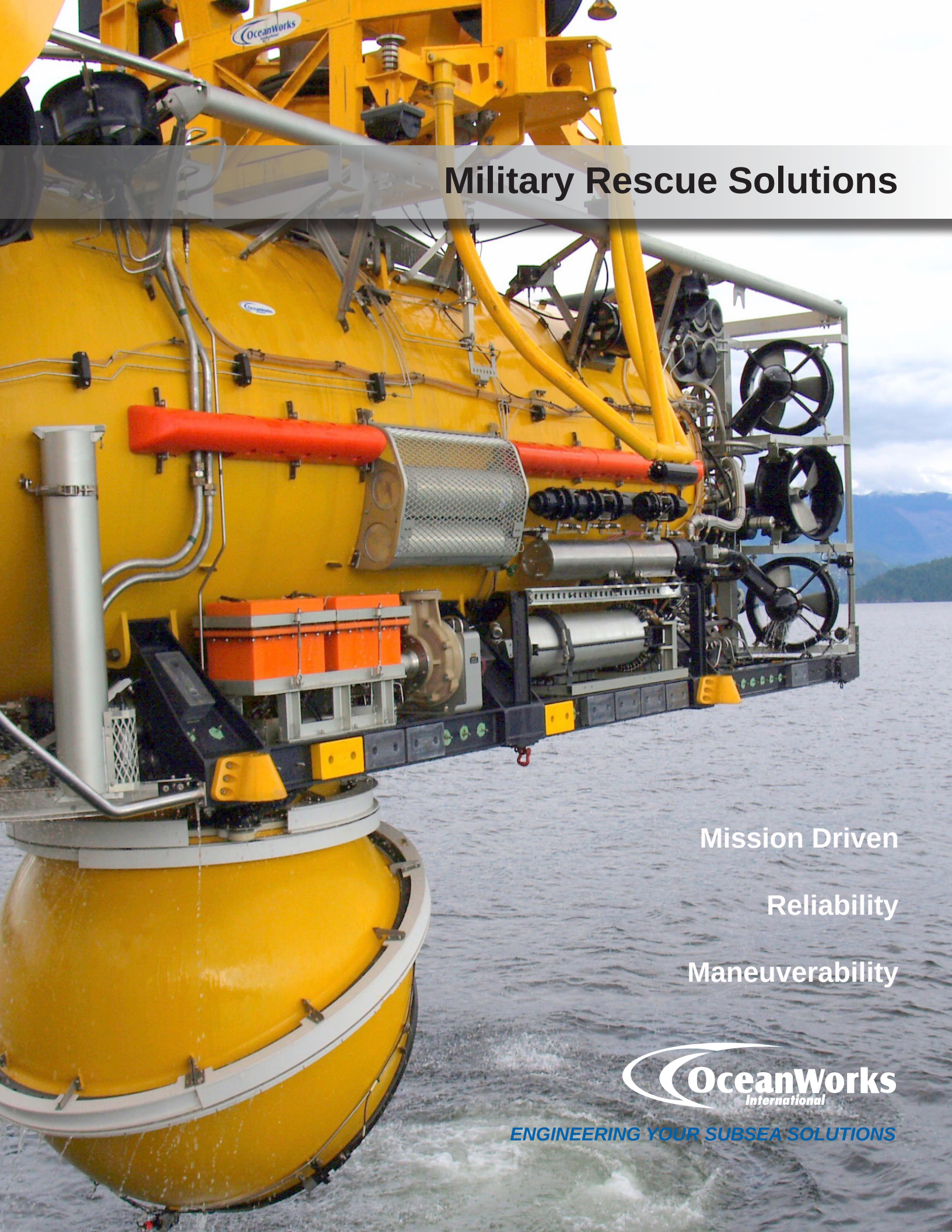
Military Rescue Solutions



Mission Driven

Reliability

Maneuverability

OceanWorks International

ENGINEERING YOUR SUBSEA SOLUTIONS

Contents

OceanWorks International

OceanWorks International is a globally recognized subsea technology company, specializing in the design and manufacture of manned and unmanned subsea systems and specialized equipment for the oil and gas industry, military, scientific and other marine markets. We offer a full range of subsea system engineering, design, analysis, fabrication, testing, and project management services. OceanWorks personnel have been at the cutting edge of deep subsea intervention and diving technology, operations, and support for over 30 years.

