

ANAVE – Circular de Régimen Interior

Madrid, 5 de abril de 2022
Ref: Varios 25/2022/MH

Asunto: Armada - Acuerdo de colaboración para el transporte de vehículos de rescate a submarinos.

Muy Srs. nuestros:

La Armada tiene acuerdos de colaboración con empresas navieras que ofrecen su(s) buque(s) en régimen de disponibilidad. Estos buques pueden continuar con sus labores comerciales hasta el momento en que la Armada los necesite y en caso de un incidente se ponen a disposición para ser utilizados como **buques de oportunidad** (vessels of opportunity, VOO).

Estos VOO se encargarían, en el marco de un acuerdo internacional, de trasladar un vehículo de rescate (mini submarino) y sus equipos hasta el lugar del suceso.

Existen dos tipos diferentes de vehículos de rescate, el *Submarine Rescue Diving and Recompression System*, SRDRS y el *NATO Submarine Rescue System*, NSRS. Este segundo se encuentra en Escocia y, en caso de incidente en aguas españolas, sería el que se utilizaría con más probabilidad.

Las características que debe reunir el buque para poder transportar cada uno de los vehículos se detallan en los anexos:

1. *Submarine Rescue Diving and Recompression System*, SRDRS
 - Anexo I – Características que deben cumplir los buques de oportunidad para transportar el SRDRS.
2. *NATO Submarine Rescue System*, NSRS.
 - Anexo II – Características que deben cumplir los buques de oportunidad para transportar el NSRS.
 - Anexos III, IV y V – Ejemplos de cubiertas

Las empresas que dispongan de buques de tales características pueden ponerse en contacto con Ramón Álvarez Viñes ralvarezv@mitma.es para un mayor detalle no más tarde del **martes 19 de abril**, indicando:

- Nombre del buque y número OMI
- Vehículo que pueden transportar (SRDRS o NSRS)
- Datos de una persona de contacto.

Muy cordialmente,

Elena Seco
Directora General

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DEPARTMENT OF THE NAVY
ADVANCED UNDERSEA SYSTEMS PROGRAM MANAGER
1339 PATTERSON AVE. SE STOP 7026
WASHINGTON NAVY YARD, DC 20376-7026

REISSUE
IN REPLY REFER TO
9070
Ser 394R/0165
13 May 11

From: Advanced Undersea Systems Program Manager (PMS394)
To: Distribution

Subj: SPECIFICATION FOR SUBMARINE RESCUE SYSTEM VESSEL OF
OPPORTUNITY, REV D, RELEASE OF

Ref: (a) PMS394 ltr 9070 Ser 394R/0774 of 04 Nov 08

Encl: (1) Submarine Rescue Diving and Recompression System
Vessel of Opportunity Specification, Rev D
(2) Submarine Rescue Diving and Recompression System
Vessel of Opportunity Checklist, Rev D

1. **Background:** This letter approves and promulgates the revised specification for the Submarine Rescue Diving and Recompression System (SRDRS) Vessel of Opportunity (VOO) and SRDRS VOO Survey Checklist, provided as enclosure (1) and (2), respectively.

2. **Discussion:** The specification and checklist are intended to be used by the U.S. Navy's Submarine Rescue Operations/Maintenance Contractor for pre-qualification of VOOs worldwide and for VOO selection on an emergent basis during rescue operations. Additionally, the specification and checklist may be used by foreign navies to help identify existing local vessels or as a design specification for new ships to support 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.

Subj: SPECIFICATION FOR SUBMARINE RESCUE SYSTEM VESSEL OF
OPPORTUNITY, REV D, RELEASE OF

5. The Advanced Undersea Systems Program Manager In-Service
Rescue point-of-contact is Andrew Little, PMS394RE, at (202)
781-7323 or andrew.w.little@navy.mil. The Global Rescue point-
of-contact is Harold "Dave" Wunder, PMS394RG, at (202) 781-7413
or harold.wunder@navy.mil.



MICHAEL D. MCCLATCHEY

By direction

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SUBMARINE RESCUE DIVING AND RECOMPRESSION SYSTEM

VESSEL OF OPPORTUNITY SPECIFICATION REV D

Naval Sea Systems Command
Advanced Undersea Systems Program (PMS394)
1339 Patterson Ave SE, Stop 7026
Washington Navy Yard, DC 20376-8026

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RELEASE 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 VOO Specification into document. Re-review of mandatory requirements. Incorporate new LARS Base requirements and deck flatness clarification.

OVERVIEW

This document provides the requirements specification for the Submarine Rescue Diving and Recompression System (SRDRS) Vessel of Opportunity (VOO). SRDRS is comprised of the Assessment Underwater Work System (AUWS) and the Submarine Rescue System (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 VOO to support and operate the Submarine Rescue System (SRS).

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, and replicates the functionality of the Deep Submergence Rescue Vehicle (DSRV). 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 TUP requirements are for information only and are subject to change pending capability delivery.

There are two LARS Base configurations for SRS. 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.

The Rev 1 Launch and Recovery System (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 5 tonnes/ m² or greater.

The AUWS portion of SRDRS consists of the Atmospheric Diving System 2000 (ADS), its Launch and Recovery System (LARS), the Light Weight Mooring System (LWMS), and a Side Looking Sonar System (SILOS). The ADS is rated for 2000 ft (609.6 m) seawater. The ADS is capable of operations to a reduced depth without its LARS with the ADS launched from a classed/certified shipboard crane and the tether hand-tended by line handlers. A shipboard crane that has been classed by a maritime classification society for manned use is preferred.

The SRCFS portion is a rescue chamber capable of operations to 850 ft (259.08 m) seawater. A shipboard crane that has been classed by a maritime classification society is preferred.

The following Drawings, along with this document, form the complete SRDRS VOO specification:

- a. NAVSEA Drawing 7411191 ICD, SRS to VOO Deck Layout
- b. NAVSEA Drawing 7411192 ICD, SRS To VOO Structural Interface Draft
- c. NAVSEA Drawing 594-6395636 Atmospheric Diving System (ADS) Launch and Recovery System (LARS) Vessel of Opportunity (VOO) Mounting Procedure
- d. NAVSEA Drawing 594-7329708 AUWS and SRC VOO Deck Layout

It is intended that this document be used in conjunction with the above drawings to qualify candidate VOOs and establish a worldwide pool of vessels available in areas of submarine operations.

SRS VOO attributes have been categorized as mandatory, critical, or mission enhancing.

Mandatory requirements - Provide the absolute minimum attributes needed for a rescue and require a Departure from Specification (DFS) approved by NAVSEA PMS394 if not met.

Critical attributes - while not required, increase the likelihood of meeting rescue timelines but should not necessarily be used to eliminate a candidate VOO.

Mission enhancing elements - should be considered but are not necessary to perform a rescue.

For purposes of this document, Sea States are defined using Table D-1 of STANAG 4194, Standard Wave and Wind Environments and Shipboard Reporting of Sea Conditions.

NOTE: 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:

"**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.

The document is broken into seven appendixes:

- Appendix 1 - SRS VOO Capabilities applicable to all VOOs
- Appendix 2 - Barges as Vessels of Opportunity for SRS
- Appendix 3 - ADS VOO Capability
- Appendix 4 - SRCFS Capabilities applicable to all VOOs
- Appendix 5 - SILOS VOO Capability
- Appendix 6 - LMWS VOO Capability
- Appendix 7 - Acronyms

VOO CAPABILITIES APPLICABLE TO ALL VOOs

No.	SRS VOO Capability	Mandatory Requirement	Objective
1	Vessel Classification and General Conditions	<ul style="list-style-type: none"> a. Class by an International Association of Classification Society (IACS) member. b. Is the vessel Classification current at the time of mobilization and deployment. 	
2	Available Deck Area	<ul style="list-style-type: none"> a. Clear deck area of 88 ft (26.8 m) in length and 33 ft (10.1 m) in width for the SRS-RCS configuration. b. Clear deck area of 98 ft (29.9 m) in length and 34 ft (10.4 m) in width for the SRS-TUP configuration. <p>NOTE: The SRS-RCS and SRS-TUP footprint can be found in NAVSEA Drawing 7411191 ICD, SRS to VOO Deck Layout.</p> <p>NOTE: If VOO is a barge, see additional requirements section.</p> <p>Deviations to the notional deck configuration would need to be concurred to by the attending ABS Surveyor (NAVSEA approval is required for major departures).</p>	Clear deck area of 110 ft (33.5 m) in length and 40 ft (12.2 m) in width for the SRS-RCS configuration.

No.	SRS VOO Capability	Mandatory Requirement	Objective
3	Vessel Deck Loading Capacity	<ul style="list-style-type: none"> a. Cargo loading capacity of 1025 lb/ft² (5 tonnes/m²) b. Minimum deck load capacity with 160 short ton (145.2 tonnes) for SRS-RCS, 500,000 pounds (227 tonnes) for SRS-TUP. c. Rev 1 Bases only - Transom of 3/8" (9mm) shell plating d. Rev 0 Bases only - Longitudinal or transverse structural bulkheads with minimum scantlings of 7/16" (11.1 mm) thickness and 6" x 4" x 0.375" (152.4 mm x 101.6 mm x 9.5 mm) vertical angle stiffeners. Center to center spacing shall be no more than 24" (609.6 mm), or structural equivalent. e. Rev 0 Bases only Any location and orientation of support bulkheads is acceptable as long as they provide sufficient support to the LARS attachment points on the deck. Transverse bulkheads located at a distance of between 3 to 4 ft (91.4 cm to 121.9 cm) and between 22 to 34 ft (660 cm to 1020 cm) forward of the transom would be a typical solution. <p>Note: If the VOO does not meet any of deck loading capacity requirements above, an analysis may be conducted using the equipment locations, weights, and centers as defined in ICD 7411192 to verify the structural adequacy of the deck to support SRS.</p>	

No.	SRS VOO Capability	Mandatory Requirement	Objective
4	Position-Keeping Capability	<ul style="list-style-type: none"> a. Capable of entering and maintaining a 4-point moor in depths up to 2000 ft (609.6 m). Or b. Equipped with a International Maritime Organization (IMO) Equipment Class 2 dynamic positioning system (DPS). A waiver shall be submitted to NAVSEA PMS394 if a DPS Class of less than 2 is used. c. The location of any moving DPS machinery (thrusters, propellers, etc.) shall not be within 15 ft (4.6 m) of an umbilical. d. DPS shall be able to maintain VOO ± 60 ft and ± 10 degrees from a given position/heading once the DPS has stabilized. e. The DPS position reference systems shall not be taut wire or a laser system. 	

