoustic tracking system that is compatible with the SRS navigation and communications systems? Section 2.2.8, 2.6.12	Yes	No
B2.6.47	Does the Vessel have an installed transducer deployment system? Section 2.6.12	Yes	No
B2.6.48	What is the capacity of the Medical facilities? Section 2.6.13	# Beds:	
B2.6.49	Are the Machinery spaces well maintained and clean with no excessive corrosion, leaks or fluids on deck? Section 2.6.14	Yes	No

B2.7 Working Deck Configurations

B2.7.1 Deck General

Step	Information Request/Specification/Notes		
B2.7.1.1	What type of deck covering is present? Section 2.7.1.2	Brief Description:	
B2.7.1.2	What is the material condition of the deck (corrosion, permanent installed objects)? Section 2.7.1.1	Brief Description:	
B2.7.1.3	What No weld or no hot work zones are in the vicinity of the system footprints? Identify No weld or no hot work zones on Figure B and document in Notes section 2.B2.9. Section 2.7.1.3	Brief Description:	
B2.7.1.4	Is the deck and deck attachment points free from damage or cracking, cracked welds, excessive pitting or corrosion? Section 2.7.1.1	Yes	No

B2.7.2 Deck Areas

Step	Information Request/Specification/Notes		
B2.7.2.1	What is the Vessel cargo deck area? Section 2.7.2	Length _____ (Feet/m) Width _____ (Feet/m) Area _____ (Ft^2/m^2)	
B2.7.2.2	SRS RCS: Is there a minimum of 2904 ft^2 (269.8 m^2), 88 ft x 33 ft (26.8 m x 10.1 m) of clear aft deck space? Section 2.7.2.1	Yes	No
B2.7.2.3	SRS TUP: Is there a minimum of 3332 ft^2 (309.6 m^2), 98 ft x 34 ft (29.9 m x 10.4 m) of clear aft deck space? Section 2.7.2.2	Yes	No
B2.7.2.4	ROV LARS: Is there a minimum of 1050 ft^2 (97.5 m^2) 25 ft x 42 ft (7.6 m x 12.8 m) of clear aft deck space? Section 2.7.2.3	Yes	No
B2.7.2.5	SRCFS: Is there a minimum of 2001 ft^2 (186 m^2), 48 ft x 42 ft (14.6 m x 12.8 m) of clear aft deck space? Section 2.7.2.4	Yes	No
B2.7.2.6	SRCFS: If there is not an inherent shipboard crane capable of handling the SRC, is there a minimum area of 728 ft^2 (67.6 m^2), 28 ft x 26 ft (8.5 m x 7.9 m) for a truck crane within the SWL arc to support deploying the SRC over the side? Section 2.7.2.5	Yes	No
B2.7.2.7	SRCFS / ROV LARS: Is there a minimum of 3051 ft^2 (283.5 m^2), 74 ft x 42 ft (22.5 m x 12.8 m) of clear deck space? Section 2.7.2.6	Yes	No
B2.7.2.8	SRCFS/ROV/SILOS: Is there in addition to 2.7.3.3 and 2.7.3.4, a minimum of 131 ft^2 (12.2 m^2), 22.5 ft x 5.8 ft (6.9 m x 1.8 m) of clear deck space for generators and fuel? Section 2.7.2.9	Yes	No
B2.7.2.9	LWMS: Is there a minimum of 2717 ft^2 (252.4 m^2) of clear aft deck space? Section 2.7.2.7	Yes	No
B2.7.2.10	SILOS: Is there a minimum of 182 ft^2 (16.9 m^2)? Typical installation is 55 ft 8 in x 28 ft 4 in (17.0 m x 8.6 m) of clear aft deck space? Section 2.7.2.8	Yes	No
B2.7.2.11	NSRS RESCUE SYSTEM w/ NSRS INTERVENTION SYSTEM: Is there a minimum of 6120 ft^2 (568 m^2) 170 ft x 36 ft (51.6 m x 11.0 m) of clear aft deck space? Section 2.7.2.10	Yes	No
B2.7.2.12	NSRS RESCUE SYSTEM w/o NSRS INTERVENTION SYSTEM: Is there a minimum of 4306 ft^2 (400 m^2) 131.2 ft x 32.8 ft (40.0 m x 10.0 m) of clear deck space? Section 2.7.2.11	Yes	No
B2.7.2.13	NSRS INTERVENTION SYSTEM: Is there a minimum of 1808 ft^2 (168.0 m^2) 45.9 ft x 39.4 ft (14.0 m x 12.0 m) of clear deck space? Section 2.7.2.12	Yes	No
B2.7.2.14	RHIB/Small boat and Cradle: Is there a minimum of 214 ft^2 (19.9 m^2) 22.8 ft x 9.0 ft (7.3 m x 2.7 m) of clear deck space? Section 2.7.2.13	Yes	No

