NATO
SMERWG 2017
Amsterdam, The Netherlands

INDUSTRY RECEPTION

Wednesday 7th June
Marine Kazerne Amsterdam
Kattenburg Straat 7
1018 JA, Amsterdam

17:30 hrs

advanced marine innovation
technology subsea ltd.

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Analox Military Systems (AMS)

produce gas monitoring systems that sustain or support life in hostile environments.

SUBMARINE ATMOSPHERE MONITORING SYSTEMS

As a supplier of bespoke solutions for submarine atmosphere monitoring we understand the complexities of the environment in terms of pressure, temperature and humidity variations.

Our expertise and knowledge of gas sensing techniques, combined with our understanding of the submarine environment and challenges within diving and hyperbaric systems, means Analox Military Systems are able to offer a full range of atmosphere monitoring systems. AMS can offer routine and bespoke submarine atmosphere monitoring, submarine escape and rescue and deployment of special forces from submarines and submersibles.

Analox Military Systems have been an active member within the submarine community for more than 15 years and have worked with more than half of the world's submarine operating nations.

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info@analox-military.net

ANALOX Military Systems

www.analoxmilitarysystems.co.uk

UNDERWATER TRAINING FACILITY'S & HYPERBARIC DEEP DIVING SIMULATION SYSTEMS

Auxilium Offshore

Auxilium Offshore is an independent company which consults and delivers project development of mission equipment. We are a dynamic and ambitious company who provides professional expertise to serve international defence forces for challenging projects worldwide on a high service level.

Our expertise includes the entire process of project and operational optimisation; from initiation to delivery, support and aftercare. This also involves the whole process of consulting clients, from design, engineering and construction, to system integration, and operational support.

Specialized projects like Underwater Training Facilities (UTF) and Hyperbaric Deep Diving Simulation Systems (HDDSS) are a part of Auxilium Offshore's portfolio, in which every design or requirement can be built according the client's specifications.

The Underwater Training Facility (UTF) is a facility used for a wide range of activities. The UTF can be used for:

- Simulate several diving activities;
- Instructors train submarine crew how to act in an emergency situation;
- Various diving emergency procedures can be trained and simulated;
- Simulate working techniques required to complete underwater tasks;
- Submarine escape training.

Underwater Training Facilities (UTF)

Hyperbaric Deep Diving Simulation Systems (HDDSS)

The Hyperbaric Deep Diving Simulation System (HDDSS) is a system used for a wide range of activities. The HDDSS can be used for:

- Test breathing (life-support) equipment;
- Test working techniques required to complete underwater tasks;
- Check divers' mental and physical abilities;
- Simulate deep diving in a controlled environment;
- Diving equipment training.

Contact
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Office: +31 (0)10 737 09 81
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Auxilium Offshore B.V.
Gamerschestraat 34
5301 AS Zaltbommel
The Netherlands

BABCOCK INTERNATIONAL GROUP MARINE & TECHNOLOGY

Provides platform design, integration and management services and high integrity systems to the defence sectors worldwide.

Submarine Under-Casing Life Raft

Babcock has designed and developed a Submarine Under Casing Life Raft System. The primary function of the system is to act as an indicator buoy. The system has the additional functionality of a SOLAS approved Life Raft contained in a GRP pressure vessel. Dual systems can be fitted per boat, one forward and one aft, providing the capability to accommodate the full crew. This system is now in service with the Royal Netherlands Navy.

Sea Training

- Delivering a comprehensive training service to the Royal Navy, the UK MOD and other customers
- Chosen training partner for the Royal Navy for over 18 years
- The breadth and depth of the naval training we provide is unrivalled
- We provide training and learning design, planning, delivery, apprenticeship management, equipment support, facilitation and information management
- Over 10,000 students trained
- 500,000 training days delivered
- 2,500 Royal Navy apprentices managed
- 9,000 Royal Navy service personnel
- 1,000 course types delivered
- Delivered training for international students from over 50 countries
- Designed and delivered a fully accredited international crew training and support programme
- Provide an in-country naval training and maritime academy capability

Babcock International Group
technology.enquires@babcockinternational.com
Tel +44 (0)117 966 4677