No.	SRS VOO Capability	Mandatory Requirement	Objective
5	Sea-Keeping Capability	<p>a. Shall be able to conduct aft deck and launch and recovery operations with 160 short ton (145.2 tonnes) system (SRS-RCS) installed in up to Sea State 4.</p> <p>b. Shall maintain ship survivability with 160 short ton (145.2 tonnes) system in up to Sea State 6.</p> <p>NOTE: 250 short tons (226.8 tonnes) is the expected weight of the SRS-TUP configuration installed in up to Sea State 4.</p>	<p>a. Shall be able to conduct aft deck and launch and recovery operations with 160 short ton (145.2 tonnes) system (SRS-RCS) installed in up to Sea State 5.</p> <p>b. Shall maintain ship survivability with 160 short ton (145.2 tonnes) system installed in up to Sea State 7.</p>
6	Vessel Stability	<p>For all operating scenarios (including the worst case scenarios found in ICD 7411191), the VOO, with the LARS and PRM installed, shall comply with all intact and damage stability criteria required by the VOO's Flag Administration and Classification Society's Rules.</p> <p>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.</p>	

No.	SRS VOO Capability	Mandatory Requirement	Objective
7	Deck Flatness	<p>a. The deck shall be coplanar with a maximum vertical deviation of 2 in (5.08 cm) when measured from the transom to 64 ft (19.5 m) forward of the transom for SRS-TUP.</p> <p>b. Deck hardware shall be removed in way of SITS and LARS Bases if vertical height is 2 in (5.08 cm) or greater from the deck.</p> <p>NOTE: Includes retractable deck equipment.</p>	
8	Lifesaving Equipment Capacity	<p>Provide sufficient storage for additional life-saving equipment provided by the SRDRS Operations and Maintenance Contractor (up to 30 personnel).</p> <p>NOTE: If VOO is a barge, see additional requirements section.</p>	<p>Provide sufficient life-saving equipment to meet local regulatory and SOLAS requirements for all embarked SRDRS personnel and rescuees.</p>

No.	SRS VOO Capability	Mandatory Requirement	Objective
9	Working Deck Fire Protection Capability	<p>Provide fire-fighting coverage of all SRDRS elements on deck using the VOO'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.</p> <p>NOTE: The VOO is expected to have a fire main connection back aft and fire fighting equipment that can be used to fight a fire on any SRS component.</p>	
10	Vessel Freeboard	<p>Maximum freeboard of 10 ft (3.1 m).</p> <p>NOTE: The VOO may be ballasted to achieve this maximum freeboard, provided it does not violate USCG or Classification Society regulations regarding stability. Freeboards of 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 and a waiver submitted to NAVSEA PMS394.</p>	

No.	SRS VOO Capability	Mandatory Requirement	Objective
11	Over-boarding Access	Provide sufficient opening of any stern wall to provide for the unobstructed over-boarding of the LARS. A minimum of a 22 ft (6.7 m) opening is required and on VOOs with stern walls greater than 3 ft (0.9 m) in height, an opening of 32 ft (9.7 m) is required to clear the LARS winches.	
12	Transducer Pole Installation	Provide sufficient access on the PORT or STBD side of the VOO to mount the 32 ft (9.7 m) Transponder Pole wherein when the pole is deployed it will extend a minimum of 10 ft (3 m) below the VOO keel.	

No.	SRS VOO Capability	Critical Attribute	Objective
13	Operating Endurance	<p>a. Capable of 10 days un-replenished operation (or replenishment of critical stores) with 30 additional personnel (SRS-RCS). This includes:</p> <ol style="list-style-type: none"> 1. food 2. berthing 3. potable water 4. waste disposal (sanitary) 	<p>a. Capable of 20 days un-replenished operation (or replenishment of critical stores) with 30 additional personnel (SRS-RCS). This includes:</p> <ol style="list-style-type: none"> 1. food 2. berthing 3. potable water 4. waste disposal (sanitary)
14	Provision for Small Boat and Associated Launch and Recovery Equipment	<p>Provide sufficient space on deck to accommodate a small boat and associated launch and recovery equipment</p> <p>NOTE: Small boat in its cradle weighs 5700 lbs (2585.5 kg) and is 275 in (7 m) long, 88 in (223.5 cm) tall (keel to console, not on cradle), 96 in (243.8 cm) wide deflated (110 in (279.4 cm) wide inflated).</p>	<ol style="list-style-type: none"> a. Provide a small boat and associated launch and recovery equipment for use during emergency recovery of the PRM. b. Provide an 80 HP motor with a tow point forward of the engine for the small boat.

No.	SRS VOO Capability	Critical Attribute	Objective
15	Remote Monitoring Station Capacity	<p>Provide sufficient space to accommodate the Remote VOO Monitoring Control Station. This includes voice communications with SRS personnel on deck, video monitoring of SRS cameras.</p> <p>NOTE: VOO 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.</p>	Provide sufficient space on the bridge to accommodate the Remote VOO Monitoring Control Station.
16	Diesel Fuel Capacity	Provide 20,500 gallons (77,600 L) of cleaned and polished No. 2 Diesel fuel, accessible on the working deck, for the Generator Van (GV). As an alternative, the VOO shall have the capability to transfer the fuel from a support vessel.	

No.	SRS VOO Capability	Critical Attribute	Objective
17	Fresh Water	Provide up to 2000 gallons (7570.8 liters) of freshwater to the fantail for wash down of PRM and equipment, as well as for filling PRM ballast bags.	
18	Gas (Workshop Quality Air)	Provide workshop-quality compressed air to entire fantail for tools such as air driven wrenches. This will allow more rapid system installation.	
19	On-Board Crane	<p>A crane with a 25 short ton (22.7 tonnes) capacity with sufficient reach to lift the PRM from the pier to the centerline of the VOO.</p> <p>Note: On-board cranes will speed the mobilization and de-mobilization of the system but are not required.</p>	A crane with a 110 ton (100 tonnes) capacity with sufficient reach to lift the LARS from the pier to the stern of the ship.
20	Emergency Power Supply Capability	Provide 350 kW of 480 VAC, 3-phase, Delta, 60 Hz, 400 A electric power per bus to the GV in event of GV engine failure.	

No.	SRS VOO Capability	Mission Enhancing Element	Objective
21	Helicopter Deck	Helicopter deck allows easier and quicker transfer of personnel to and from the SRS VOO.	
22	Acoustic Tracking Systems	a. Installed transducer deployment system, or b. An acoustic tracking system. This provides additional capability to track the PRM once in the water. An installed depth tracking system will prevent the PRM rising beneath the hull during recovery operations	
23	Sick Bay	Well-equipped sick bay. This can enhance the capability for medical treatment of survivors.	

BARGES AS VESSELS OF OPPORTUNITY FOR SRS

No.	Additional Requirement	Requirement	Objective
1	Safety Equipment for Manned Operations	a. Certified for Open Ocean Manned Operations per applicable USCG and/or ABS regulations. Or b. Following equipment shall be installed: 1. Emergency alarm system and panel (fire, man overboard, general, flooding, abandon ship alarms). 2. Fire alarm pull stations. 3. Man overboard alarm pull stations. 4. Alarm speakers. 5. Fire, smoke, heat, and flooding sensors. 6. Emergency lighting. 7. Emergency gear locker. 8. Life saving equipment and associated launch equipment. 9. Life rafts to accommodate 30 souls. 10. Intercom/general announcing system. 11. Safety rails or lines. 12. Fire pump and associated firefighting equipment.	

No.	Additional Requirement	Requirement	Objective
		<p>13. Portable firefighting equipment and mountings.</p> <p>14. Black water tank/pollution abatement equipment.</p> <p>15. Navigation and warning lights.</p> <p>Installation of equipment to support Manned Operations shall be accompanied by an up-to-date USCG Certificate of Inspection (COI) or Temporary COI.</p>	
2	On-Site Tug Support	Accompanied by a vessel that is capable of maneuvering and towing at all times during operations.	
3	Available Deck Area	Sufficient deck area for the installation of four winches, associated fairleads, and cabling to support a 4 point moor of the barge in 2,000 ft (609.6 m) of water.	<p>a. Deck area to accommodate portable accommodations modules for at least 100 rescuees.</p> <p>b. Deck area to accommodate portable accommodations modules for infirmary equipment and treatment room.</p> <p>c. Deck area to accommodate portable office modules for 4 offices and meeting rooms.</p> <p>d. Deck area to accommodate two 8 ft by 20 ft (2.4 m by 6.1 m) workshop containers.</p> <p>e. Deck area to accommodate portable galley, refrigerator and freezer modules.</p> <p>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)</p>

No.	Additional Requirement	Requirement	Objective
4	Voice Communications Capability	<p>Provide ship-to-ship and ship-to-shore voice communications as required by local regulatory agencies. This capability can be installed as a portable installation upon SRS embarkation.</p> <p>NOTE: Navy communication package fits within a 8 ft X 10 ft (2.4 m X 3.1 m) CONEX Box.</p>	
5	Lighting	<p>Installed or portable lighting capable of illuminating the deck for night operations.</p>	
6	Stability	<p>The Barges Certificate of Inspection shall be updated to reflect acceptable use of lifting equipment over the side and stern if not already present.</p>	