B2.7.3 Deck Loading

Step	Information Request/Specification/Notes		
B2.7.3.1	What is the maximum deck loading authorized for the SRS Installation area? Section 2.7.3	Max load: _____ lb/ft^2 _____ tonnes/m^2	
B2.7.3.2	SRS: Can deck support 1025 lb/ft^2 (5 tonnes/m^2)? Section 2.7.3.1	Yes	No
B2.7.3.3	SRS LARS Base Rev 1: Is the Transom of 3/8" (9mm) shell plating? Section 2.7.3.2	Yes	No
B2.7.3.4	SRS LARS Base Rev 0: Is vessel longitudinally framed with transverse structural bulkheads of 7/16 inch (11.1 mm) thick or more? (If "No" attach structural details.) Section 2.7.3.3	Yes	No
B2.7.3.5	SRS LARS Base Rev 0: Are supporting bulkhead vertical stiffener angles a minimum 6" x 4" x 3/8" (152.4 mm x 101.6 mm x 9.5 mm)? (If "No" attach structural details.) Section 2.7.3.3	Yes	No
B2.7.3.6	SRS LARS Base Rev 0: Does the vessel have longitudinal girder spacing 10.0 feet (3.0 m) or less? (If "No" attach structural details.) Section 2.7.3.3	Yes	No
B2.7.3.7	SRS LARS Base Rev 0: Does the vessel have transverse stiffener spacing of 24 inches (609.6 mm) or less? (If "No" attach structural details.) Section 2.7.3.3	Yes	No
B2.7.3.8	SRS LARS Base Rev 0: If the MOSHIP does not meet any of the deck loading capacity requirements above ("Yes" to all items B2.7.3.4 through B2.7.3.7), has an analysis using the procedure outlined in NVIC 1-98 and an ultimate strength of 21.3 klb/in^2 (14.7 kN/cm^2) been conducted using the equipment locations, weights, and centers as defined in reference (v) to verify the structural adequacy of the deck? Section 2.7.3.3	Yes	No
B2.7.3.8	ROV LARS: Can deck support 1025 lb/ft^2 (5 tonnes/m^2) Section 2.7.3.4	Yes	No
B2.7.3.9	SRCFS; Can deck support 942 lb/ft^2 (4.6 tonnes/m^2)? Section 2.7.3.5	Yes	No
B2.7.3.10	SILOS: Can deck support 985 lb/ft^2 (4.8 tonnes/m^2)? Section 2.7.3.6	Yes	No
B2.7.3.11	NSRS RESCUE SYSTEM / TUP: Can deck support 1025 lb/ft^2 (5 tonnes/m^2)? Section 2.7.3.7	Yes	No

Step	Information Request/Specification/Notes		
B2.7.3.12	NSRS PLARS: Does existing ship structure meet PLARS support requirements? (NSRS PLARS installation requires three bulkheads which are (1) the transom bulkhead, (2) a bulkhead no less than 6000 mm (19.7 ft) from the ship's transom, (3) a bulkhead no more than 12000 mm (39.3 ft) from the ship's transom.) Section 2.7.3.8	Yes	No
B2.7.3.13	NSRS INTERVENTION SYSTEM: Can deck support 1025 lb/ft^2 (5 tonnes/m^2)? Section 2.7.3.9	Yes	No
B2.7.3.14	LWMS: Can deck support 746 lb/ft^2 (3.7 tonnes/m^2)? Section 2.7.3.10	Yes	No

B2.7.4 Deck Flatness

Step	Information Request/Specification/Notes	
B2.7.4.1	**1.** What deck hardware is in way of mounting SRS-RCS SITS, SRS-TUP SITS? **2.** Do any deck obstructions (stern roller or other components) exist that would preclude welding of the SITS to the deck within one foot of the transom? **3.** Deck coplanar from transom to 38 ft (11.6 m) forward for SRS-RCS, 68 ft (20.7 m) forward for SRS-TUP? Identify interfering deck hardware on Figure B and Notes section 2.B2.9. Include action/options to adjudicate corrective actions identified in Survey Report. Section 2.7.4.1	Brief Description:
B2.7.4.2	**1.** What deck hardware is in the way of ROV, SRCFS, SILOS, LWMS? Identify interfering deck hardware on Figure B and Notes section B2.9. Include action/options to adjudicate corrective actions identified in Survey Report. Section 2.7.4.2	Brief Description:
B2.7.4.3	**1.** What deck hardware is in the way of NSRS RESCUE SYSTEM, TUP and NSRS INTERVENTION SYSTEM? **2.** Indicate items greater than 1.97 in (5.0 cm) vertical distance from the deck? Identify interfering deck hardware on Figure B and Notes section B2.9. Include action/options to adjudicate corrective actions identified in Survey Report? Section 2.7.4.3	Brief Description:

