

Final Approval signature form.

OPERATIONAL REQUIREMENTS DOCUMENT

Serial Number (\*) : 489-87-98

FOR

SUBMARINE RESCUE DIVING & RECOMPRESSION SYSTEM

(POTENTIAL ACAT IVT)

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VALIDATED and APPROVED:

  
(N8)

6/3/98  
(DATE)

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(\*) CNO(N810) will assign serial number once validated and approved.



**OPERATIONAL REQUIREMENTS DOCUMENT  
FOR  
SUBMARINE RESCUE DIVING AND RECOMPRESSION SYSTEM  
ACAT IV(T), Revision 1**

(For Review)

SUBMITTED:

PRIORITIZATION (\*): 1

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Feb 2 98  
(DATE)

(N83 - CINC/FLTCINC REVIEW)

(DATE)

(N81 - N8 REVIEW)

(DATE)

(\* ) Prioritization: 1 = Essential    2 = Critical    3 = Important  
4 = Valid    5 = Excess

**OPERATIONAL REQUIREMENTS DOCUMENT  
FOR  
SUBMARINE RESCUE DIVING AND RECOMPRESSION SYSTEM (SRDRS)**

1. General Description of Operational Capability. Highly mobile submarine rescue diving and recompression assets will improve submarine rescue response time for the greatest number of potential rescue locations. Use of a rapid assessment and portable underwater work system, a pressurized rescue module, and a submarine decompression system capable of rapid deployment to the disaster area are proposed to meet the requirement for submarine rescue and escape which was established by the SRDRS Mission Needs Statement (MNS), M016-002-92. It states:

"Existing [United States Navy] capability for providing assistance to effect personnel rescue or escape from a disabled submarine ... is inadequate. Existing capability is dependent on specific ships ... which are unable to arrive at distant disaster sites in time to provide assistance. Underwater tasks to repair or make serviceable damaged submarine hatches may be required to effect rescue or escape. Immediate treatment of personnel suffering decompression sickness or arterial gas embolism ... is required to sustain life or prevent permanent physical disability. Moving submarine rescue ... assets that are portable, by available ... aircraft and installing aboard the nearest, most suitable ... ship of opportunity, will greatly improve submarine rescue response time."

2. Threat. If operating in a hostile environment, SRDRS could be subject to the same threats as those encountered by the disabled submarine. Those threats are described in Office of Naval Intelligence (ONI) Threat Assessment, January 1998, ONI TA-007-98. Threat protection for SRDRS will be provided by the On-scene Commander.

3. Shortcomings of Existing Systems. In addition to their relatively high cost, the existing USN systems have significant operational shortcomings. Specifically:

- ◆ The operational effectiveness of the Deep Submergence Rescue Vehicle (DSRV) is limited by its dependence on specially configured mother submarines (MOSUBs) or surface support ships. As of December 1997, there are 10 U.S. and 8 allied submarines configured as MOSUBs. Plans call for a reduction to 8 U.S. MOSUBs. There are 2 appropriately configured surface support ships in the world. Due to the limited number of MOSUBs, rapid worldwide response cannot be assured.
- ◆ Neither of the existing systems is capable of "pressurized rescue" (i.e., removing rescues from a pressurized DISSUB and transferring them to surface recompression chambers - maintaining pressure throughout). This inability has potentially fatal consequences. Although data on DISSUB scenarios is scant, there is a significant possibility that the internal pressure of a DISSUB will exceed one atmosphere and the crew of the DISSUB would be "saturated" on air and would have a significant decompression obligation. Without a pressurized rescue capability, it is very possible that rescued survivors would suffer serious injury and possibly die from decompression sickness. A decompression facility could be developed to interface with the existing Submarine Rescue Chamber (SRC), however, there is no cost

effective way to harden the existing MOSUBs to achieve a pressurized rescue capability.

4. **Capabilities Required.** The SRDRS must provide a quick-response, worldwide capability for rescuing the crew of a disabled, pressurized submarine trapped on the ocean floor. Beyond that, it must provide capability for controlled decompression of the rescuees who are likely to have incurred a significant decompression obligation while awaiting rescue. SRDRS is not intended for search and localization of a disabled submarine. That requirement will be met by other existing systems including submarine emergency position indicating buoys/beacons and a variety of acoustic and non-acoustic search systems.