Please contact us at sales@oceanworks.com for more information on the extensive OceanWorks military product line.
www.oceanworks.com

Engineering Your Military Rescue Solutions

OceanWorks International offers a full range of Atmospheric Diving System and Submarine Rescue System hardware and services for both commercial and military applications. Since the company's inception in 1986, OceanWorks has executed over 70 projects related to submarine rescue and submarine systems.

OceanWorks' successful track record is based on our extensive understanding of the industry and our ability to develop new, innovative technologies to meet the deep water challenges presented by our customers.

OceanWorks Intervention Systems

- HARDSUIT™ Atmospheric Diving System (ADS)
- Submarine Emergency Ventilation & Decompression System (SEVDS)
- Emergency Life Support Stores (ELSS) System
- Remotely Operated Vehicle (ROV)

OceanWorks Submarine Rescue Systems

- Remotely Operated Rescue Vehicle (RORV)
- Submersible Rescue Vehicle (SRV)
- Submarine Rescue Chambers (SRC)

OceanWorks Auxiliary Equipment

- Launch and Recovery Systems (LARS)
- Ship Interface Template Sets (SITS)
- Transfer Under Pressure (TUP) Systems

OceanWorks Integrated Logistics Support

- Reliability and Maintainability Engineering
- Maintenance Planning
- Supply Support
- Training
- Operations Support

ENGINEERING YOUR SUBSEA SOLUTIONS

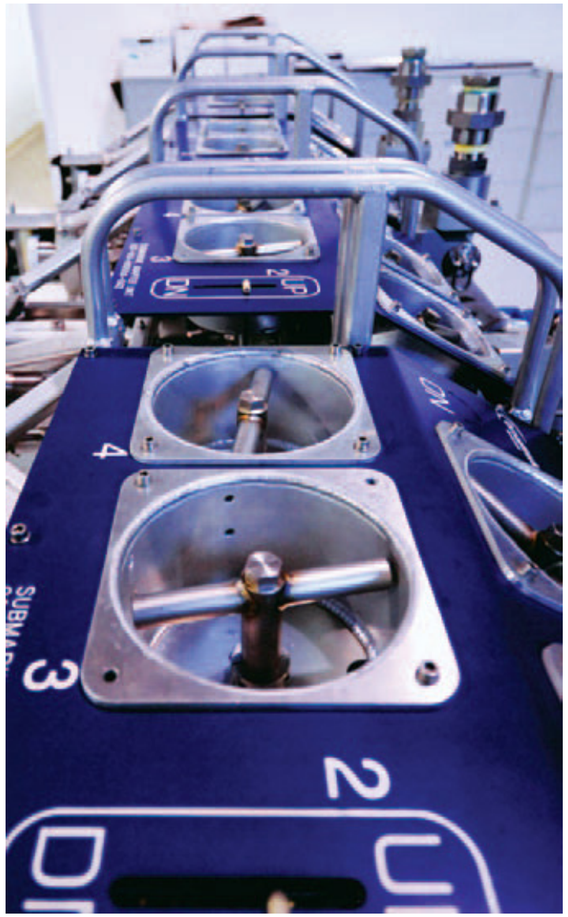
Submarine Rescue - Intervention Systems

Overview

OceanWorks provides an extensive range of subsea intervention assets designed for rapid deployment in a number of operating scenarios including search, salvage, ordinance recovery, disabled submarine life extension, escape support and survivor rescue.