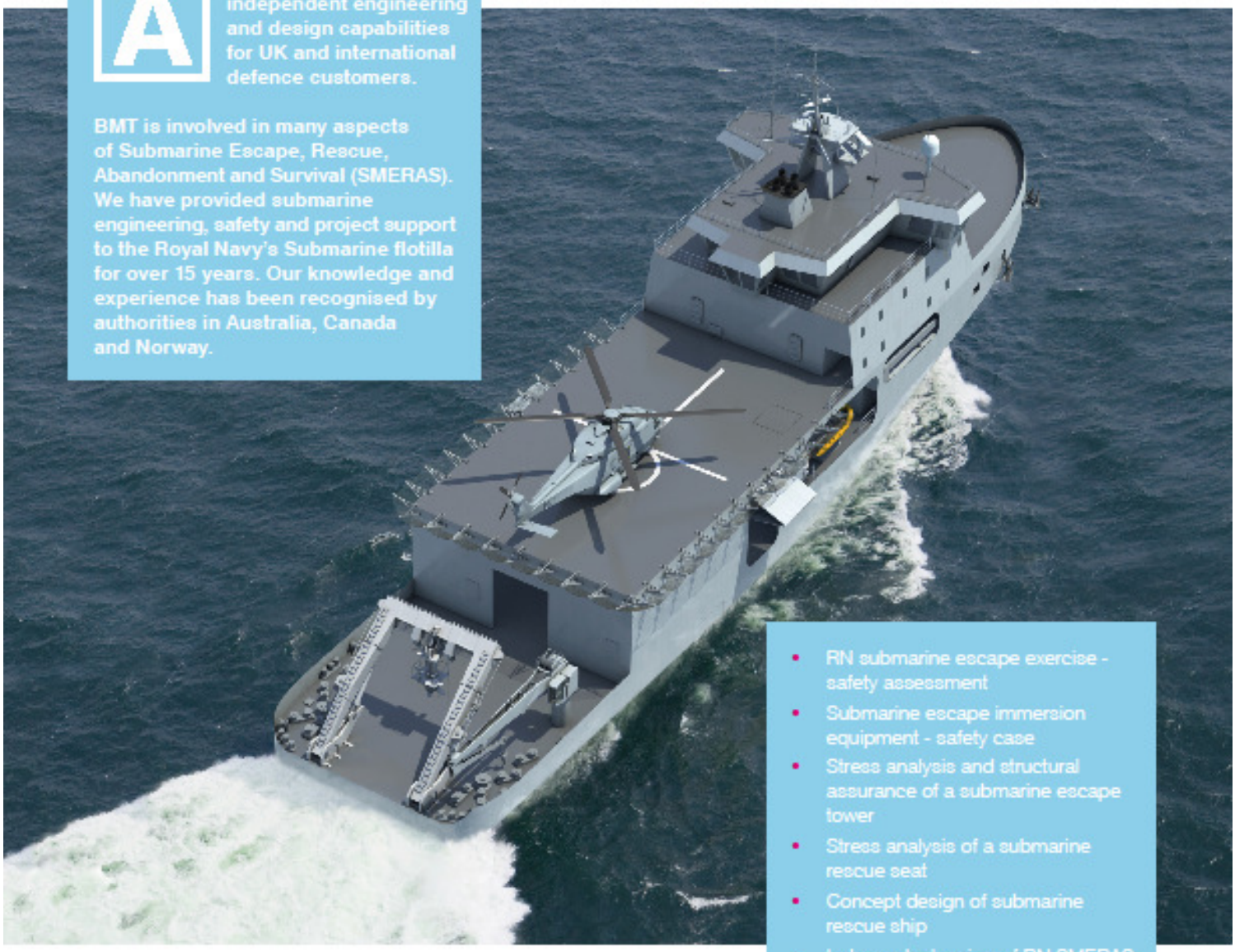
www.babcockinternational.com

Babcock International Group, Marine & Technology
SMERWG 2017

Submarine Escape, Rescue, Abandonment and Survival Systems

At BMT we deliver independent engineering and design capabilities for UK and international defence customers.

BMT is involved in many aspects of Submarine Escape, Rescue, Abandonment and Survival (SMERAS). We have provided submarine engineering, safety and project support to the Royal Navy's Submarine flotilla for over 15 years. Our knowledge and experience has been recognised by authorities in Australia, Canada and Norway.