A) **System Performance.** The SRDRS is composed of three distinct systems. The first is the Assessment/Underwater Work System (AUWS) which consists of Atmospheric Dive Suits (ADS) and associated Launch and Recovery Systems (LARS). This will be the first system mobilized and will provide capability for rapid assessment of the disabled submarine, hatch clearance and life support supply replenishment. The second system is the Submarine Decompression System (SDS). The SDS is composed of two large Submarine Decompression Chambers and auxiliary equipment used to support controlled decompression of rescuees or escapees. The third system is the Pressurized Rescue Module (PRM) and associated LARS. The PRM is intended to rescue personnel from the DISSUB under pressure and transfer them to the SDS for decompression therapy. All three systems are to be designed for air transport and for mobilization to military or commercial Vessels of Opportunity (VOOs) eliminating the dependence on specially configured MOSUBs or surface support ships. Specific requirements for system performance are included in Tables I-III.

Table I: Operational Parameters - Assessment/Underwater Work System (AUWS)

Operational Requirement	Objective	Threshold
<b>Operational Depth</b>	610 msw (2000 fsw)	260 msw (850 fsw)*
<b>Submarine Hatch Conditions</b>	Damaged or Debris Covered; Install Downhaul Cable	Damaged or Debris Covered; Install Downhaul Cable
<b>Road Transportability (truck &amp; trailer)</b> Max Individual Gross Weight: Max Individual Width: Max Individual Height: Interface (see Note 1):	36290 kg (80000 lbs) 2.4 m (8 ft) 4.1 m (13 ft 6 in) ISO Container	36290 kg (80000 lbs) 2.6 m (8 ft 6 in) 4.1 m (13 ft 6 in) ISO Container
<b>Air Transportability (see Note 2)</b>	C-130 & C-141	C-141*
<b>Vessels of Opportunity (VOO)</b> (see Note 3):	Single VOO from assembly of qualified international vessels	USN T-ATF*
<b>Sea States (see Note 4)</b>	Subsea Operations: 5 Launch: 4 Recovery: 5 Survivability: 7	Subsea Operations: 4 Launch: 4 Recovery: 4 Survivability: 6
<b>Water Temperature</b> 0-91 m (0-300 ft)  91-610 m (300-2000 ft)	Max: 35.0°C (95.0°F) Min: -1.7°C (29.0°F) Max: 25.6°C (78.0°F) Min: -2.2°C (28.0°F)	Max: 29.4°C (85.0°F) Min: 1.7°C (35.0°F) Max: 21.0°C (70.0°F) Min: -2.2°C (28.0°F)

**Table I: Operational Parameters – AUWS, Continued**

<b>Operational Requirement</b>	<b>Objective</b>	<b>Threshold</b>
<b>Air Temperature</b> (see Note 5) Operating: Non-Operating:	Max: 43.3°C (110.0°F) Min: -17.8°C (0.0°F) Max: 65.6°C (150.0°F) Min: -17.8°C (0.0°F)	Max: 37.8°C (100.0°F) Min: -12.2°C (10.0°F) Max: 54.4°C (130.0°F) Min: -12.2°C (10.0°F)
<b>Max Underwater Current</b> (see Note 6) 0-260 msw (0-853 fsw): 260-460 msw (853-1509 fsw): 460-610 msw (1509-2000 fsw):	1.0 m/s (2.0 kts) 0.6 m/s (1.2 kts) 0.5 m/s (1.0 kts)	0.8 m/s (1.5 kts) 0.5 m/s (1.0 kts) 0.4 m/s (0.8 kts)
<b>Time to Load Aircraft</b>	3 hours	4 hours
<b>VOO Mobilization</b> (see Note 7)	6 hours	12 hours
<b>Underwater Task/Rapid Assessment Duration</b>	80 hours cumulative mission total at 610 msw (2000 fsw)	80 hours cumulative mission total at 260 msw (850 fsw)
<b>Underwater Visibility</b>	0 m (0 ft)	0.3 m (1.0 ft)