The urgency of a situation involving rescue from a Disabled Submarine (DISSUB) requires high quality, modern technology that can be quickly and efficiently mobilized on a Vessel Of Opportunity (VOO) in a minimum amount of time.
Our intervention products include Atmospheric Diving Systems (ADS) and Remotely Operated Vehicles (ROV).
These intervention assets can be used to assist escape and rescue and to deploy Emergency Life Support Stores (ELSS) systems and connect Submarine Emergency Ventilation and Decompression Systems (SEVDS). OceanWorks supplied intervention equipment allows navies to extend the life of survivors and support escape while the operation is being initiated.

OceanWorks' ADS and ROV intervention systems can also be utilized for a wide variety of search and salvage operations and ordinance or causality recovery.



OceanWorks HARDSUIT™

OceanWorks HARDSUIT™ Atmospheric Diving Systems (ADS) include fully integrated Launch and Recovery Systems (LARS) and operational tooling. With over forty HARDSUIT™ systems delivered since 1986, OceanWorks ADS technology has consistently evolved since its initial release and today the HARDSUIT™ Quantum ADS represents the state of the art in atmospheric diving systems. The Quantum ADS offers a unique and cost effective solution for completion of many underwater tasks in depths up to 610 meters. The HARDSUIT™ has an unblemished safety record and provides human 3 dimensional awareness and “eyes-on-the-scene” capability for a fraction of the cost of a conventional saturation diving system due to the elimination of decompression time, reduced crew size, elimination of costly consumables, ease of mobilization and reduced vessel size.

Several militaries around the world have acquired the HARDSUIT™ system from OceanWorks for use in salvage, ordinance recovery and submarine rescue efforts, including France, Italy, Russia, Turkey, and the USA. The HARDSUIT™ is the ideal first responder for locating and evaluation of a stranded submarine, establishment of communications, submarine escape hatch clearing for escape, life support re-supply and rescue system interface. The HARDSUIT™ provides unmatched mobility for access to tight spaces and can change its attitude and orientation based on the commands of the HARDSUIT™ pilot. The ability of the HARDSUIT™ to quickly respond and execute unplanned tasks combined with simplified training and reduced maintenance to make it an ideal deep diving system for all military applications.

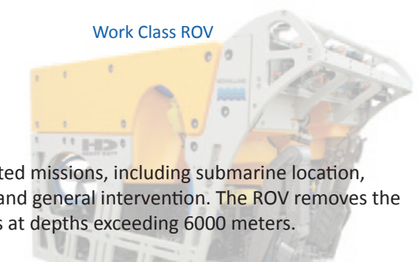
Hardsuit ™ Quantum

OceanWorks HARDSUIT™ - The New Design

Derived from the established HARDSUIT™ design and proven accomplishments, the next generation of ADS design has now been defined, incorporating the new technologies and fiber optics available to dive equipment today.

Cost effective, modern technologies allow the new ADS end-user to quickly learn the system and rapidly deploy this critical component in rescue capabilities. Current fiber optics have optimal bandwidth that allow for multiple camera feeds and 3D Sonar. A higher visibility and ease of manueverability comprises the new design. Tooling systems are easily adapted in order to ensure quick change out of mission tasks and rapid de-mobilization.

For more on the new OceanWorks ADS design and capabilities, please contact us.



Work Class ROV

Working with a Remotely Operated Vehicle (ROV)

Remotely Operated Vehicle (ROV) systems can be utilized for a variety of rescue related missions, including submarine location, hatch clearing, ELSS pod posting, submarine ventilation system connection, salvage and general intervention. The ROV removes the requirement to place a human underwater and can be used for multiple applications at depths exceeding 6000 meters.

The ROV can be used in situations where the depth exceeds the rating of the ADS or in very hazardous scenarios. The HARDSUIT™ Quantum and ROV are often operated as a pair for safety and enhanced task performance with the ROV providing heavy lift, tool power and area lighting / video while the ADS undertakes all work requiring fine dexterity and sensitive manipulation.