ADS VOO Capability

SS520-AU-SCB-010/ADS REV 01
APPENDIX H

ADS MISSION MATRIX	SHIPPING WEIGHTS AND LOAD SQFT REQUIRED	Estimated VOO Deck Space Required	AIRCRAFT PALLET POSITIONS REQUIRED	2000-950 FSW LARS M	950-850 FSW HT Mode	850-300 FSW HT Mode	300-190 FSW HT Mode	<190 FSW HT Mode	VOO MAN RATED CRANE REQUIRED
ADS CONFIGURATIONS									
CONFIGURATION 1: 2 ADS SUITS, 2 LARS. -STAND-BY ASSET- 2nd ADS SUIT	169570 LBS 958.9 SQFT	1917.8 SQFT	33	X	X	X	X	X	
CONFIGURATION 2: 1 ADS SUIT, 1 LARS. -STAND-BY ASSET- 1 ROV.	116070 LBS 638.9 SQFT	1277.8 SQFT	22	X	X	X	X	X	
CONFIGURATION 3: 1 LARS, 2 ADS SUITS. -STAND-BY ASSET- 2nd ADS SUIT <i>(transfer std-by suit to LARS for manning and launch)</i>	123070 LBS 798.9 SQFT	1597.8 SQFT	23		X	X	X	X	NOT MAN RATED
CONFIGURATION 4: 2 ADS SUITS. -STAND-BY ASSET- 2nd ADS SUIT	66950 LBS 564.8 SQFT	1129.6 SQFT	9		X	X	X	X	X
CONFIGURATION 5: 1 ADS SUIT. -STAND-BY ASSET- 1 ROV	59950 LBS 404.8 SQFT	809.6 SQFT	8		X	X	X	X	X
CONFIGURATION 6: 1 ADS SUIT. -STAND-BY ASSET- FLY-AWAY SAT SYSTEM.	59950 LBS 404.8 SQFT	809.6 SQFT	8			X	X	X	X
CONFIGURATION 7: 1 ADS SUIT. -STAND-BY ASSET- FMGS DIVERS.	59950 LBS 404.8 SQFT	809.6 SQFT	8				X	X	X
CONFIGURATION 8: 1 ADS SUIT. -STAND-BY ASSET- FADS DIVERS.	59950 LBS 404.8 SQFT	809.6 SQFT	8					X	X
CUSTOM CONFIGURATION :	0 LBS 0 SQFT	0 SQFT	0						
Notes									
1. Does not denote the stand-by asset weights / sqft.									
2. ADS Suits are limited to 950 (fsw) in the Hand Tended Mode with a 1200 (ft) neutral tether and 2000 (fsw) in the LARS mode.									
3. Man Rated crane is required for Hand tended ADS operations, not required for LARS									
4. Power requirements for ADS LARS operations are Main supply 3 Phase / 60Hz / 460 Vac / 200 AMP & Secondary Supply 3 Phase / 60Hz / 460 Vac / 200 AMP									

Table 1

No.	ADS VOO Capability	Requirement	Objective
1	Available Deck Area	<p>Note: Refer to NAVSEA Drawing 594-6395636.</p> <ul style="list-style-type: none"> a. Depends on configuration, see NAVSEA Drawing 594-6395636. Equipment placement is subject to the following restrictions: <ul style="list-style-type: none"> 1. MAX distance LARS to HPU is 20 ft (6.1 m). 2. MAX distance between any two ADS deck mounted components is 70 ft (21.3 m). b. LARS placement is subject to access for deploying of the ADS. An 11 ft (3.4 m) opening in the bulwark is required for each LARS. c. The LARS Skid cannot be secured to the deck any further than 35.5 in (90.2 cm) from the VOO's gunwale. d. Consideration should be given to maximize the distance between the over boarding position of the ADS and the vessel's propellers, rudders, and thrusters. 	<p>Standard 1 in diameter Baxter Bolt receivers spaced on 24 in (61 cm) centers available on working deck. (Minimum pullout strength of 10,000 lbs (4535.9 kg))</p> <p>NOTE: Use of a non-man rated crane requires NAVSEA approval.</p> <p>NOTE: Deck space in NAVSEA Drawing 594-6395636 includes portable generators.</p> <p>NOTE: The Intermediate Skid raises the LARS approximately 12 in (30.5 cm), allowing the LARS to be used where low obstructions exist along the VOO gunwale.</p> <p>NOTE: Provided the hull wall is vertical to the waterline or angled towards the ship's centerline as viewed from the deck. Any object protruding from the hull (bumpers, thrusters, fin stabilizers, etc.) or any protrusion on the ship's hull itself must be factored into determining where the Skid is to be secured to the deck to ensure safe transitioning of the TMS through the surface-to-water interface.</p> <p>Note: Equipment is to be placed to maximize the distance between ADS launch position and dynamic positioning (DP) thrusters. 25 ft (7.6 m) is minimum recommended separation.</p>

No.	ADS VOO Capability	Requirement	Objective
2	Deck Flatness	The deck must be flat in all directions within 1 in (2.54 cm) and 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.	NOTE: Shimming to meet 1 in (2.54 mm) requirement is acceptable.
3	Vessel Deck Loading Capacity	<p>a. Deck load capacity of:</p> <p>Intermediate Skid installation 416 lb/ft² (2031 kg/m²) Sacrificial Tab installation 955 lb/ft² (4663 kg/m²)</p> <p>b. Minimum cargo load capacity depends on configuration, see NAVSEA Drawing 594-6395636.</p>	
4	Vessel Structure	<p>a. The deck and deck attachment points must not have damage or cracking, cracked welds, excessive pitting or corrosion.</p> <p>b. All vans are fitted with standard ISO container attachments, and can be secured to the deck with any standard attachment method, including existing ISO twist-locks on the VOO deck. Other acceptable methods include chaining and using tie down plates with ISO quick-connect fittings and Baxter bolts.</p>	<p>a. Baxter bolt inserts to accept 1 in-8 Grade 5 bolts with minimum thread engagement of 1 in (2.54 cm). Inserts should be flush with the deck.</p> <p>b. 6.5 in (165.1 mm) minimum and 66 in (167.6 cm) maximum distance from the gunwale to the first Baxter bolt position.</p> <p>c. 6 Baxter bolt positions required forward and aft. (each LARS)</p> <p>d. 11 Baxter bolt positions required port and starboard. (each LARS)</p>

No.	ADS VOO Capability	Requirement	Objective
5	Fresh Water	Provide freshwater to the deck for wash down of ADS equipment.	
6	Power Supply Capability	NOTE: Portable generators available as Main &/or Secondary Power Supplies if VOO unable to provide.	a. Main Power Supply: VOO provide the PDU with 3 phase 440 VAC (nominal), at 60 Hz and 200 amps. b. Secondary Power Supply: VOO provide the PDU with 3-phase 440 VAC (nominal), at 60 Hz and 200 amps.
7	On-Board Crane	Hand tended diving requires the use of a 2800 lbs (1270.1 kg) SWL (minimum) crane, A-Frame or power davit to launch the suit over the side of the launch platform. NOTE: If crane is not man rated a NAVSEA waiver is required.	

No.	SRCFS VOO Capability	Requirement	Objective
1	Available Deck Area	<ul style="list-style-type: none"> a. Clear deck area of 2001 ft² (186 m²). b. Relative positions of SRC, deck roller, umbilical box and backhaul line box must be maintained for umbilical assembly and handling, per NAVSEA Drawing 594-7329708. c. Maximum allowed distance between: Control console to either air rack – 80 ft (24.4 m) Air rack to compressor – 75 ft (22.9 m) Air rack to air rack – 30 ft (9.2 m) 	Clear deck area of 48 ft (14.6 m) in length and 42 ft (12.8 m) in width.
2	Deck Flatness	The deck must be flat in all directions within 1 in (2.54 cm) and 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.	NOTE: Shimming to meet 1 in (2.54 cm) requirement is acceptable.
3	Vessel Deck Loading Capacity	Deck load capacity of: 1120 lb/ft ² (5.5 tonnes/ m ²)	5.5 tonnes/ m ² comes from the weight of the SRC and the AT SEA stand and is based on using 30in x30in interface plates (worst case) the 5.5 tonnes/ m ² will be decreased if larger interface plates are used.
4	Fresh Water	Provide up to 2000 gallons (7570.8 liters) of freshwater to the fantail for wash down of SRCFS and equipment, as well as for filling SRC ballast bags.	Note: Variable ballast can requirement of 135 gallons (613.7 liters) per rescue sortie.

No.	SRCFS VOO Capability	Requirement	Objective
5	Vessel Structure	<ul style="list-style-type: none"> a. The deck and deck attachment points must not have damage or cracking, cracked welds, or excessive pitting or corrosion. b. VOO deck structure shall not have excessive corrosion. c. Machinery spaces shall be relatively clean with no excessive corrosion, leaks or fluids on deck. 	<ul style="list-style-type: none"> a. Standard 1 in (2.54 cm) diameter Baxter Bolt receivers spaced on 24 in (60.96 cm) centers available on working deck. (Minimum pullout strength of 10,000 lbs (4535.9 kg)). b. Baxter bolt inserts to accept 1 in-8 Grade 5 bolts with minimum thread engagement of 1 in (2.54 cm). Inserts should be flush with the deck.
6	Deck Space for Electrical Generators	<p>In addition to the deck space requirements specified above, an additional 131 ft² (12.17 m²) 270 in X 69.5 in (685.8 cm X 176.5 cm) is required for generators and fuel on VOOs that cannot provide the required electrical power.</p>	
7	Electrical Power Supply	<p>None. GFE if VOO cannot provide the required electrical power. See SRCFS Item 6 above.</p>	<p>Two (2) separate supplies of:</p> <ul style="list-style-type: none"> a. VOO provide 440 - 480 VAC, 3-phase, 60 Hz, 40 A b. VOO provide 110 - 125 VAC, 1-phase, 60 Hz, 15 A
8	On-Board Crane	<p>A crane with 25,000 lb (11.8 tonnes) SWL, with a minimum reach of 15 ft (4.6 m) over the side.</p> <p>NOTE: SRC (22,000 lbs - 9979 kg) and rescue reel (WT lbs – kg) must be within the SWL crane reach arc.</p>	

No.	SILOS VOO Capability	Requirement	Objective
1	Available Deck Area	<ul style="list-style-type: none"> a. Clear deck area of 182 ft² (16.9 m²). b. SILOS over boarding sheave to be mounted as close to transom as possible. c. SILOS winch to be placed in-line with over boarding sheave. d. SILOS depth sounding davit to be placed adjacent to gunwale. 	<ul style="list-style-type: none"> a. For typical SILOS installation 55ft 8in x 28ft 4in)
2	Deck Flatness	<p>The deck must be flat in all directions within 1 in (2.54 cm) and 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.</p>	<p>NOTE: Shimming to meet 1 in (2.54 cm) requirement is acceptable.</p>
3	Vessel Deck Loading Capacity	<p>Deck load capacity of: 1248 lb/ft² (6.1 tonnes/ m²)</p>	
4	Vessel Structure	<ul style="list-style-type: none"> a. The deck and deck attachment points must not have damage or cracking, cracked welds, excessive pitting or corrosion. b. VOO deck spaces shall not have excessive corrosion. c. Machinery spaces shall be relatively clean with no excessive corrosion, leaks or fluids on deck. 	<ul style="list-style-type: none"> a. Standard 1 in (2.54 cm) diameter Baxter Bolt receivers spaced on 24 in (60.96 cm) centers available on working deck. (Minimum pullout strength of 10,000 lbs (4535.9 kg)) b. Baxter bolt inserts to accept 1 in-8 Grade 5 bolts with minimum thread engagement of 1 in (2.54 cm). Inserts should be flush with the deck.