B2.7.5 Sea Access and Bulwark Openings

Step	Information Request/Specification/Notes		
B2.7.5.1	What size bulwark openings are available and at what locations? Map bulwark openings on figure B. Section 2.7.5	Details: Mark as SAT/UNSAT/Mods Required SRS: SRC: ROV LARS: SILOS: NSRS:	
B2.7.5.2	SRS: If freeboard is higher than 10 feet (3.1 m) can fenders, collision pads, etc. be installed? Section 2.7.5.1	Yes	No
B2.7.5.3	SRS w/LARS Base Rev 0: Is the stern wall opening a minimum of 22 ft (6.7 m) for stern walls less than 3 ft (0.9 m) or a minimum of 32 ft (9.7 m) for stern walls greater than 3 ft (0.9 m)? Section 2.7.5.2	Yes	No
B2.7.5.4	SRS w/LARS Base Rev 1: Is the stern wall opening a minimum of 34 ft (10.4 m)? Section 2.7.5.3	Yes	No
B2.7.5.5	SRCFS: Can fenders, collision pads, etc. be installed? Section 2.7.5.4	Yes	No
B2.7.5.6	SRCFS: Is there a direct line of sight from capstan to the overboarding bulwark with an opening in the bulwark of 48 inches (1.3 m) or the capacity to mount the overboarding roller to the bulwark so personnel can work the umbilical over the side? Section 2.7.5.5	Yes	No
B2.7.5.7	ROV LARS: Can the ROV LARS be secured to the deck within 24 inches (33.0 cm) of the MOSHIP's gunwale? Section 2.7.5.6	Yes	No
B2.7.5.8	ROV LARS: Does the vessel have an 11 ft (3.4 m) opening in the bulwark for the ROV LARS? Section 2.7.5.6	Yes	No
B2.7.5.9	SILOS: Can the SILOS depth sounding davit be placed adjacent to gunwale? Section 2.7.5.7	Yes	No
B2.7.5.10	SILOS: Can the SILOS winch be placed in-line with over boarding sheave? Section 2.7.5.7	Yes	No
B2.7.5.11	SILOS: Can the SILOS over boarding sheave be mounted close to transom? Section 2.7.5.7	Yes	No
B2.7.5.12	NSRS RESCUE SYSTEM SRV: Is the stern wall opening a minimum of 34 ft (10.4 m) for unobstructed over-boarding of the LARS? Section 2.7.5.8	Yes	No
B2.7.5.13	NSRS INTERVENTION SYSTEM: Is the stern wall opening a minimum of 10 ft (3 m) for unobstructed over-boarding of the LARS? Section 2.7.5.9	Yes	No

Step	Information Request/Specification/Notes		
B2.7.5.14	LWMS: Is the bulwark capable of supporting 3,400 lb (1542.2 kg) for anchors and 3,000 lb (1360.8 kg) anchor chain I-beams? Section 2.7.5.10	Yes	No
B2.7.5.15	LWMS: Is there sufficient clear area maintained around capstans and bitts to allow safe line handling? Section 2.7.5.11	Yes	No
B2.7.5.16	LWMS: Is there clear area inboard of the LWMS anchors to allow for release lines and working area? Section 2.7.5.12	Yes	No
B2.7.5.17	LWMS: Are there Capstans and bitts fore and aft for line handling and establishing a 4-point moor? Section 2.7.5.13	Yes	No
B2.7.5.18	LWMS, Mooring Points: Can the installation maximize fore-aft and athwart ships separation of mooring points on vessel? Section 2.7.5.14	Yes	No
B2.7.5.19	LWMS, Anchor chain I-beams: Is there sufficient area to place the I-beams aft of each anchor? (20 ft (6.1 m) of gunwale.) Section 2.7.5.15	Yes	No