Submarine Rescue - Intervention Systems

Emergency Life Support Stores (ELSS)

Emergency Life Support Stores (ELSS) pods are pressure vessels that allow transfer of food, water, medical supplies, oxygen candles or CO2 scrubber materials to the disabled submarine. The pods are standardized in accordance with STANAG 1391 to fit the escape tower of NATO submarines. Alternate pod configurations have also been made for nonstandard applications.

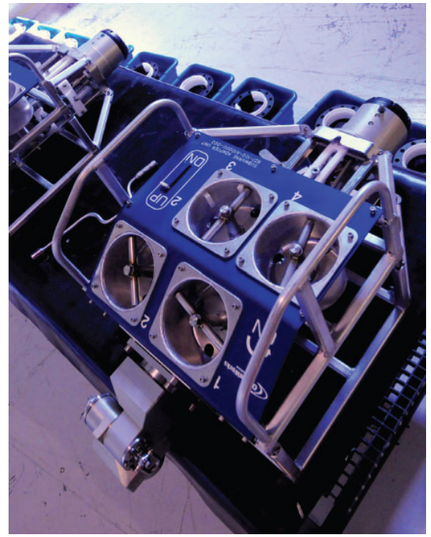
The OceanWorks ELSS pods and accessories can be supplied as individual components or as a fully integrated system with 4 carousels carrying a total of 20 pods, a flyaway launch and recovery system and acoustic tracking and release systems to allow rapid deployment from a small vessel.

Submarine Emergency Ventilation and Decompression System (SEVDS)

In a submarine disaster it is essential to stabilize the internal environment and extend the life of survivors while the rescue equipment is being mobilized.

The OceanWorks Submarine Emergency Ventilation and Decompression System (SEVDS) can be rapidly deployed to the scene and connected by the HARDSUIT™ ADS, an ROV, or conventional divers. With air supply and return controlled and monitored from the surface, the SEVDS can then be used to control DISSUB pressurization and clear smoke and carbon dioxide or other toxic gas accumulation. The OceanWorks SEVDS is designed with custom submarine receiving fittings (SRF) and submarine adapter units (SAU) as options and is compatible with NATO STANAG 1450. The unique OceanWorks SRF and SAU fittings are specifically designed for operation by divers, ADS and ROV systems.

HARDSUIT™ Operating ELSS Pods



Submarine Adapter Unit Operated by HARDSUIT™

Submarine Rescue - Intervention Systems

US NAVY Submarine Rescue Diving & Recompression System (SRDRS)

Since its delivery by OceanWorks to the US Navy, the Pressurized Rescue Module System (PRMS) “FALCON”, with its other SRDRS components, has been used in NATO “Bold Monarch” submarine rescue exercises around the world. It has proven its ability to perform rapid sortie excursions and to mate with and transfer personnel from multiple international submarines. The SRDRS system has proven fly away capabilities and has been flown to several locations and loaded out on multiple vessels of opportunity.

OceanWorks was selected by the US Navy for the design, construction and testing of numerous SRDRS elements including: the HARDSUIT™ 2000 Atmospheric Diving System (01) - part of the Advanced Underwater Work Systems (AUWS); the Pressurized Rescue Module System (PRMS) (02); the Launch and Recovery System (LARS) (03); the containerized control system (04) and the umbilical winch system (05). These elements, when combined with other containerized accessories, form the US Navy’s comprehensive SRDRS Rescue Capable System (RCS). The PRMS FALCON replaces the previous US submarine rescue asset, the DSRV Mystic and provides several unique advantages including:

- ROV type electro-optical tethered design provides unlimited power and real time, high bandwidth command, control and communications including 2 way video and data transmission.
- OceanWorks patented articulated transfer skirt to allow for connection to a disabled submarine at angles of up to 45 degrees while maintaining a level attitude.
- Shipment by military or commercial aircraft, truck, rail or sea systems.
- Operation from a vessel of opportunity (VOO), eliminating the need for a dedicated mother ship or mother submarine.
- Capability to support transfer under pressure of rescued crew.