No.	SILOS VOO Capability	Requirement	Objective
5	Deck Space for Electrical Generators	In addition to the deck space requirements specified above, an additional 131 ft ² (12.2 m ²) 270 in X 69.5 in (685.8 cm X 176.5 cm) is required for generators and fuel on VOOs that cannot provide the required electrical power.	
6	Electrical Power Supply	None. GFE if VOO cannot provide the required electrical power. See SILOS Item 5 above.	Two (2) separate supplies of: <ul style="list-style-type: none"> a. VOO provide 440 – 480 VAC, 3-phase, 60 Hz, 100 A b. VOO provide 440 – 480 VAC, 3-phase, 60 Hz, 100 A

No.	LWMS VOO Capability	Requirement	Objective
1	Available Deck Area	<ul style="list-style-type: none"> a. Clear deck area of 2717 ft² (252.4 m²). b. Installation shall maximize fore-aft and athwart ships separation of mooring points on VOO. c. Capstans and bits may not be necessary depending on equipment installed on VOO. Sufficient clear deck area shall be maintained around capstans and bits to allow safe line handling. d. Clear deck area required inboard of mounted Bruce anchors for release lines and working area. 	<p>NOTE: This is the amount of space occupied by all LWMS components. This space includes 1500 ft² (139.4 m²) 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.</p>
2	Vessel Deck Loading Capacity	Deck load capacity of: 750 lb/ft ² (3.7 tonnes/ m ²).	
3	Vessel Structure	<ul style="list-style-type: none"> a. VOO bulwark must 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. b. Anchor chain I-beams to be placed aft of anchor and each anchor / I-beam setup require 20 ft (6.1 m) of gunwale. 	Capstans and bits fore and aft for line handling and establishing a 4 point moor.
4	On-Board Crane	A crane with 6,000 lb (2.7 tonnes) SWL, with a minimum reach of 15 ft (4.6 m) over the side.	

No.	LWMS VOO Capability	Requirement	Objective
5	Electrical Power Supply	NOTE: LWMS load-out includes generators to meet this requirement.	VOO provide 440 – 480 VAC, 3-phase, 60 Hz, 20 A.
6	Rigid Hull Inflatable Boat (RHIB)	<p>The RHIB must have at least 80 HP motor with a tow point forward of the engines.</p> <p>NOTE: RHIB must be within the SWL crane reach arc.</p>	

ACRONYMS

ABS	American Bureau of Shipping
ADS	Atmospheric Dive Suit
AUWS	Assessment/Underwater Work System
COI	Certificate of Inspection
DC	Deck Cradle
DFS	Departure from Specification
DP	Dynamic Positioning
DPS	Dynamic Positioning System
DSRV	Deep Submergence Rescue Vehicle
GV	Generator Van
HP	Horse Power
IACS	International Association of Classification Societies
ICD	Interface Control Drawing
IMO	International Maritime Organization
LARS	Launch and Recovery System
LWMS	Lightweight Mooring System
NAVSEA	Naval Sea Systems Command
PMS	Program Manager Sea
PRM	Pressurized Rescue Module
PRMS	Pressurized Rescue Module System
RHIB	Rigid Hull Inflatable Boat
SILOS	Side Looking Sonar
SIT	Ship Interface Template
SITS	Ship Interface Template Sets
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
REV	Revision
TTFR	Time To First Rescue
USCG	United States Coast Guard
VOO	Vessel of Opportunity

INTRODUCTION

The purpose of the VOO Survey is to document compliance with SRDRS VOO Specification attributes, record key VOO characteristics, and develop a mobilization plan as a rescue or intervention VOO. While the ship configuration may change later, an important aspect is to develop an estimated timeline to remove equipment (if required) to support AUWS or SRS installation. Results of the survey shall be documented in a survey report with a filled out checklist and entered into the database.

Identified VOOs that have the potential to meet the SRDRS specifications shall be evaluated by the surveyor. Recommendations for further survey or on-site evaluation will be presented to the VOO Survey Board. The surveyor may use e-mail or other appropriate communication methods to identify potential VOOs for more urgent evaluation or for on-site evaluation. A pre-screening questionnaire shall be provided to the vessel owner and answered before conducting a survey. The rescue contractor shall ensure that the minimum VOO 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.

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SHIP NAME _____ DATE SURVEYED _____

1	VESSEL CLASSIFICATION AND GENERAL CONDITIONS		YES	NO
1.1	SRS	Is the Vessel classed by an IACS Classification Society?		
1.2	SRS	Is the Vessel Classification current?		
1.3	SRS	Is the vessel permitted to conduct manned diving operations?		
1.4	SRS	Are there exceptions to Class?		
1.5	SRS	When is the next Class survey?	Date:	
1.6	SRS	Who is the Classification Society?		
2	AVAILABLE DECK AREA (If VOO is a barge, see additional requirements section.)		YES	NO
2.1	SRS	What is the Vessel cargo deck area?	Length	Ft
			Width	Ft
2.2	SRS	Does Vessel clear deck have 2 ft X 2 ft (60.96 cm x 60.96 cm) Baxter Bolt pattern for a non-welded installation?		
2.3	SRS	Does Vessel have a cargo deck area for the SRS-RCS configuration? (88 ft x 33 ft) (26.8 m x 10.1 m)		
2.4	SRS	Does Vessel have a cargo deck area for the SRS-TUP configuration? (98 ft x 34 ft) (29.9 m x 10.36 m)		
2.5	SRS	Is the Vessel capable of installing portable accommodation modules? (Additional cargo deck area and auxiliaries such as power, CHT, and water)		
			Length	Ft
			Width	Ft
2.6	SRCFS	Does Vessel have a cargo deck area for the SRCFS configuration? (2001 ft ²) (185.9 m ²) (48ft x 42ft (14.6m x 12.8m))(see NAVSEA Dwg 7329708)		
			Length	Ft
			Width	Ft
2.7	SRCFS	Can the system be installed to maintain relative positions of SRC, deck roller, umbilical box and backhaul line box maintained for umbilical assembly and handling (see NAVSEA Dwg 7329708)?		
2.8	SRCFS	Can the items be installed to maintain the maximum allowed distance between (see NAVSEA Dwg 7329708): 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)		

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2 (Cont)	AVAILABLE DECK AREA (If VOO is a barge, see additional requirements section.)		YES	NO
2.9	SRCFS	Does Vessel have a cargo deck area for the SRCFS & ADS w/o LARS configuration (hand tended) (see NAVSEA Dwg 7329708)? (3131 ft ²) (290.88 m ²) (for typical installation 74ft x 31ft 10in)		
			Length	Ft
			Width	Ft
2.10	AUWS	Does Vessel have a cargo deck area for the ADS w/LARS configuration (see NAVSEA Dwg 7329708)? (1918 ft ²) (178.2 m ²) (for typical installation 34ft x 32ft 6in)		
			Length	Ft
			Width	Ft
2.11	AUWS	Does Vessel have a cargo deck area for the ADS w/o LARS configuration (hand tended) (see NAVSEA Dwg 7329708)? (1130 ft ²) (104.98 m ²) (for typical installation 24ft 6in x 26ft 4in)		
			Length	Ft
			Width	Ft
2.12	SILOS	Does Vessel have additional cargo deck area for SILOS (see NAVSEA Dwg 7329708)? (182 ft ²) (16.9 m ²) (for typical installation 55ft 8in x 28ft 4in)		
			Length	Ft
			Width	Ft
2.13	SILOS	Is there anything preventing the SILOS over boarding sheave from being mounted as close to transom as possible?		
2.14	SILOS	Is anything preventing the SILOS winch from being placed in-line with over boarding sheave?		
2.15	SILOS	Is anything preventing the SILOS depth sounding davit from being placed adjacent to gunwale?		
2.16	SRS/AUWS	Does the Vessel have any Weld Free Zones in the vicinity of the system footprints?		
2.17	SRS/AUWS	If Weld Free Zones exist, provide specific locations and requirements and record/sketch Weld Free Zones in Figure B.		
2.18	ADS	Is Equipment placement is subject to the following restrictions (see NAVSEA Drawing 594-639563):		
		Can the LARS be located 20 ft (6.1 meters) from the HPU?		
		Can the MAX distance between any two ADS deck mounted components is 70 ft (21.3 meters)?		
2.19	ADS	Is an 11 foot (3.4 meters) opening in the bulwark available for each LARS.		
2.2	ADS	Do any deck obstructions exist that would preclude the LARS ISkid from being secured to the deck any further than 35.5 inches (90.2 cm) from the VOO's gunwale.		
2.21	ADS	Is the installation location near the vessel's propellers, rudders, and thrusters (see NAVSEA Dwg 7329708 Note 4)?		