B2.7.6 Deck Configuration Systems Requirements

Step	Information Request/Specification/Notes		
B2.7.6.1	Does the vessel have an installed Baxter Bolt system? Section 2.7.6.1	Yes	No
B2.7.6.2	Are the Baxter Bolts spaced on 24 in (61 cm) centers? Section 2.7.6.1	Yes	No
B2.7.6.3	Are the Baxter Bolts rated at a minimum of 10,000 lbs (4535.9 kg) pullout strength? Section 2.7.6.1	Yes	No
B2.7.6.4	Do the Baxter Bolt inserts accept 1-8 UNC bolts with a minimum of 1 in (2.54 cm) thread engagement Section 2.7.6.1	Yes	No
B2.7.6.5	Are the Baxter Bolt inserts flush with the deck? Section 2.7.6.1	Yes	No
B2.7.6.6	Can the SRCFS be installed to maintain the maximum allowed distance between the Control console and either air rack – 80 ft (24.4 m). Section 2.7.6.2	Yes	No
B2.7.6.7	Can the SRCFS be installed to maintain the maximum allowed distance between the Air rack and compressor – 75 ft (22.9 m) Section 2.7.6.2	Yes	No
B2.7.6.8	Can the SRCFS be installed to maintain the maximum allowed distance between air rack to air rack – 30 ft (9.14 m) Section 2.7.6.2	Yes	No
B2.7.6.9	Can the SRCFS be installed to maintain relative positions of SRC, deck roller, umbilical box and backhaul line box maintained for umbilical assembly and handling (see Reference a) Section 2.7.6.2	Yes	No

Step	Information Request/Specification/Notes		
B2.7.6.10	Can the SRS Transponder pole be deployed a minimum of 3 ft (.91 m) below the vessels keel? Section 2.7.6.3	Yes	No
B2.7.6.11	Is there sufficient access on the Port or STBD side of the vessel to mount the 32 ft (9.7 m) SRS Transponder Pole? Section 2.7.6.3	Yes	No
B2.7.6.12	MAX distance ROV LARS to PDU is 110 ft (33.5 m), CV to LARS 50ft (15.2 m) and PDU to CV 90ft (27.4 m). Section 2.7.6.4	Yes	No
B2.7.6.13	Does the deck have standard ISO container attachments? Section 2.7.6.5	Yes	No

B2.8 Cranes

Step	Information Request/Specification/Notes		
B2.8.1	What is the capacity of the vessel cargo area deck crane at each 10ft (3m) reach interval? Section 2.8	10ft (3m) _____ Notes: 20ft (6m) _____ 30ft (9m) _____ 40ft (12m)_____ 50ft (15m)_____	
B2.8.2	Does the crane have an IACS Classification Society man lift rating? Section 2.8	Yes	No
B2.8.3	SRCFS, 12.5 short tons (11.8 tonnes): Is the shipboard crane SWL sufficient to lift the SRC from 15 ft (4.6 m) over the side to the SRC staging area on the vessel? Section 2.8.1	Yes	No
B2.8.4	SRCFS, 1500 lbs (680.3 kg): Is the shipboard crane SWL sufficient to lift the SRCFS Rescue Reel from 10 ft (3.04 m) over the side to the rewind stand? Section 2.8.1	Yes	No
B2.8.5	LWMS, 6000 lbs (2721.6 kg): Is the shipboard crane SWL capacity sufficient to lift from 15 ft (4.6 m) over the side to the mooring anchor recovery area on the vessel? Section 2.8.2	Yes	No
B2.8.6	RHIB, 5700 lbs (2585.5 kg): Is the shipboard crane SWL capacity sufficient to lift from 15 ft (4.6 m) over the side to the RHIB on deck stowage cradle? Section 2.8.2.1	Yes	No

B2.9. Notes

Section	Explanation

Appendix C
MOBARGE Survey Check list

NOTE:
Any Yes or No questions that require amplifying information shall be documented in the 1.4 NOTES section at the back of the survey.

C1. Safety Equipment for Manned Operations.