\* denotes Key Performance Parameter

**Table II: Operational Parameters - Submarine Decompression System (SDS)**

<b>Operational Requirement</b>	<b>Objective</b>	<b>Threshold</b>
<b>Decompression/Recompression Capability</b> Pressurized Rescuers: Inside Tenders: Treatment Pressure: Oxygen Treatment Duration:  Patient Transfer:	62 persons w/repetitive use capabilities for 155 4 persons 608 kPa absolute (6.0 ata) 460 mins of 100% oxygen per person at 18 msw (60 fsw) (total of 155 persons) Lock in/Lock out	62 persons w/repetitive use capabilities for 155 4 persons 608 kPa absolute (6.0 ata)* 400 mins of 100% oxygen per person at 18 msw (60 fsw) (total of 155 persons) Lock in/Lock out
<b>Mating Capability:</b>	NATO flange and PRM	NATO flange and PRM*
<b>Road Transportability</b> (truck & trailer) Max Individual Gross Weight: Max Individual Width: Max Individual Height: Interface (see Note 1):	36290 kg (80000 lbs) 2.4 m (8 ft) 4.1 m (13 ft 6 in) ISO Container	36290 kg (80000 lbs) 2.6 m (8 ft 6 in) 4.1 m (13 ft 6 in) ISO Container
<b>Air Transportability</b> (see Note 2)	C-130, C-141, C-17 & C-5	C-17 & C-5*
<b>Vessels of Opportunity (VOO)</b> (see Note 3):	Single VOO from assembly of qualified international vessels	USN T-ATF*
<b>Sea States</b> (see Note 4)	Deck Chamber Operations: 6 Survivability: 7	Deck Chamber Operations: 5 Survivability: 6
<b>Air Temperature</b> (see Note 5) Operating: Non-Operating:	Max: 43.3°C (110.0°F) Min: -17.8°C (0.0°F) Max: 65.6°C (150.0°F) Min: -17.8°C (0.0°F)	Max: 37.8°C (100.0°F) Min: -12.2°C (10.0°F) Max: 54.4°C (130.0°F) Min: -12.2°C (10.0°F)
<b>Time to Load Aircraft</b>	6 hours	8 hours

**Table II: Operational Parameters – SDS, Continued**

<b>Operational Requirement</b>	<b>Objective</b>	<b>Threshold</b>
<b>VOO Mobilization</b> (see Note 7)	18 hours	18 hours

\* denotes Key Performance Parameter

**Table III: Operational Parameters - Pressurized Rescue Module (PRM)**

<b>Operational Requirement</b>	<b>Objective</b>	<b>Threshold</b>
<b>Operational Depth</b>	610 msw (2000 fsw)	610 msw (2000 fsw)*
<b>Mating Capability: Hyperbaric Transfer Under Pressure/ DISSUB</b> Interface: DISSUB Angle: DISSUB Pressure:	SDS and NATO Common Rescue Seat 60° 507 kPa absolute (5.0 ata)	SDS and NATO Common Rescue Seat* 45°* 507 kPa absolute (5.0 ata)*
<b>Capacity:</b>	16 rescuees/2 tenders	12 rescuees/2 tenders
<b>Road Transportability (truck &amp; trailer)</b> Max Individual Gross Weight: Max Individual Width: Max Individual Height: Interface (see Note 1):	36290 kg (80000 lbs) 2.4 m (8 ft) 4.1 m (13 ft 6 in) ISO Container	36290 kg (80000 lbs) 2.6 m (8 ft 6 in) 4.1 m (13 ft 6 in) ISO Container
<b>Air Transportability</b> (see Note 2)	C-130, C-141, C-17 & C-5	C-17 & C-5*
<b>Vessels of Opportunity (VOO)</b> (see Note 3):	Single VOO from assembly of qualified international vessels	USN T-ATF*
<b>Sea States</b> (see Note 4)	Subsea Operations: 5 Launch: 5 Recovery: 5 Survivability: 7	Subsea Operations: 4 Launch: 4 Recovery: 4 Survivability: 6
<b>Water Temperature</b> 0-91 m (0-300 ft)  91-610 m (300-2000 ft)	Max: 35.0°C (95.0°F) Min: -1.7°C (29.0°F) Max: 25.6°C (78.0°F) Min: -2.2°C (28.0°F)	Max: 29.4°C (85.0°F) Min: 1.7°C (35.0°F) Max: 21.0°C (70.0°F) Min: -2.2°C (28.0°F)
<b>Air Temperature</b> (see Note 5) Operating:  Non-Operating:	Max: 43.3°C (110.0°F) Min: -17.8°C (0.0°F) Max: 65.6°C (150.0°F) Min: -17.8°C (0.0°F)	Max: 37.8°C (100.0°F) Min: -12.2°C (10.0°F) Max: 54.4°C (130.0°F) Min: -12.2°C (10.0°F)
<b>Max Underwater Current</b> (see Note 6) 0-260 msw (0-853 fsw): 260-460 msw (853-1509 fsw): 460-610 msw (1509-2000 fsw):	1.5 m/s (3.0 kts) 1.3 m/s (2.6 kts) 1.2 m/s (2.3 kts)	1.3 m/s (2.5 kts) 1.2 m/s (2.3 kts) 1.0 m/s (2.0 kts)
<b>Time to Load Aircraft</b>	6 hours	8 hours
<b>VOO Mobilization</b> (see Note 7)	18 hours	18 hours
<b>Underwater Visibility</b>	0 m (0 ft)	0.3 m (1.0 ft)
<b>Interoperability</b>	Fully compatible with SDS	Fully compatible with SDS