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2 (Cont)	AVAILABLE DECK AREA (If VOO is a barge, see additional requirements section.)		YES	NO
2.22	LMWS	Clear deck area of 2717 ft ² (252.4 m ²) (see NAVSEA Dwg 7329708) (for typical installation 44ft 6in x 108ft 8in)(13.56m x 33.12m)		
			Length	Ft
			Width	Ft
2.23	LMWS	Can the installation maximize fore-aft and athwart ships separation of mooring points on vessel?		
2.24	LMWS	Is there sufficient clear deck area in the proposed installation location maintained around capstans and bitts to allow safe line handling?		
2.25	LMWS	Is there Clear deck area inboard of mounted Bruce anchors to allow for release lines and working area?		
3	VESSEL DECK LOADING CAPACITY		YES	NO
3.1	SRS	What is the maximum total Main Deck capacity? (min 160 short ton) (145.2 tonnes)	lbs / (tonnes)	
3.2	SRS	What is the maximum distributed Cargo loading capacity? (min 1025 lbs /ft ²)(5 tonne/m ²)	lbs/ft ² / (tonnes/m)	
3.3	SRS	LARS Rev 1 Bases only - Is the Transom of 3/8" (9mm) shell plating?		
3.4	SRS	LARS Rev 0 Bases only - Are the Longitudinal or transverse structural bulkheads with minimum scantlings of 7/16" (11.1 mm) thickness and 6" x 4" x 0.375" (152.4 mm x 101.6 mm x 9.5 mm) vertical angle stiffeners? Are the center to center spacing no more than 24" (609.6 mm), or structural equivalent?		
3.5	SRS	LARS Rev 0 Bases only - Any location and orientation of support bulkheads is acceptable as long as they provide sufficient support to the LARS attachment points on the deck. Are Transverse bulkheads located at a distance of between 3 ft to 4 ft (91.4 cm to 121.9 cm) and between 22 ft to 34 ft (660 cm to 1020 cm) forward of the transom (a typical solution)?		
3.6	SRS	If the VOO does not meet any of deck loading capacity requirements above, has an analysis been conducted using the equipment locations, weights, and centers as defined in ICD 7411192 to verify the structural adequacy of the deck to support SRS?		
3.7	ADS	Does vessel deck loading capacity support ISkid installation 416 lb/ft ² (2031 kg/m ²) and Sacrificial Tab installation 955 lb/ft ² (4663 kg/m ²)?		
3.8	LMWS	Does the deck have a load capacity of 750 lb/ft ² (3.7 tonnes/ m ²)?		
3.9	SILOS	Does the deck have a load capacity of 1248 lb/ft ² (6.1 tonnes/ m ²)?		

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3 (Cont)	VESSEL DECK LOADING CAPACITY		YES	NO
3.10	SRCFS	Does the vessel working deck load capacity supports SRCFS installation? (632 lbs /ft ²) (3.09 tonne/m ²) SRCFS & ADS w/o LARS installation?		
3.11	SRCFS	Does the vessel working deck load capacity support SRCFS installation? (1120 lb/ft ²) (5.5 tonne/ m ²)		
3.12	AUWS	Does the vessel working deck load capacity support ADS w/ LARS installation? (416 lbs /ft ²) (2.03 tonne/m ²) Iskid Installation (1000 lbs /ft ²) (4.9 tonne/m ²) (see NAVSEA Dwg 594-6395636)		
3.13	AUWS	Does the vessel deck load capacity of 500,000 pounds (227 tonnes)? (required for SRS-TUP)		
3.14	AUWS	Does the vessel working deck load capacity support ADS w/o LARS installation? (625 lbs /ft ²) (3.05 tonne/m ²)		
3.15	AUWS	Does the vessel working deck load capacity support LWMS installation? (250 lbs /ft ²) (1.22 tonne/m ²)		
4	POSITION KEEPING CAPABILITY		YES	NO
4.1	SRS	Is the vessel fitted with a dynamic positioning system (If YES, indicate the appropriate DP Class)?	DP- 1 / 2 / 3	
4.2	SRS	Is the system classed by Equipped with a IMO Equipment Class 2 dynamic positioning system (DPS).		
4.3	SRS	If DPS, is the location of any moving machinery (thrusters, propellers, etc) within 15 feet (4.6 m) of an umbilical? Annotate thruster locations in Figure A.		
4.4	SRS	Verify DPS would be expected to maintain VOO ±30 feet (9.14 m) and ± 5 degrees from a given position/heading up to seastate 5 once the DPS has stabilized		
4.5	SRS	Identify all position referencing systems.		
4.6	SRS	Verify position referencing system does not use laser or taut wire system.		
4.7	SRS	Is the Vessel capable of entering and maintaining a multi point moor in up to 2,000 feet (609.6 m)?		

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5	SEA-KEEPING CAPABILITY		YES	NO
5.1	SRS	Is the Vessel able to conduct aft deck operations with a 160 short ton (145.2 tonne) system installed up to Sea State 4?		
5.2	SRS	Is the Vessel able to conduct aft deck operations with a 250 short ton (226.8 tonne) system installed up to Sea State 4?		
5.3	SRS	Is the Vessel able to maintain survivability with a 160 short ton (145.2 tonne) system installed up to Sea State 6?		
5.4	SRS	Is the Vessel able to maintain survivability with a 250 short ton (226.8 tonne) system installed up to Sea State 6?		
6	VESSEL STABILITY		YES	NO
6.1	SRS	Does the vessel comply with all intact and damage stability criteria required by the Vessel's Flag Administration and Classification Society's Rules with the LARS and PRM installed? (SRS Weights and Centers of gravity are provided in ICD 7411191). Provide a copy of applicable Weights and Centers of gravity tables of ICD 7411191 to the Ship Master and Ship Engineer for review and calculations.		
7	DECK FLATNESS		YES	NO
7.1	SRS	Is the deck coplanar with a maximum vertical deviation of 2 in (5.08 cm) when measured from the transom to 64 feet (19.5 m) forward of the transom?		
7.2	SRS	Is all deck hardware in way of SRS SITS less than 2 in (5.08 cm) vertical distance from the deck? Identify deck hardware exceeding 2 in (5.08 cm) vertical distance on Figure B. Include project schedule to remove all items in Survey Report.		
7.3	AUWS	Is all deck hardware in way of SRCFS or AUWS less than 1 inch (2.54 cm) vertical distance from the deck?. Identify deck hardware exceeding 1 in (2.54 cm) vertical on Figure B. Include project schedule to remove all items in Survey Report.		
7.4	ADS	Is the deck flat in all directions within 1 in (2.54 cm) and 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.)		
7.5	SRCFS	Is the deck flat in all directions within 1 in (2.54 cm) and 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.)		
7.6	SILOS	Is the deck flat in all directions within 1 in (2.54 cm) and 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.		

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8	LIFESAVING EQUIPMENT CAPACITY (If VOO is a barge, see additional requirements section.)		YES	NO
8.1	SRS	How many personnel is vessel classed to carry on-board?	People	
8.2	SRS	What is the required crew size? (Including any additional personnel i.e. DP operators)	People	
8.3	SRS	Does the Vessel have sufficient lifesaving equipment for ship's crew + 30 rescue personnel?		
8.4	SRCFS	Does the Vessel have sufficient lifesaving equipment for ship's crew + 40 rescue personnel?		
8.5	SRS	Does the vessel have space to store sufficient lifesavings equipment if provided by client?		
9	WORKING DECK FIRE PROTECTION CAPABILITY		YES	NO
9.1	SRS	Does the vessel have fire fighting coverage of all SRDRS elements on deck using the vessel's existing fire fighting equipment?		
9.2	SRS	Is the Vessel capable of providing a dedicated 2.5 in (63.5 mm) fire hose connection for the portable foam firefighting unit?		
10	VESSEL FREEBOARD		YES	NO
10.1	SRS	Is the Vessel freeboard less than 10 ft (3 m)(minimum allowed)? (Maximum freeboard may be attained by ballasting, provided the ballasting does not result in violation of USCG or Classification Society stability regulations. Additional requirements apply if freeboard is greater than 10 ft (3 m).) Can fender material be attached?		
11	OVER-BOARDING ACCESS		YES	NO
11.1	SRS	Is there sufficient opening of any stern wall to provide for the unobstructed over-boarding of the LARS? (A minimum of a 22 ft (6.7 m) opening is required and on vessels with stern walls greater than 3 ft (0.9 m) in height, an opening of 32 ft (9.7 m) is required to clear the LARS winches. (Rev 1 SITS requires minimum bulkwork to deck opening of 34 ft (10.36 m))		
12	TRANSDUCER POLE INSTALLATION		YES	NO
12.1	SRS	Is there sufficient access on the port or STBD side of the vessel to mount the 32 ft (9.7 m) Transponder Pole and is the overboard side free of obstructions to deploy the transducer? (When the pole is deployed it will extend a minimum of 10 ft (3 m) below the vessels keel.)		

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13	OPERATING ENDURANCE		YES	NO
13.1	SRS	Is the Vessel capable of 10 days un-replenished operation (or replenishment of critical stores) with 30 additional personnel (SRS-RCS)		
13.2	SRS	What is the maximum number of people and for how many days can the vessel remain at sea un-replenished with stores?	People/Days	
13.3	SRS	Food - Is 24 Hr Messing and crew to operate mess available?		
13.4	SRS	Berthing	Men	
13.5	SRS	Potable Water	Gallons	
13.6	SRS	Sanitary Tank Capacity or is the system continuous processing?	Gallons	
13.7	SRCFS	Is the Vessel capable of 10 days un-replenished operation (or replenishment of critical stores) with 40 additional personnel (SRCFS)		
14	PROVISION FOR SMALL BOAT LAUNCH AND ASSOCIATED LAUNCH AND RECOVERY EQUIPMENT		YES	NO
14.1	SRS	Does the vessel have a small boat and associated launch and recovery equipment that can be used? Is an 80 HP motor with a tow point forward of the engine for the small boat available?		
14.2	SRS	If NO, does the Vessel have sufficient space to accommodate a small boat and is there a crane available for launch and recovery? NOTE: Small boat in its cradle weighs 5700 lbs (2585.5 kg) and is 275 in long and 88 in tall (7 m long and 223.5 cm tall) (keel to console, not on cradle), 96 in wide (2.44 m) deflated (110 in wide (2.79 m) inflated).		
15	REMOTE MONITORING STATION CAPABILITY		YES	NO
15.1	SRS	Does the vessel have adequate space to accommodate the Remote VOO Monitoring Control Station with 110v ac power available? (VOO Monitoring Station is contained in a 34.9" x 27" x 27.9" (88.7 cm X 68.6 cm X 70.9 cm) hardcase. One of the 19" (48.26 cm) LCD monitors extends outside the hardcase when the system is in use.)		
16	DIESEL FUEL CAPACITY		YES	NO
16.1	SRS	Is the Vessel capable of providing 20,500 gallons (77,600 L) of cleaned and polished No. 2 Diesel fuel accessible on the main deck for the Generator Van? (An alternate is the ability to transfer the fuel from a support vessel.)		
17	FRESH WATER		YES	NO
17.1	SRS	Is the Vessel able to provide 2,000 gallons (7570.8 liters) of freshwater to the barge deck for wash down of PRM and equipment and filling the PRM ballast bags?		
17.2	ADS	Is freshwater available to the deck for wash down of ADS equipment.		
17.3	SRCFS	Provide up to 2000 gallons (7570.8 liters) of freshwater to the fantail for wash down of SRCFS and equipment, as well as for filling SRC ballast cans.		
18	GAS (WORKSHOP QUALITY AIR)		YES	NO
18.1	SRS	Is the Vessel capable of providing the working deck with workshop quality compressed air for air-driven tools?		