Overview

OceanWorks submarine rescue systems provide a quick response and world wide capability for physical transfer of crew members from a submarine that is disabled and trapped on the sea floor.

OceanWorks can supply a variety of system and component options for customers to choose from and will work with each customer to arrive at the right system option to suit budgets and operating requirements. These options include:

- ROV type electro-optical tethered design provides unlimited power and real time, high bandwidth command, control and communications including 2 way video and data transmission.
- OceanWorks patented articulated transfer skirt to allow for connection to a disabled submarine at angles of up to 45 degrees while maintaining a level attitude.
- Shipment by military or commercial aircraft, truck, rail or sea systems.
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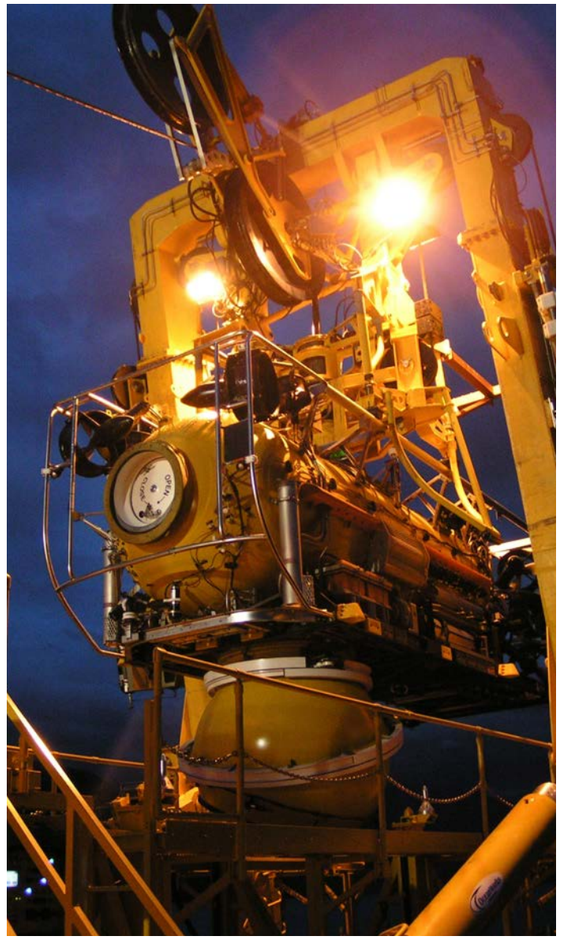