Step	Information Request/Specification/Notes		
C1.1	Is the Barge Certified for Open Manned Operations per applicable USCG and/or ABS regulations? Section 3.1.2	Yes	No
	- OR -		
C1.2	Can the following equipment be installed? (Installation of equipment to support manned operations shall be accompanied by an up-to-date USCG Certificate of Inspection (COI) or Temporary COI)	Yes	No
C1.2.1	Emergency alarm system and panel (fire, man overboard, general, flooding, abandon ship alarms) Section 3.1.2.1	Yes	No
C1.2.2	Fire Alarm Pull Stations Section 3.1.2.2	Yes	No
C1.2.3	Man overboard alarm pull stations Section 3.1.2.3	Yes	No
C1.2.4	Alarm speakers. Section 3.1.2.4	Yes	No
C1.2.5	Fire, smoke, heat, flooding sensors. Section 3.1.2.5	Yes	No
C1.2.6	Emergency Lighting. Section 3.1.2.6	Yes	No
C1.2.7	Emergency Gear Locker. Section 3.1.2.7	Yes	No
C1.2.8	Lifesaving equipment and associated launch equipment to accommodate embarked personnel. (Embarked personnel capacity: _____) Section 3.1.2.8	Yes	No
C1.2.9	Life rafts to accommodate embarked personnel. (Embarked personnel capacity: _____) Section 3.1.2.9	Yes	No
C1.2.10	Intercom/General announcing system. Section 3.1.2.10	Yes	No
C1.2.11	Safety Rails or Lines. Section 3.1.2.11	Yes	No

C1.2.12	Fire Pump and associated firefighting equipment. Section 3.1.2.12	Yes	No
C1.2.13	Portable firefighting equipment and mountings. Section 3.1.2.13	Yes	No
C1.2.14	Black Water Tank / Pollution abatement equipment. Section 3.1.2.14	Yes	No
C1.2.15	Navigation and warning lights. Section 3.1.2.15	Yes	No
C1.2.16	Boarding ladder access. Section 3.1.2.16	Yes	No

C2. On-Site Tug Support

Step	Information Request/Specification/Notes		
C2.1	Is the barge provided with a Vessel capable of maneuvering and towing at all times during the Operation? Section 3.2.1	Yes	No

C3. Deck Area

NOTE:

Deck area for items 3.3.1 – 3.3.6 are either on the barge or if the barge has a permanent support vessel can be on a Support Vessel)

Step	Information Request/Specification/Notes		
C3.1	Does the Barge have sufficient deck area for installation of four capstans (with a source of power), associated fairleads, and cabling to support the LWMS in 2,000 feet (609.6 m) of water? Section 3.3.1	Yes	No
C3.2	Does the barge have 800 ft^2 of deck area of to accommodate portable accommodations modules for at least 100 rescuees? Section 3.3.2	Yes	No
C3.3	Does the barge have 200 ft^2 of deck area to accommodate portable accommodations modules for infirmary equipment and treatment room? Section 3.3.3	Yes	No
C3.4	Does the barge have 400 ft^2 of deck area to accommodate portable office modules for 2 offices and meeting rooms? Section 3.3.4	Yes	No
C3.5	Does the barge have 400 ft^2 of deck area to accommodate two 8 ft x 20 ft (2.4 m x 6.1 m) workshop containers? Section 3.3.5	Yes	No
C3.6	Does the barge have 400 ft^2 of deck area to accommodate portable galley, refrigerator and freezer modules? Section 3.3.6 NOTE: The area can be either on the barge or on a support vessel. (Additional cargo deck area and auxiliaries such as power, CHT, and water)	Yes	No

C3.7	Does the barge have 100 ft^2 of deck area or is able to install portable lighting capable of illuminating the deck for night operations? Section 3.3.7	Yes	No

C4. Operational Capabilities

Step	Information Request/Specification/Notes		
C4.1	Is the Barge's Certificate of Inspection updated to reflect acceptable use of lifting equipment over the side and stern if not already present? Section 3.4.1	Yes	No
C4.2	Does the barge have Ship-to-ship and ship-to-shore voice communications? Section 3.4.2	Yes	No

C5. Notes

Section	Explanation

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Appendix D
Pre-Survey Check List

D1. Cover Letter Example

INTRODUCTION

System Overview

The SRDRS is a rapidly deployable rescue asset designed to rescue up to 155 men from a disabled submarine at depths up to 2,000 feet. This system is the United States Navy's primary deep-water asset with the ability to rescue men in a pressurized environment up to five atmospheres. Installing the SRDRS assets onboard a Mother Ship (MOSHIP) is conducted with maximum efficiency and minimum delay in order to assist in achieving the desired Time to First Rescue.

To help ensure the installation process is as efficient as practicable, the United States Navy and Submarine Rescue Operations Maintenance Contractor (SROMC) is carrying out a number of surveys on key MOSHIPs throughout the world. The output of these surveys will provide an indication that the surveyed vessel is, or can be modified to be, a qualified MOSHIP able to operate SRDRS and other rescue support equipment.

Please complete this questionnaire and provide the requested documentation to aid in the screening process and to provide information in advance of an on-site survey. The SROMC and The United States Navy will use the information in the completed questionnaire during the survey to identify areas requiring further examination.