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19	ON-BOARD CRANE		YES	NO
19.1	SRS	Is the Vessel equipped with a 50,000 lb (22.7 tonne) capacity with sufficient reach to lift the PRM from the pier to the center line of the VOO?		
19.2	SRS	Is the Vessel equipped with a 220,000 lb (100 tonne) capacity with sufficient reach to lift the LARS from the pier to the stern of the Vessel?		
19.3		Is Vessel equipped with a crane to support the following requirements?		
19.4	SRCFS	25,000 lb (11.8 tonne) SWL @ minimum reach of 15 ft (4.6 m) over the side. Is the crane approved by NAVSEA for manned lifts?		
19.5	LWMS	6000 lb (2.7 tonne) SWL @ minimum reach of 20 ft (6.1 m) on deck & 15 ft (4.6 m) over the side.		
19.6	ADS w/o LARS	2800 lb (1.27 tonne) SWL @ minimum reach of 15 ft (4.6 m) over the side Is the crane approved by NAVSEA for manned lifts?		
19.7	SRCFS & ADS w/o LARS	SRCFS: 25000 lbs (11.8 tonne) SWL @ minimum reach of 15 ft (4.6 m) over the side (if only one crane must be able to lift SRCFS and ADS). ADS: 2800 lbs (1.27 tonne) SWL @ minimum reach of 15 ft (4.6 m) over the side. Is the crane approved by NAVSEA for manned lifts?		
20	EMERGENCY POWER SUPPLY CAPABILITY		YES	NO
20.1	SRS	Is the Vessel capable of providing 350 KW of 480 VAC, 3-phase Delta, 60 Hz, 400 A electric power per bus to the GV in the event of GV engine failure?		
20.2	SRCFS	Is the Vessel capable of provide the following power supplies to main deck? 440-480V, 3Phase, 60Hz, 40A and 110-125V, 1Phase, 60Hz, 15A		
20.3	ADS	Is the Vessel capable of provide the following power supplies to main deck? 2 Independent 440-480V, 3Phase, 60Hz, 200A		
20.4	SRCFS & ADS	Is the Vessel capable of provide the following power supplies to main deck? 440-480V, 3Phase, 60Hz, 40A and 110-125V, 1Phase, 60Hz, 15A, 2 Independent 440-480V, 3Phase, 60Hz, 200A		
20.5	LWMS	Is the Vessel capable of provide the following power supplies to main deck? 440-480V, 3Phase, 60Hz, 20A		
20.6	SILOS	Is the Vessel capable of provide the following power supplies to main deck? 2 Independent 440-480V, 3Phase, 60Hz, 100A		

Submarine Rescue Diving and Recompression System VOO Survey Checklist Rev D

21	HELICOPTER DECK		YES	NO
21.1	SRS	Does the Vessel have a Helicopter Deck?		
22	ACOUSTIC TRACKING SYSTEMS		YES	NO
22.1	SRS	Does the Vessel have an installed transducer deployment system?		
22.2	SRS	Does the Vessel maintain an acoustic tracking system? If yes, is it compatible with the SRS navigation and communications systems?		
23	SICK BAY		YES	NO
23.1	SRS	Does the Vessel have a designated Sick Bay?		
24	VESSEL STRUCTURE		YES	NO
24.1	ADS	Do the deck and deck attachment points have damage or cracking, cracked welds, excessive pitting or corrosion?		
24.2	ADS	Can the vans be secured to the deck with any standard attachment method, including existing ISO twist-locks on the VOO 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.		
24.3	SRCFS	Do the deck and deck attachment points have damage or cracking, cracked welds, or excessive pitting or corrosion?		
24.4	SRCFS	Does the VOO deck structure have excessive corrosion?		
24.5	SRCFS	Are the Machinery spaces well maintained and clean with no excessive corrosion, leaks or fluids on deck?		
24.6	SILOS	Do the deck and deck attachment points have damage or cracking, cracked welds, excessive pitting or corrosion?		
24.7	SILOS	Does the VOO deck spaces have excessive corrosion in way of SILOS installation?		
24.8	SILOS	Are the Machinery spaces well maintained and clean with no excessive corrosion, leaks or fluids on deck?		
24.9	LWMS	Is the VOO bulwark 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?		
24.10	LWMS	Is there sufficient space to allow the Anchor chain I-beams to be placed aft of anchor and each anchor / I-beam setup require 20 ft (6.1 m) of gunwale?		
25	DECK SPACE FOR ELECTRICAL GENERATORS		YES	NO
25.1	SRCFS	Additional 131 ft ² (12.17 m ²) 270" X 69.5" (685.8 cm X 176.5 cm) is required for generators and fuel on vessels that cannot provide the required electrical power.		
25.2	SILOS	Is there additional 131 ft ² (12.2 m ²) 270" X 69.5" (685.8 cm X 176.5 cm) area for generators and fuel on vessels that cannot provide the required electrical power?		

Submarine Rescue Diving and Recompression System VOO Survey Checklist Rev D

26	ELECTRICAL POWER SUPPLY		YES	NO
26.1	SRCFS	Can VOO provide electrical power? (GFE if VOO cannot provide the required electrical power.)		
26.2	SILOS	Can VOO provide electrical power? (GFE if VOO cannot provide the required electrical power.)		
27	RIGID HULL INFLATABLE BOAT		YES	NO
27.1	LMWS	Does the VOO have a RHIB with at least 80 HP motor and a tow point forward of the engines? NOTE: RHIB must be within the SWL crane reach arc.		

Submarine Rescue Diving and Recompression System VOO Survey Checklist Rev D

BARGES AS VESSELS OF OPPORTUNITY

1	SAFETY EQUIPMENT FOR MANNED OPERATIONS	YES	NO
1.1	Is the Barge Certified for Open Manned Operations per applicable USCG and/or ABS regulations?		
1.2	Is the following equipment installed (Installation of equipment to support manned operations shall be accompanied by an up-to-date USCG Certificate of Inspection (COI) or Temporary COI)		
1.2.1	Emergency alarm system and panel (fire, man overboard, general, flooding, abandon ship alarms)		
1.2.2	Fire Alarm Pull Stations		
1.2.3	Man overboard alarm pull stations		
1.2.4	Alarm speakers		
1.2.5	Fire, smoke, heat, flooding sensors		
1.2.6	Emergency Lighting		
1.2.7	Emergency Gear Locker		
1.2.8	Life saving equipment and associated launch equipment		
1.2.9	Life rafts to accommodate 40 souls		
1.2.10	Intercom/General announcing system		
1.2.11	Safety Rails or Lines		
1.2.12	Fire Pump and associated fire fighting equipment		
1.2.13	Portable fire fighting equipment and mountings		
1.2.14	Black Water Tank / Pollution abatement equipment		
1.2.15	Navigation and warning lights		
2	ON-SITE TUG SUPPORT	YES	NO
2.1	Is the barge provided with a Vessel capable of maneuvering and towing at all times during the Operation?		

Submarine Rescue Diving and Recompression System VOO Survey Checklist Rev D

3	AVAILABLE DECK AREA (NOTE: Deck area for items 3.2 – 3.6 either be on the Barge to on a Support Vessel)	YES	NO
3.1	Does the Barge have sufficient deck area for installation of four winches (with a source of power), associated fairleads, and cabling to support a 4 point moor of the barge in 2,000 feet (609.6 m) of water?		
3.2	Provide estimated deck area available (in addition to SRS and mooring equipment) for:		
3.2.1	Portable office modules for 4 offices and meeting rooms.		
3.2.2	Portable accommodations modules for Infirmary equipment and treatment room.		
3.2.3	To accommodate two 8 foot x 20 foot (2.4 meters x 6.1 meters) workshop containers.		
3.2.4	To accommodate portable galley, refrigerator and freezer modules.		
3.2.5	Portable accommodations modules for at least 100 rescuees.		
3.3	Is deck suitable to weld to? Is deck covered in wood or is it a cement deck?		
3.4	Is there suitable bulkwark openings to support SRCFS roller, access etc.?		
3.5	Is there sufficient opening of any stern wall to provide for the unobstructed over-boarding of the LARS? (A minimum of a 22 ft (6.7 m) opening is required and on vessels with stern walls greater than 3 ft (0.9 m) in height, an opening of 32 ft (9.7 m) is required to clear the LARS winches. (Rev 1 SITS requires removal of this equipment.))		
4	VOICE COMMUNICATIONS CAPABILITY	YES	NO
4.1	Provide Ship-to-Ship and Ship-to-Shore communications as required by local regulatory agencies.		
5	LIGHTING	YES	NO
5.1	Does the Barge have installed or portable lighting capable of lighting the entire deck area for night operations?		
6	STABILITY	YES	NO
6.1	Is the Barge Certificate of Inspection updated reflecting the acceptable use of lifting equipment over the side and stern if not already present?		