\* denotes Key Performance Parameter

Note 1: ISO Containers Standard: ISO 1161, *Series 1 Freight Containers – Corner Fittings – Specification*

Note 2: Air transportation may require multiple aircraft. The exact number of each type will vary depending on the aircraft and combinations of aircraft available at the time of an emergency. Cargo will not include any trailer that may have been used to transport SRDRS systems to the VOO. Therefore, the cargo dimension requirements are different for road and air transportability.

Note 3: The AUWS would deploy first to arrive on-site and begin its assessment and clearance efforts, meanwhile the SDS and PRM are installed for deployment on a second VOO.

Note 4: Survivability Definition and Sea States Descriptions

Survivability Definition: Survivability as set forth in DOD-STD-1399, Section 301A, refers to the survival of a system in sea conditions which are more severe than those in which various subsystems are operational. Such survival requires that after the sea condition subsides, mission essential subsystems are without serious damage and are capable of continuing the mission without returning to port for repairs. For the SRS, this definition includes temporarily suspending the mission with the pressure vessels for human occupancy (PVHO) occupied and pressurized; keeping the operators and occupants of the PVHOs safe until the sea condition subsides.

Sea State	Significant Wave Height
3	0.5 - 1.25 m (1.6 - 4.1 ft)
4	1.25 - 2.5 m (4.1 - 8.2 ft)
5	2.5 - 4.0 m (8.2 - 13.1 ft)
6	4.0 - 6.0 m (13.1 - 19.7 ft)
7	6.0 - 9.0 m (19.7 - 29.5 ft)

Table IV

Note 5: Air Temperature: These values enable the system to operate in a wide range of latitudes in all oceans year round. The 10 degree F requirement allows operations as far north as 60 degrees latitude or more in February (mid-winter) & as far south as 60 degrees latitude or more in August (mid-winter). The 100 degree F requirement allows operation in equatorial waters year round including operations in the 91 degree F average surface temperatures found in the Persian Gulf in August. Increasing temperature requirements will increase the system weight & will slow deployment due to an increase in weight cause by addition of insulation & additional environmental control unit heating & cooling capabilities.

Note 6: Water Current: The profile represents an evolution of data and study values culminating in the present values. The original values were derived from a review of measured current profiles for a world-wide capable system, the US Navy's CURV III. (This system is a 20,000 ft remotely operated vehicle designed to meet the needs for deep water recovery.) This leads to the following current profile and reflects the threshold values for the AUWS:

0-853 fsw	1.5 kts
853-1509 fsw	1.0 kts
1509-2000 fsw	0.8 kts

An analysis was then performed to refine the conceptual design model of the PRM verifying its top performance to gain additional margin in operating in even higher currents. The model was found to be capable of achieving mission requirements against even higher current profiles without significant weight and size gains to the system. Therefore, these current profiles were chosen as the threshold values for the PRM:

0-853 fsw	2.5 kts
853-1509 fsw	2.3 kts
1509-2000 fsw	2.0 kts

Note 7: VOO Mobilization: VOO mobilization is defined as the time between beginning installation and beginning transit to DISSUB site. Flight and transportation times to VOO mobilization port and VOO transit to DISSUB are situationally defined.