Your support in this effort is deeply appreciated by the SROMC and the United States Navy. Please feel free to contact us if you have any questions. The following personnel are the primary points-of-contact before and during the MOSHIP survey process:

The attached is a PDF form and can be completed electronically or printed and completed.

VESSEL INFORMATION

Vessel Name:	Flag:
Vessel IMO Number:	Classification Society:
Vessel MMSI Number:	Vessel Type and Builders Design:
Length and Width of the Vessel:	GT:

CONTACT INFORMATION FOR VESSEL INFORMATION

Master / ship
Owners / Managers
Other useful contacts

1. REQUESTED DOCUMENTS

Please attach a copy of the following documents, if available.

NAME OF DOCUMENT	ATTACHED
General Arrangement	☐ YES ☐ NO
Main Deck, Tween, or Second Structural Plans	☐ YES ☐ NO
Vessel Specifications	☐ YES ☐ NO

A copy of the following documents are desired to be reviewed or obtained during actual survey or when available.

NAME OF DOCUMENT	ATTACHED
Fire Control and Safety Plan	☐ YES ☐ NO
Specification/drawings for launch and recovery system/ROV	☐ YES ☐ NO
Exceptions to class	☐ YES ☐ NO
Crane certification	☐ YES ☐ NO
Tank capacity plan	☐ YES ☐ NO
Ship Stability booklet	☐ YES ☐ NO
DP FMEA	☐ YES ☐ NO

2. MINIMUM REQUIREMENTS

Question No.	REQUIREMENTS (Use section 3 for comments)	
1.1	Is the vessel classed by an International Association of Classification Society (IACS) member? Section 2.1.1	☐ YES ☐ NO
1.2	Can deck timbers (if installed) be removed from the aft working deck? Section 2.7.1.2	☐ YES ☐ NO
1.3	Can the vessel provide a clear aft deck area of 88 ft (26.8 m) in length from the transomand 33 ft (10.1 m) in width with no items of a vertical height 2 in (5.08 cm) or greater from the deck? Section 2.7.2.1 If no, document in Section 3 any items that cannot be cut off or otherwise removed.	☐ YES ☐ NO
1.4	Can the vessel provide a clear aft deck area of 98 ft (29.9 m) in length from the transom and 34 ft (10.4 m) in width with no items of a vertical height 2 in (5.08 cm) or greater from the deck? Section 2.7.2.2 If no, document in Section 3 any items that cannot be cut off or otherwise removed.	☐ YES ☐ NO
1.5	Is the cargo loading capacity of 1025 lb/ft^2 (5 tonnes/m^2)? Section 2.7.3.1	☐ YES ☐ NO
1.6	Is the transom constructed of minimum 3/8" (9mm) shell plating? Section 2.7.3.2	☐ YES ☐ NO
1.7	Can the vessel conduct aft deck and launch and recovery **operations** with 166 short ton (150 tonnes) system installed in up to Sea State 4? Section 2.4.3	☐ YES ☐ NO
1.8	Can the vessel maintain ship **survivability** with 166 short ton (150 tonnes) system in up to Sea State 6? Section 2.4.4	☐ YES ☐ NO
1.9	Can welding be conducted on the aft working deck? Section 2.7.1.3 If no, document in Section 3 any locations of no weld zones.	☐ YES ☐ NO
1.10	Is the vessel's freeboard less than 10 ft (3.1 m) or be ballasted to achieve this maximum freeboard? Section 2.4.2 If no, document in Section 2 vessel's freeboard.	☐ YES ☐ NO
1.11	Is the vessel's stern clear and without a stern roller? Section 2.7.5 If no, document in Section 3 any equipment attached to the stern.	☐ YES ☐ NO
1.12	Can the vessel provide an opening in the stern wall to provide for the unobstructed over-boarding of an A-frame launch and recovery system? Section 2.7.5.1 *A minimum of a 22 ft (6.7 m) cut or removable opening is required. On vessels with a stem wall greater than 3 ft (0.9 m) in height, an opening of 32 ft (9.7 m) is required to clear the A-frame winches.*	☐ YES ☐ NO