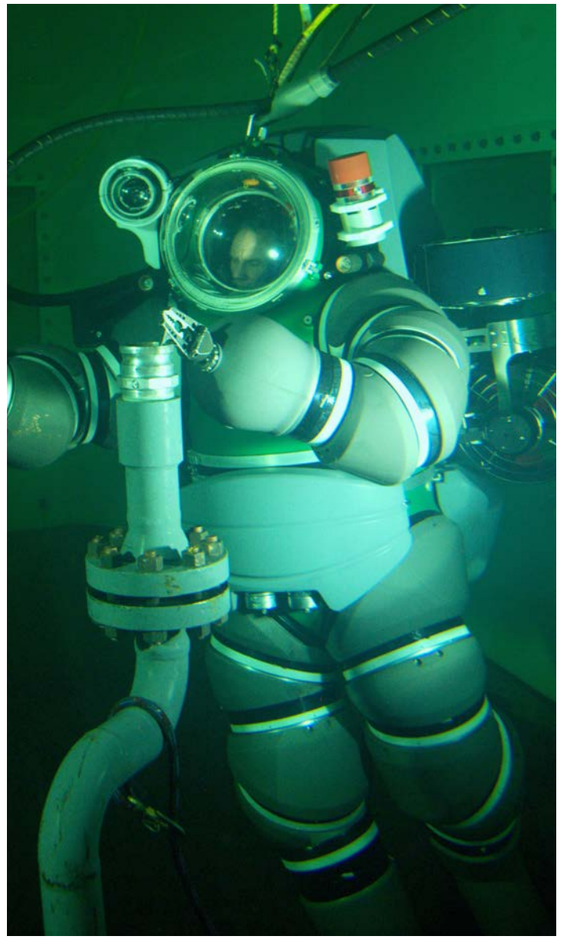

Submarine Rescue Systems

Remotely Operated Rescue Vehicles

US Navy PRMS “Falcon” Rescue Vehicle

Royal Australian Navy ASRV “Remora” Rescue Vehicle

OceanWorks has pioneered technology development for submarine rescue in two key areas:

01 The introduction of our patented articulated mating skirt, which allows a rescue vehicle to lock onto a disabled submarine lying at extreme angles (up to 60 degrees) on the sea floor without requiring the vehicle to change pitch or roll. Our skirt is fully compatible with all NATO and other standard submarine mating seats.

02 The introduction of the tethered Remotely Operated Rescue Vehicle (RORV) system configuration, which applies state-of-the-art ROV technology to rescue operations, training, and through-life support.

Used in combination, these technologies provide submarine rescue capability with unlimited power and mission endurance, real time, 2-way command, control and communication and unprecedented safety, mating, and maneuvering control.

The RORV technology developed by OceanWorks has been adopted by both the Royal Australian Navy and the US Navy and provides a physical link with the surface support vessel and the rescue vehicle at all times. This physical link not only provides unlimited power, video and sonar feeds and communication ability but also provides a mechanical connection to make transfer of the vehicle to the surface support mother ship safer and more controlled, particularly in higher sea states without the need for diver support.

The patented OceanWorks articulated mating skirt allows the rescue vehicle to orient itself to optimize power and minimize sail area in currents. In addition, the RORV can maintain a level attitude, a distinct advantage for ease of mating, execution of orderly evacuation, handling injured survivors and reducing ballasting and other control systems complexity.

Submarine Rescue Systems

US Navy Submarine Rescue Chamber

Submarine Rescue Chamber

Submarine Rescue Chambers (SRCs) are the lowest cost and smallest footprint submarine rescue system available. They are based on proven, existing designs, upgraded for deeper operating depth and transfer under pressure capability. They can be rapidly transported due to small size and light weight when compared to more capable systems. The SRC requires a down-haul cable to be attached to a special pad-eye on the submarine hatch in order to align itself and mate.

The SRC requires a diver, HARDSUIT™ ADS or ROV to connect the down-haul cable and requires the surface support vessel to provide maneuvering into location. As a result the SRC has a limited operational window compared to the RORV solution.

Options are available to add thrusters and the OceanWorks patented articulating skirt to increase operational capability. The SRC can be provided with a fully integrated LARS.

Launch and Recovery System

Submarine Rescue Chamber - Launch and Recovery

OceanWorks provides custom Launch And Recovery (LARS) handling systems for our rescue assets, including the ADS, ROV, submersible rescue vehicles, diving systems, SEVDS and ELSS equipment. We also provide LARS for other custom offshore subsea equipment. We have extensive experience in the specification, design and procurement of handling systems to commercial certification standards such as ABS and DNV.

Launch and recovery systems are provided based on the operational requirements of the customer. Typical design considerations and options include capability for: air transport; high sea state operation; low temperature designs for polar operations and rapid deployment / custom fit for use on any specified Vessel Of Opportunity (VOO) or dedicated ship.

OceanWorks, as a systems integrator, will work with each client to identify the optimal LARS solution.

Ship Interface Template Sets

Ship Interface Template Sets

OceanWorks has developed Ship Interface Template Sets (SITS) to allow partner nations to prepare a Vessel Of Opportunity (VOO) to rapidly install the existing US Navy submarine rescue system in the event of a submarine accident. A similar arrangement can be made for the NATO Submarine Rescue System (NSRS).