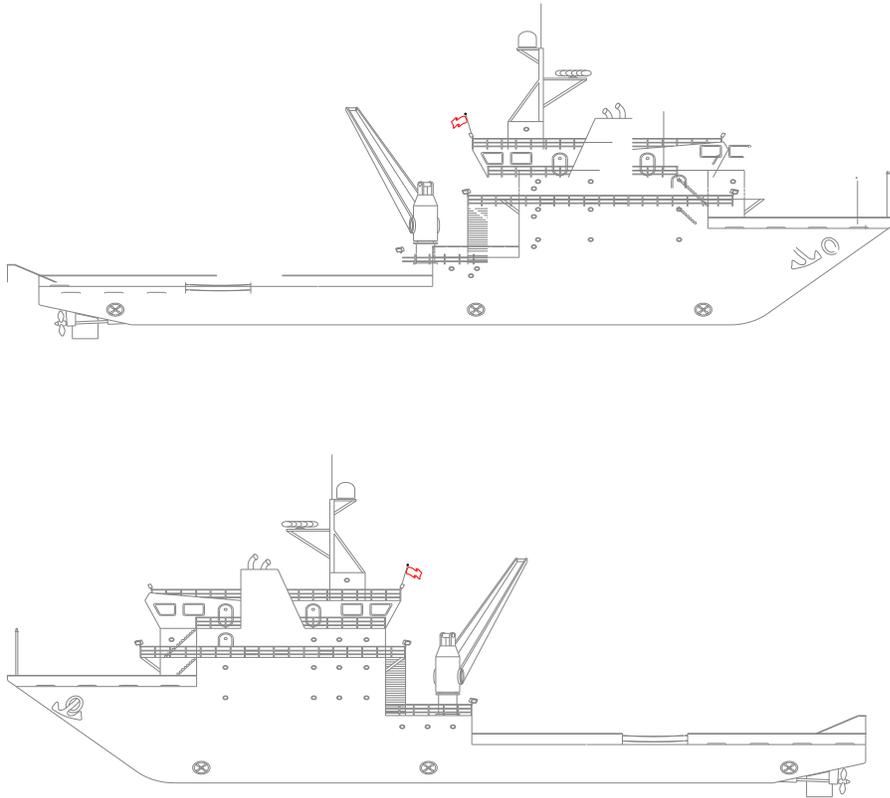


FIGURE A - DPS thruster locations

Submarine Rescue Diving and Recompression System VOO Survey Checklist Rev D

Name		IMO#		Call Sign		Flag	
Class					Recommended Category (A/B/C)		

Master/Ship Contact Information	Owners/Managers Contact Information	Other Useful Contacts

Surveyor Summary Remarks and Recommendations

Distribution Statement A: Approved for public release; distribution is unlimited.

The Minimum NSRS Rescue MOSHIP Capabilities

ID	Rescue MOSHIP Capability	NSRS Requirement
1	Operating Endurance (without replenishment)	The Rescue MOSHIP shall be capable of 20 days un-replenished operation. This allows for 3 days each way on outward and return transit plus 14 days on station.
2	Position Keeping Capability	IMO DP Class 0 (Joy Stick Control). The Rescue MOSHIP shall be capable of maintaining station over the DISSUB datum.
3	Sea Keeping Capability (Transit)	Transit in sea conditions up to and including a Significant Wave Height (SWH) of 10m.
4	Sea Keeping Capability (Operations)	Operate continuously in sea conditions up to and including a Significant Wave Height (SWH) of 5m.
5	Wind Speed (Transit)	Transit in wind speeds gusting up to 100 knots.
6	Wind Speed (Operations)	Operate continuously in at least a wind speed of 30 knots.
7	Vessel Speed	Have a vessel speed of 10 knots minimum.
8	Available Deck Area (NSRS Rescue Spread)	A suitably shaped clear deck area of at least 400m ² (based approximately on 40m x 10m or 35m x 12m) with 11m at transom required for PLARS and fibre-optic winch. For SRDRS - A deck area of at least 320m ² (based approximately on 30m x 10.5m).
9	Accommodation Capacity	Accommodation for at least 20 personnel, in addition to the vessel's normal complement.
10	Vessel Deck Loading Capacity	For NSRS – a) A ¹ minimum deck point loading capacity of at least 5 tonnes/m ² . b) A minimum deck load capacity of at least 380 tonnes, with a CoG of 4m. c). PLARS is to be mounted over three bulkheads, which are: <ul style="list-style-type: none"> • The transom bulkhead • A bulkhead no less than 6000mm from the ships transom • A bulkhead no more than 12000mm from the ships transom For SRDRS – a) A minimum deck point loading capacity of at least 5 tonnes/m ² . b) A minimum deck load capacity of at least 200 tonnes, with a CoG of 4m.
11	Launch and Recovery capability – or suitability for installation of a Portable Launch and Recovery System (PLARS)	a). Be capable of accommodating the NSRS PLARS, or. b). The MOSHIP shall have a launch and recovery system certified for “man riding” and be compatible with the NSRS SRV.

¹ To be endorsed at NSRS CMT – Dec 2011

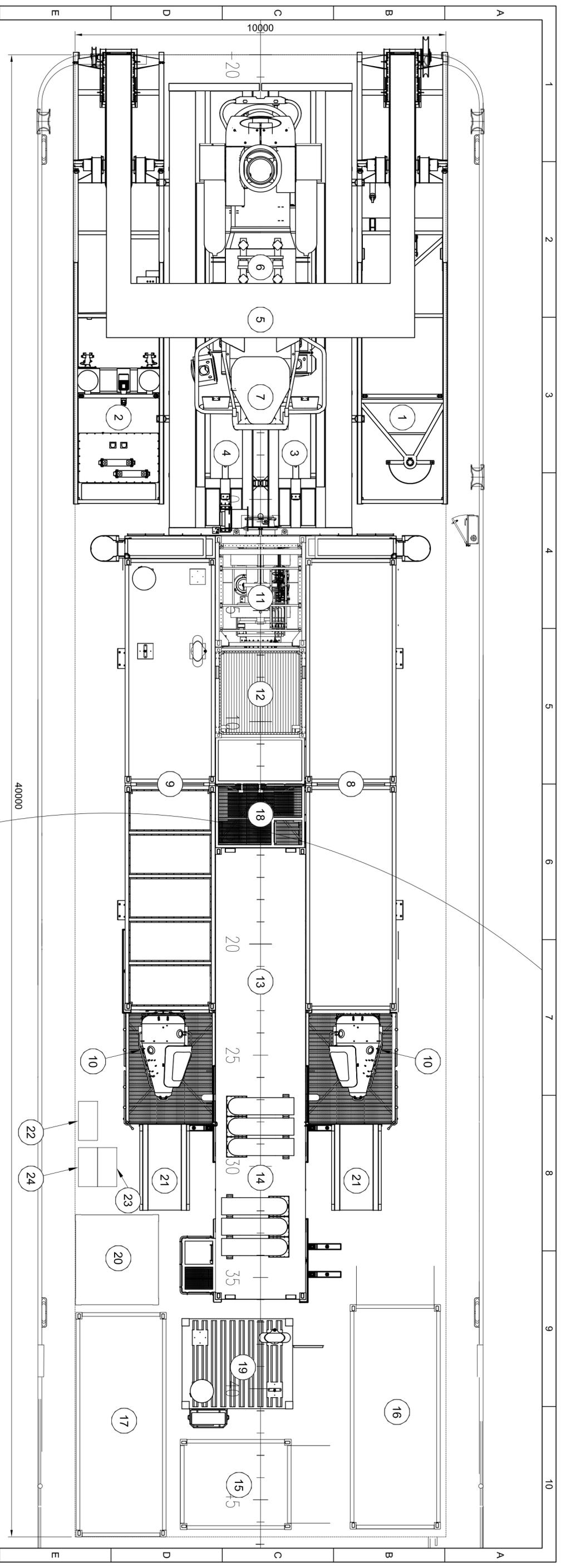
ID	Rescue MOSHIP Capability	NSRS Requirement
12	Communications (Voice)	Provide ship to ship and ship to shore voice communications on marine band radio.
13	Victuals	Provide victuals for all NSRS embarked operational personnel.
14	Working Deck Power Supplies (Emergency Ship's Supply in event of RPGS failure).	<p>Individual minimum demands are:</p> <p><u>TUP</u> Rating 440v, 60Hz, 3ph. Steady state load demand is 148A.</p> <p><u>PLARS</u> Rating 440v, 60Hz, 3ph. Steady state load demand is 221A..</p> <p><u>RHIB Davit and cooling</u> Rating 440v, 60Hz, 3ph. Steady state load demand is 90A.</p> <p><u>Battery Charging Module</u> Rating 440v, 60Hz, 3ph. Steady state load demand is 90A.</p> <p><u>PNTCS</u> Rating 230v, 60Hz, 1ph (Live and neutral) via 440/230V 1ph transformer. Steady state load demand is 21A (440V).</p>
15	Sea Water	Provide 20m ³ /hour continuous flow for NSRS Rescue System equipment cooling for the duration of the rescue operation.
16	Working Deck Fire Protection	Provision of ship fire fighting capability on the work deck area.
17	Diesel Fuel	Provide diesel (BS2869, ASTM D975 and D74, or EN590 compatible fuel) accessible on the working deck for the RPGS and RHIB.
18	Waste Disposal	Provide facility for storing/disposing of human biological waste products from up to 72 personnel (rescuees) in decompression for the 14 day operational period.
19	Sea Temperature	Support continuous NSRS operations in a sea water temperature range from -4°C to +33°C.
20	Reliability	Provide continuous operational availability without interruption to ship's position keeping capability and provision of emergency essential electrical supplies during the rescue activities.
21	Portable Navigation Tracking and Communications System (PNTCS) Command Console	Provide 2 X 2m by 1m clear desk top areas with personnel access on the Bridge or in the Operations Room with a 240v 50 Hz power supply for the PNTCS Command Console and Secure Communications system.
22	Propulsion and Power Generation Configuration	If the MOSHIP propulsion is delivered via un-shrouded propellers (fixed or CPP), the shafts must be capable of being crash stopped in an emergency. If MOSHIP electrical power is derived from Shaft Generators, these need to be capable of isolation and supplies achieved via alternative methods of power generation.