Question No.	REQUIREMENTS (Use section 3 for comments)	
1.13	Is the vessel capable of 10 days un-replenished operations with 30 addition personnel? *This includes food, berthing, potable water, and waste disposal.* Section 2.6.5 If no, list limitations in Section 3.	☐ YES ☐ NO
1.14	Can the vessel provide 20,500 gallons (77,600 L) of cleaned and polished No.2 diesel fuel to the working deck for a diesel generator? Section 2.6.8 If no, document the amount the vessel is able to transferred and/or if the vessel has the capability to transfer fuel from a support vessel at sea.	☐ YES ☐ NO
1.15	Can the vessel provide up to 2000 gallons (7570.8 liters) of freshwater to the aft deck for wash down of equipment and for filling ballast bags? Section 2.6.9 If no, document the amount the vessel is able to transfer and/or the availability of seawater to the aft deck.	☐ YES ☐ NO
1.16	Is the vessel equipped with a crane? Section 2.8 Document the number and capabilities of the cranes in Section 3.	☐ YES ☐ NO
1.17	What type of electrical power can the vessel produce? What electrical power connections are located on deck? Section 2.5 Document in Section 3.	

3. ADDITIONAL INFORMATION

The table below is for additional or supporting information for any of the questions in section 1.

Question No.	Comments

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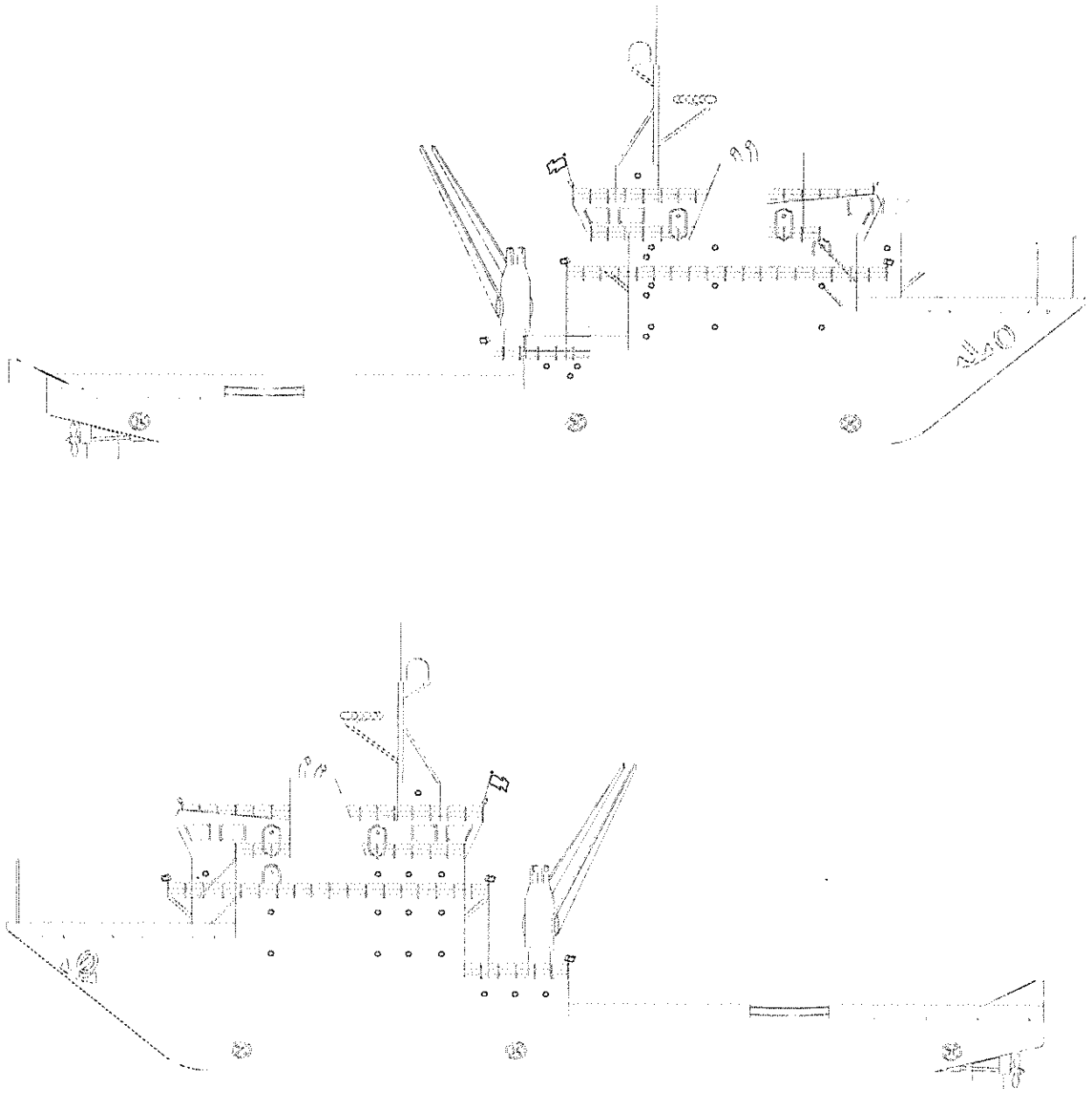