SITS are an approved structural interface that can be fitted to a pre-qualified VOO or dedicated ship during the time that the rescue system itself is being air transported to the port of embarkation, thus improving time to first rescue. By procuring SITS for forward deployment and identifying suitable vessels of opportunity, navies are able to provide more cost effective submarine rescue support capabilities on a fast response time.

Transfer under Pressure System

Transfer Under Pressure Capability

Transfer Under Pressure (TUP) capability is a requirement for modern submarine rescue systems since it has been established that survivors will most likely be exposed to elevated pressure for extended periods prior to rescue and that they will require transfer into a surface decompression and treatment facility.

OceanWorks offers TUP interface chambers, mating trunks and deck decompression chamber systems designed to allow for safe, efficient transfer under pressure of rescued personnel once the rescue vehicle is secure on the deck of the vessel of opportunity. The integrated decompression system configuration is customized to match the customer's requirements as driven by size of submarine crews, ship detail and decompression protocols.

Logistics Support

Following hardware delivery, OceanWorks provides comprehensive Integrated Logistics Support (ILS) including:

- Reliability and Maintainability Engineering and Obsolescence Planning
- Maintenance (preventive, predictive and corrective) Planning
- Supply (Spare parts) Support
- Packaging, Handling, Storage, and Transportation (PHS&T)
- Obsolescence Management
- Manpower and Personnel Support – Maintenance
- Training and Training Support
- Manpower and Personnel Support – Operations

Our ILS also incorporates Support and Test Equipment provision, Technical Data / Publications Management, Computer Resources Support and Facilities Planning.

OceanWorks also offers a variety of support service options to ensure smooth operation and availability, by working as a team with the customer. Options include:

- Contractor Owned, Contractor Operated (COCO)
- Government Owned, Contractor Operated (GOCO)
- Government Owned, Contractor Maintained (GOCM)

Reliability and Maintainability Engineering

OceanWorks has design engineering and production engineering groups involved in all system design and build projects. System reliability and maintainability are factored into the designs. Formal analysis, testing and validation are included as appropriate.

Preventive, Predictive and Corrective Maintenance Planning

In addition to operational manuals all products are provided with a set maintenance plan and procedure to keep system operation functioning at an optimal level. System support is provided by our 24hr a day, 7 days a week manned product support help line.

Preventive, Predictive and Corrective Maintenance Planning

All OceanWorks systems include recommended operation and depot level spares lists. All spares are supported by our product support group.

Integrated Logistics Support

Packaging, Handling, Storage and Transportation (PHST)

OceanWorks' PHST procedures ensure that all equipment and support items are properly preserved, packaged, labeled, handled, transported and stored to meet both short-term and long-term requirements. This includes hazardous material packaging for transport, material safety data sheet (MSDS) provision, expiry date notification and markings, customs and export notification document preparation, environmental impact assessment and constraints and more to make sure that each customer is properly supplied and informed on all PHST issues.

Obsolescence Management

Obsolescence Management is provided through regular technical service bulletins and product updates to ensure that system through life support is maintained.

Maintenance Support

OceanWorks maintains a 24hr a day, 7 days a week technical support service that can draw on both our Customer Support Engineers and Technician Groups to to respond to inquiries from customers. We can provide remote electronic or on-site support as required. It is recommended that OceanWorks be on-site during major maintenance cycles or re-certification of equipment.

Training

Class room, in-water and at sea formal training, to accredited standards is available for all product lines. Training can be undertaken at our depot facility or on-site at the customer's facility as required.

Operations Support

Through our commercial operations group, OceanWorks can provide operations personnel, Technicians, Engineers and Project Managers to help ensure that integration of the OceanWorks hardware on a customer's vessel or operation of that hardware is conducted in a safe and efficient manner. Our Operations Support Group can combine actual operations support with initial training to provide an efficient ramp up of customer capabilities and experience offshore when new equipment is introduced.

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