B) Logistics and Readiness. Tailored logistics data will be collected in accordance with MIL-PRF-49506 and with the guidance of MIL-HDBK-502. The data will be maintained throughout development concentrating on maintenance, facilities, and packaging, handling, storage and transportation requirements. There are no integrated fault diagnostic capabilities anticipated for the SRDRS system.

(1) Operational Suitability characteristics to support SRDRS mission requirements are as follows:

Table V: **Operational Suitability**

		Objective	Threshold
Reliability	$MTBOMF_{SYS}$	720 Hours	720 Hours
Maintainability	$MCMTOMF_{SYS}$	4 Hours	6 Hours
Availability	$A_{oSYS}$	96%	93%
Logistics Related Reliability	$MTBUM_{SYS}$	24 Hours	18 Hours

$MTBOMF_{SYS}$  (Mean Time Between Operational Mission Failures - System) = Total System Operating Time/Number of Operational Mission Failures

$MCMTOMF_{SYS}$  (Mean Corrective Maintenance time for Operational Mission Failures or Faults - System) = Total Elapsed Time to Correct Operational Mission Failures/Total Number of Operational Mission Failures

$A_{oSYS}$  (Operational Availability - System) = Uptime/(Uptime + Downtime)

$MTBUM_{SYS}$  (Mean Time Between Unscheduled Maintenance) = Total Operating Time/Total Number of Incidents Requiring Unscheduled Maintenance

SYS = Denotes that value given is for each individual SRDRS system (i.e., AUWS, SDS, PRM)

Note: Given operational suitability values are for hardware only. Operational suitability parameters for software are not applicable to the SRDRS system.

(2) Operating and Support (O&S) Cost Objective and Threshold Values: SRDRS O&S Cost Objective and Thresholds were based on the predecessor item's (DSRV) O&S costs. These costs were calculated from DSRV OMN, DSA, OPN and support ship cost values. The O&S Cost Objective is a savings of 60% over DSRV O&S and the O&S Threshold Cost is a savings of 40% over DSRV O&S costs.

C) Other System Characteristics. There are no special category characteristics related to communications, information, physical or operational security needs.

D) Rescue operations involving exposure to ionizing radiation. SRDRS shall be able to conduct rescue operations in circumstances possibly involving exposure to ionizing radiation including contamination of the rescuees. SRDRS will accommodate means to quantify the radiological problem (i.e., able to stow necessary radiacs, dosimeters, etc.).

- ◆ Exposure to penetrating radiation: ADS and PRM may be subject to low level penetrating radiation while in the immediate vicinity of the DISSUB. Total exposure will be minimized by existing reactor plant shielding, the DISSUB hull, the rescue vehicle hull, the distance between the rescue vehicle and the radiation source, and the minimal time spent in the immediate vicinity of the radiation source.
- ◆ Exposure to airborne and surface decontamination: Measures taken to minimize exposure to ionizing radiation and spread of contamination shall be simple, easily accomplished, and consistent with the emergency nature of rescue operations (i.e., rinse contaminated rescues and clothe them in insulated coveralls). The measures taken shall not interfere with the expeditious removal of the rescues from the DISSUB.

E) Decontamination. SRDRS shall utilize existing or new means to provide for decontamination of the vehicles and its occupants following exposure to ionizing radiation.