FIGURE A - DP Thruster Location Map

SKETCH NO WELD ZONE AND INTERFERING DECK HARDWARE LOCATIONS

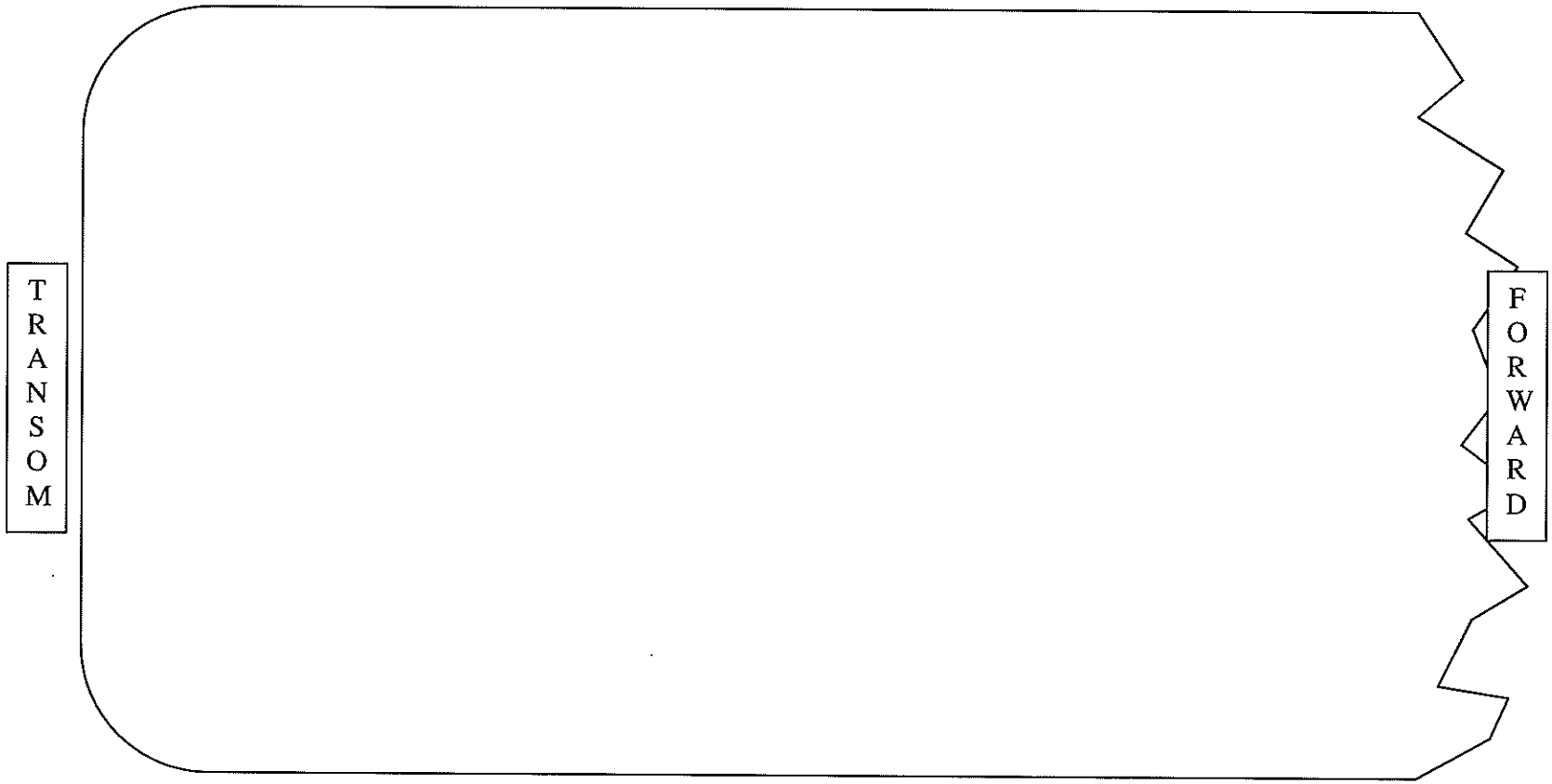

FIGURE B - Sketch No Weld Zone and Interfering Deck Hardware Locations