Additional Desirable NSRS Rescue MOSHIP Capabilities

Rescue MOSHIP Capability	Comments
<p>Position keeping capability in accordance with the following classifications, (in order of preference):</p> <p>IMO DP Class 3 IMO DP Class 2 IMO DP Class 1 Static Moor</p>	<p>Maintain a position over the DISSUB datum.</p>
<p>Propulsion System Configuration:</p> <p>Shrouded Propellers Azimuth Thruster</p>	<p>Experience has shown that shrouded propellers are very desirable; they reduce the wake interference and act as protection from the blades themselves. The provision of an Azimuth Thruster (fitted forward and able to deliver ship speed 4-6 knts) has been shown to provide the best MOSHIP propulsion method for SRV launch and recovery operations.</p>
<p>Available Deck Area (NSRS Rescue Spread):</p> <p>A clear deck area of >560 m2</p>	<p>The minimum specified deck area (400m²) merely provides for the footprint of the Rescue Spread on the MOSHIP back deck and assumes that additional space(s) would be available some where to locate / store the ancillary equipments required to support rescue operations, e.g. spares / workshops, ELSS. Whilst this minimum deck area specification maximises the potential number of MOSHIPS, experience has shown that it does present some operating constraints and limitations. The “Baseline Design” MOSHIP for NSRS is the UT755 PSV. This Class of vessel provide significantly larger clear deck areas. A desirable clear deck area of >560 m², minimises the potential imposition of any operating constraints and limitations (based on NSRS Generic Deck Plan RR Drg SUB3007421, e.g. length 40m x breadth 14m). The desirable clear width at the transom would be > 12.5m required for PLARS and fibre-optic winch.</p> <p>The standard PLARS deployment is to utilise a welded fit to the deck. However a bolted solution can provide significant benefits to Time To First Rescue (TTFR). If interested in adopting this solution, please contact NSRS for further information.</p> <p>For new construction vessels the addition of thickened areas of the deck is also recommended</p>
<p>Available Deck Area (for post TUP Rescuer Assessment & Triage)</p>	<p>In addition to the available clear deck area for the Rescue Spread, it would be desirable to have further clear areas forward for assessment and triage of Rescuers immediately after they exit the TUP.</p>
<p>Vessel Deck Strength:</p> <p>A deck point loading capacity. 5 tonnes/m²</p>	<p>Whilst this minimum deck point loading capacity specification maximises the potential number of MOSHIPS, experience has shown that vessels with decks of this capacity would require some pre-engineering to distribute the NSRS loads into the ships structure. This is particularly relevant for PLARS loadings. A desirable deck point loading capacity of 5 tonnes/m², would tend to have a greater inherent strength; thus potentially minimising any requirement for pre-engineering. It is noted that some potential MOSHIPS have multiple deck loading capacities; some having a deck loading capacity 10</p>

Rescue MOSHIP Capability	Comments
	tonnes/m ² in the area immediately forward of the transom, eg Anchor Handlers.
<p>Stern/Transom Configuration:</p> <p>An open transom/flat stern, with no round down or stern roller.</p>	<p>The minimum MOSHIP capability does not constrain the stern/transom configuration, thus maximising the potential number of MOSHIPS. However, experience has shown that any requirements for removal of built in transoms adds to the pre-engineering time line and reinstatement. Whilst round downs/stern rollers potentially impose operational constraints and limitations. The latter results from the inability to locate the PLARS heel fitting at the extreme stern position, thus reducing SRV/Stern clearance during SRV launch and recovery.</p> <p>This should be a clear opening at deck level to allow the PLARS to be mounted directly on the transom, thus maximising clearance between the MOSHIP and SRV during launch and recovery.</p>
<p>Craneage:</p> <p>Facility to deploy PNTCS Transducer Assembly.</p> <p>Facility to move NSRS loads on the deck.</p>	<p>It is desirable to have a method of deploying the PNTCS Transducer Assembly. A small crane mounted on the superstructure with a 2Te capacity at 5m outreach would suffice. It is also desirable to have the capability to move small loads (<5Te) on the MOSHIP back deck.</p>
<p>MOSHIP Boat to support NSRS operations</p>	<p>It is desirable that the MOSHIP can provide a RHIB to support NSRS operations in up to SS6 without impact to the statutory regulations with respect to the vessels safety boat requirements. If this cannot be satisfied, NSRS can deploy a RHIB, and if required an associated high sea state capable davit. However, this will require an appropriate location for embarkation on the MOSHIP.</p>
<p>Heli-deck, located close to the working deck to ease the transfer of any stretcher rescuees</p>	<p>It is possible that instances of decompression illness (DCI) will be high and rescuees will require evacuation to a remote hyperbaric treatment facility. The ability to evacuate such casualties and survivors by air would be a significant benefit.</p>
<p>Decompression chamber(s) equipped with a standard NATO flange</p>	<p>It is possible that instances of decompression illness (DCI) will be high and rescuees will require recompression to treat DCI. The ability to use MOSHIP assets for treatment would reduce the burden on the NSRS equipment.</p>
<p>Tracking</p>	<p>Access to ship installed transducer deployment system.</p> <p>Provide access to ships acoustic tracking system.</p> <p>Secure route for communications system cable routing from work deck area to Bridge.</p>
<p>Accommodation</p>	<p>Accommodation for at least 50 personnel, in addition to the vessel's normal complement.</p> <p>The minimum capability requirement, ie 'accommodation for at least 20 personnel, in addition to the vessels normal complement', assumes that in a rescue scenario additional accommodation for NSRS personnel would have to be provided on another supporting vessel.</p>
<p>Fresh Water</p>	<p>Provide fresh water at a flow rate of 12 l/min on</p>

Rescue MOSHIP Capability	Comments
	demand to the TUP 1m ³ Header Tank for the operational deployment period.
Reception Centre and Accommodation/Floor	Provide space for 30 survivors who are out of Decompression but under medical monitoring and awaiting repatriation for up to 5 hours.
A well equipped Sick Bay	The availability of a dedicated Sick Bay and medical facilities may enhance the NSRS capability for the medical treatment of survivors.
Certified by the same organisation as the NSRS equipment (ie Lloyds Register of Shipping)	Ensuring that the same authority certifies NSRS and the Rescue MOSHIP may speed up the certification of the NSRS onboard installation.
Onboard supply of diving quality high pressure (HP) air and oxygen	Onboard HP air and oxygen supplies (130 m ³ /hr air) would reduce the logistical burden for gas supplies to support decompression operation.
Gas (Workshop Quality Air)	Provision to the working deck of 5 m ³ /hr of workshop quality compressed air at a pressure of 80 bar.
Hydraulic Oil	Provide 4000 litres of Tellus 37 Hydraulic Oil for the NSRS PLARS and RHIB davit.
Remotely Operated Vehicle (ROV)	ROV (with launch and recovery equipment) capable of supporting the NSRS.
Fire Detection	Integration of NSRS and vessel Fire Detection Systems.
Air Temperature	Support continuous NSRS operations over an air temperature range from -15°C to +40°C.
Personnel	Provide support from the ship's staff to assist the NSRS Mobilisation Team.



AFT MAIN DECK ARRANGEMENT
PLAN
SCALE 1:75
CLEAR DECK SPACE = 400m²

ITEM	QTY	DESCRIPTION	DIMENSIONS (L x W x H)	WEIGHT (t)	VCG (m)
1	1	PORT DIS	12609 x 2438 x 2440	14.9	5.20
2	1	STBD DIS	12192 x 2438 x 2440	15.5	5.20
3	1	PORT FR	12192 x 2438 x 2510	8.5	0.25
4	1	STBD FR	12192 x 2438 x 2510	8.5	0.25
5	1	CROSSBEAM	8400 x 2200 x 2300	9.6	10.92
6	1	STABILISATION UNIT	3000 x 3000 x 1850	8.3	9.50
7	1	SRV ON CRADLE	20840 x 3500 x 3630	55.0	3.40
8	1	DCMP	6730 x 2438 x 2440	15.4	1.22
9	1	DCMS	6730 x 2438 x 2440	15.4	1.22
10	2	TWO-MAN PORTABLE CHAMBER	2358 x 1442 x 1156	1.5	0.50
11	1	MATING MODULE SUPPORT CONTAINER	2991 x 2438 x 2440	5.0	1.22
12	1	DECK TRANSFER CHAMBER	2438 x 2438 x 2440	9.6	3.05

ITEM	QTY	DESCRIPTION	DIMENSIONS (L x W x H)	WEIGHT (t)	VCG (m)
13	1	ENVIRONMENTAL CONTROL MODULE	12000 x 2438 x 2440	14.6	3.65
14	1	AIR SUPPLY MODULE	6000 x 2438 x 2440	13.7	1.22
15	1	SRV WORKSHOP CABIN	2997 x 2438 x 2440	10.5	1.22
16	1	PLARS WORKSHOP CABIN	6058 x 2438 x 2440	12.0	1.22
17	1	RPGS GENERATOR	6058 x 2438 x 2440	18.0	1.22
18	1	WALKWAY*	2400 x 1800 x 200	0.3	0.20
19	1	PNTCS	2991 x 2948 x 2440	4.0	1.22
20	2	FUEL BUND*	2400 x 2400 x 1200	3.0	0.50
21	2	RAMP**	2330 x 1340 x 200	N/A	0.12
22	1	COS	2000 x 800 x 1000	0.7	0.50
23	1	DB1*	2000 x 650 x 1600	0.8	1.00
24	1	DB2*	2000 x 650 x 1600	0.8	1.00

NOTES:
1. ASSET LIST SHOULD BE REVIEWED PRIOR TO MOBILISATION
2. NSRS RIB AND DAVIT HAVE BEEN OMITTED FROM THE DECK ARRANGEMENT, UTILISING THE MINIMUM REQUIRED DECK SPACE WOULD REQUIRE FURTHER ENGINEERING TO SECURE THE DAVIT
3. THE DECK ARRANGEMENT ABOVE ASSUMES THE VESSEL WILL BE CAPABLE OF SUPPLYING THE PRIMARY POWER SUPPLY

Rev	Date	Description	Drawn	Chkd	Appd
01	25/09/16	FOR INFORMATION ONLY	JM	GL	GC

± TOLERANCES UOS	F	M	C
<120	0.125	0.25	1
120-1000	0.25	0.5	2
>1000	0.5	1	4
ANGLE	0.5°	1°	3°

PROJECTION:

DO NOT SCALE AS SHOWN

Original Drawing Size A2

Scale As Shown

Mn. Text Height 2.5mm

All Dimensions in mm UOS

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JFD
James Fisher Defence Ltd, Carlisle
Avenue, Middleton Business Park,
PA4 8YU
T: +44 (0)141 812 8700
F: +44 (0)141 812 8700
W: www.jfddefence.com

Document type:	DA	Project:	NSRS	Client:	-
Drawn by:	JMCLETCHE	Drawing Title:	NSRS RESCUE SYSTEM MINIMUM DECK SIZE GENERAL ARRANGEMENT		
Checked by:	G.LINDHOFER	Deck Size:	40m x 10m (400m ²)		
Approved by:	G.COTTEN	Drawing Number:	-		
First Issued:	25/09/2016	Drawing Status:	FOR INFO. ONLY		
		Sheet:	1 OF 2	Issue:	01