- ◆ External vehicles: In the event that the external portions of the vehicles are contaminated, primary decontamination shall be considered to be conducted by motion through the water column while in transit to the host platform. Surveys of the external hull may be required following completion of the last rescue cycle to verify decontamination.
- ◆ Personnel and internal vehicles: SRDRS shall include provision, either existing or new, to decontaminate personnel upon arrival at the host platform and prevent the spread of contamination (i.e., ability to erect appropriate radiologically controlled areas and decontamination facilities). Decontamination shall be conducted in accordance with standard U.S. Navy radiological control procedures. Only easily accomplished minimal decontamination of the interior of the rescue vehicle, consistent with the emergency nature of rescue operations, shall be accomplished between cycles. Complete decontamination shall be accomplished following extraction of all personnel from the DISSUB:

## 5. Program Support.

A) Maintenance Planning. The SRDRS operational philosophy requires a system capable of rapid response, staffed by qualified personnel, and that achieves low total cost of ownership. The SRDRS will be a government owned/contractor operation (GO/CO) using a core-surge staffing approach eliminating the requirement for a large, dedicated staff. It will use a tailored maintenance program; and provide life cycle cost savings without sacrificing system reliability, performance or safety.

System complexity will be at a level commonly seen by marine systems technicians. These technicians perform a combination of organizational and intermediate level maintenance. Should a work item be beyond their capability, the contractor will have the authority to have the work performed by other qualified in-house personnel, or by another qualified activity.

Expenditure limits will be set for each such occurrence, and the contractor will be required to obtain authorization to proceed if the work will exceed the specified amount.

The contract maintenance program, while patterned after Navy PMS, will be tailored to reduce paperwork and administration burdens. Attention to life support system certification and Reentry Control (REC) procedures will be equivalent to military operated systems. A Level of Repair Analysis (LORA) will be conducted to determine the most cost effective maintenance approach. Maintenance requirements will focus on equipment condition assessments and monitoring operating trends. A condition-based maintenance approach will also support phased maintenance of major items during the life cycle. This will negate the need to perform a major system overhaul, which would take the system off-line for an extensive period of time.

The GO/CO system will have a dedicated system spares inventory. The initial inventory requirements will be established during system development and procured by the contractor responsible for system operation and maintenance. A Readiness Based Sparing Model (RBS) will be used to aid in the establishment of the particular spares and amounts needed. During the contract performance period the contractor will maintain item inventory and usage records, as well as make recommendations to the government for proposed changes (additions/deletions) to the spares allocation.

The level of detail for maintenance planning and documentation will be contractually established to provide the necessary assurances that the system is maintained in a ready for use condition and meets all certification authority requirements. An assigned Navy Contracting Officer's Representative (COR) will provide government oversight, day-to-day control of SRDRS maintenance and operations, and liaison with user activities.

B) Support Equipment. All support equipment will be designated and dedicated to this system and concurrently maintained. The use of a Consolidated Automated Support System (CASS) would not be cost effective for SRDRS. The contractor will be required to nominate support equipment (SE) and monitor SE needs. SE needs, when nominated to the government, will be reviewed for redundancy. If new equipment is developed for SRDRS, CASS would then be implemented.

C) Human Systems Integration. SRDRS will be operated and maintained by contractors. The Government/Military will be responsible for program management, contractor oversight and the supply of necessary medical personnel from existing endstrength. No new military occupational specialties will be established by SRDRS. Manpower and personnel requirements, including the desired mix and training levels, for operators, maintainers and support personnel will be detailed in the SRDRS Operations and Maintenance contract. Personnel will have training levels commensurate with current Government/Military Officer In Charge, Financial, Administrative, Dive Supervisor, Pilot, and System Operator training levels. *Anthropometric Indices Among U.S. Navy Divers*, NSMRL 83-3, and *Anthropometric Indices Among U.S. Navy Divers*, NSMRL 1135, will be used to establish Human System Interface requirements.

Training will also be a contractor responsibility. Necessary standards and specifications will

be identified in the SRDRS Operations and Maintenance contract. When applicable, training equipment will also be identified in the proper contract.

The entire SRDRS system will be certified to established U.S. Navy system safety certification standards.

D) Computer Resources. There are no computer resource constraints or need for computer resources support.

E) Other Logistics Considerations. Provisioning will be under contractual requirements of the commercial contractor selected to maintain and operate the SRDRS system. The supply of spare parts has a great impact on readiness. A military owned and operated system must rely on an established military parts supply system which is demand based and suited to equip an entire fleet of users all using common equipment. SRDRS is a one only system. Because of this, demand for parts will be low, creating situations where the lack of spare parts is a real possibility if standard military supply actions are taken. This unavailability of parts will adversely affect the readiness of the system. A GO/CO system relies on existing, commercially established parts supply systems. If a part is needed it is simply purchased from an established source. If it were not available from the usual source, another can be quickly found in the commercial world. This system of parts supply enables a GO/CO system to respond to breakdowns faster and requires that only preventative maintenance stock be kept on hand, yet another cost reducer.

A GO/CO system will have a dedicated systems spares inventory. The initial inventory is established during system development and turned over to the contractor with the system as Government Furnished Equipment (GFE). During the contract performance period, the contractor maintains item inventory and usage records, as well recommending to the government proposed additions or deletions to the spares allocation. Spares are maintained in a controlled van and transported with the system during mobilization. Provisioning will be under contractual requirements of the commercial contractor selected to maintain and operate the SRDRS system. There are no unique facility, shelter or environmental compliance requirements.

SRDRS will use a tailored Continuous Acquisition and Life-cycle Support (CALs) due to the small number of interests involved.

Another consideration is storage, handling and transportation of SRDRS. Under GO/GO a government owned warehouse, crane, forklift and trucking services is required. A GO/CO approach allows for basing SRDRS at the location which delivers the best competitive cost. Also, there is no need to lock in extremely long-term costs in critical Military Construction (MILCON) funding or to provide government supported infrastructure of building maintenance and services.

Finally, in accordance with Department of Defense (DoD) 5000.2-R, Part 4, Paragraph 4.3.7, the program shall incorporate environmental, safety and health planning throughout the program life-cycle.

F) Command, Control, Communications, Computers, and Intelligence. SRDRS waterborne subsystems communication and location requirements are under review as part of system design and testing. Minimum internal communications will require interface with host vessels, and vectoring/locating equipment similar to that used on existing commercial underwater vehicles. VOO selection criteria will specify standards of navigation to permit transit to site, maintain position onsite, and interface with the existing SUBMISS/SUBSUNK communications network. Backup global communications will be provided by existing Navy portable satellite communications systems. Selection of components to support underwater systems communications and navigation is being performed under current design and validation projects. The Navy will review and accept/reject any proposed systems prior to manufacture and test. No computers or software will be developed or specified for SRDRS systems.

G) Transportation and Basing. The SRDRS will be based at a single location determined by transportation access and deployment scenarios. This facility will be capable of providing recurring maintenance, training, storage, and deployment requirements. Air transportable assets will be housed in ISO containers and will fit on standard aircraft shipping pallets.

H) Standardization, Interoperability, and Commonality. SRDRS will have maximum functional commonality and standardization with US and Allied interfaces including recompression mating flanges in accordance with NATO ADivP-1 and STANAG 1297, Standard DSRV Rescue Seat, requirements. It will be modular in construction and interoperable with vessels of opportunity.

I) Mapping, Charting, and Geodesy Support. Bottom topography and geodetic data considerations will be supported with standard products produced by the National Imagery and Mapping Agency (NIMA).

J) Environmental Support. SRDRS will be installed aboard a host vessel for operations. Meteorological and Oceanographic (METOC) forecast information will be required and provided to the SRDRS operational team and the host vessel. Standard products and services from a joint or service METOC forecast activity will be available through the Global Command and Control System (GCCS).

6. Force Structure. One multi-component SRDRS will be procured and maintained. The system will be government owned and contractor operated. The SRDRS will consist of one underwater work and rapid assessment subsystem, two pressurized rescue modules, and one submarine decompression system. Assessment/underwater work and decompression assemblies will rotate through operations, training, and maintenance phases to maintain full 24 hour deployment capability.

7. Schedule Considerations. The SRDRS will proceed through all acquisition milestones and reach Initial Operational Capability (IOC) for AUWS in FY99, IOC for SDS in FY00, IOC for PRM(1) in FY03, PRM(2) in FY05 and reach Full Operational Capability (FOC) for SRDRS in FY03. IOC is established as the available date for each SRDRS subsystem deployment. This includes Technical and Operational Testing and Certification completion. FOC will include full system availability. Any delays in scheduled IOC/FOC will necessitate service life extension of existing submarine rescue systems with associated additional costs.