- RN submarine escape exercise - safety assessment
- Submarine escape immersion equipment - safety case
- Stress analysis and structural assurance of a submarine escape tower
- Stress analysis of a submarine rescue seat
- Concept design of submarine rescue ship
- Independent review of RN SMERAS capability
- Customer adviser to replacement SMERAS Training Facility Project
- Independent safety assessment of NSRS and RN SMERAS capability
- Safety and Environmental Management support to the NATO Submarine Rescue System
- Safety and Environmental management support to JFD in support of the Indian Submarine Rescue System

BMT Group

Contact: Angus Watt or Julian Woolley
Tel: +44 (0) 1225 473 600 ext 516 or +44 (0) 1305 831472
Email: SMERAS@bmtmail.com
www.bmtdsl.co.uk

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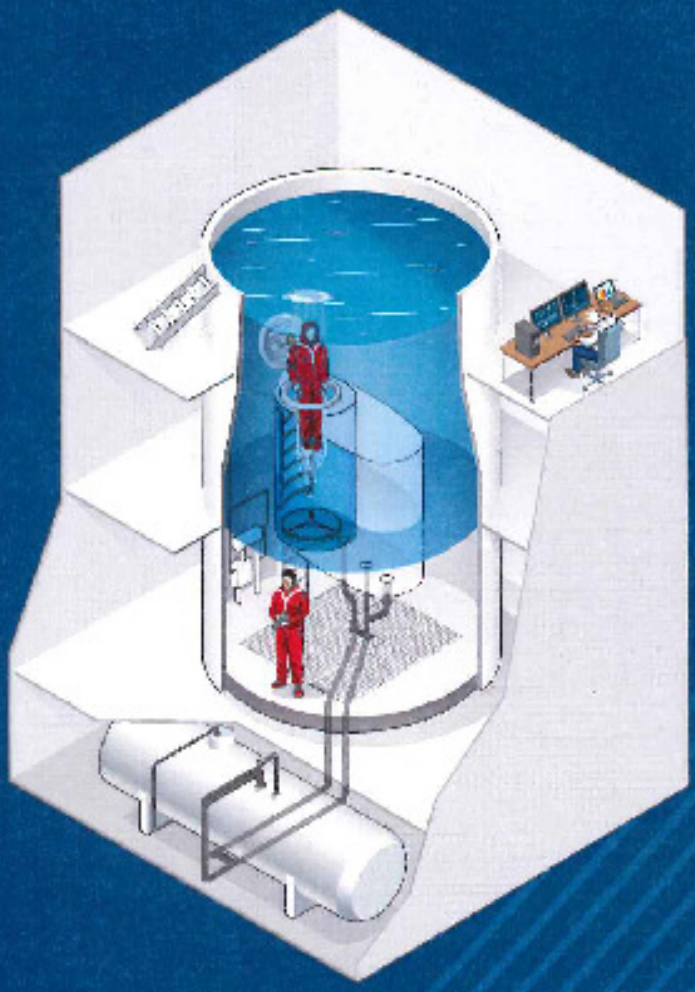
DCNS

DA Submarine Escape Training Tower is part of a facility used for training submariners in methods of emergency escape from a disabled submarine.



DCNS proposes The Escape Training Tower mainly comprises:

- A trunk with an upper and lower hatchs
- The various circuits used to operate the trunk
- A control and monitoring unit

From design to exploitation and maintenance, a submarine requires specific specialist skills and knowledge. DCNS supports the world's navies in acquiring maintaining and upgrading their know-how. DCNS provides highly efficient simulators (like the escape training tower) to train the crew for any task.

FORUM™
ENERGY TECHNOLOGIES



Forum Subsea Vehicles encompasses two of the best known brands in the design and build of remote intervention vehicles, namely Perry and Sub-Atlantic. The vehicles business offers the subsea industry an extensive range of remotely operated vehicles from inspection, survey through to deepwater construction.

Perry has a wealth of experience in the design, manufacture, testing / commissioning and operation of submersible vehicles. Since 1974, the company has produced over 500 manned and unmanned systems including rescue submersibles and ROVs with special purpose tooling. The latest Nato submarine, which completed extensive sea trials in 2008, is on constant standby for rescue operation in any part of the world and is specifically packaged for rapid deployment by air transport with all other surface elements of NSRS.
Intervention Remotely Operated Vehicles – The XLX-C work class ROV is an extremely capable and versatile Intervention vehicle, with permanent, removable or fully air transportable installations available for location, survey, debris clearance, torpedo recovery and ELSS pod posting.

Sub-Atlantic has a long history of supplying ROV systems to the military market, ranging from small observation to light work class vehicles. These may be deployed on a range of tasks including diver support, seabed survey, mine-countermeasures, port security, intruder detection, under hull search, munitions recovery, submarine rescue and a variety of other survey/search /recovery tasks. With a proven track record in the defense market, Perry and Sub-Atlantic are proud to be the manufacturers of choice by many of the world's military and naval forces, and they will continue to develop cutting edge technology which will keep them in the forefront of the subsea industry.
Whatever the mission, Forum subsea vehicles have a solution

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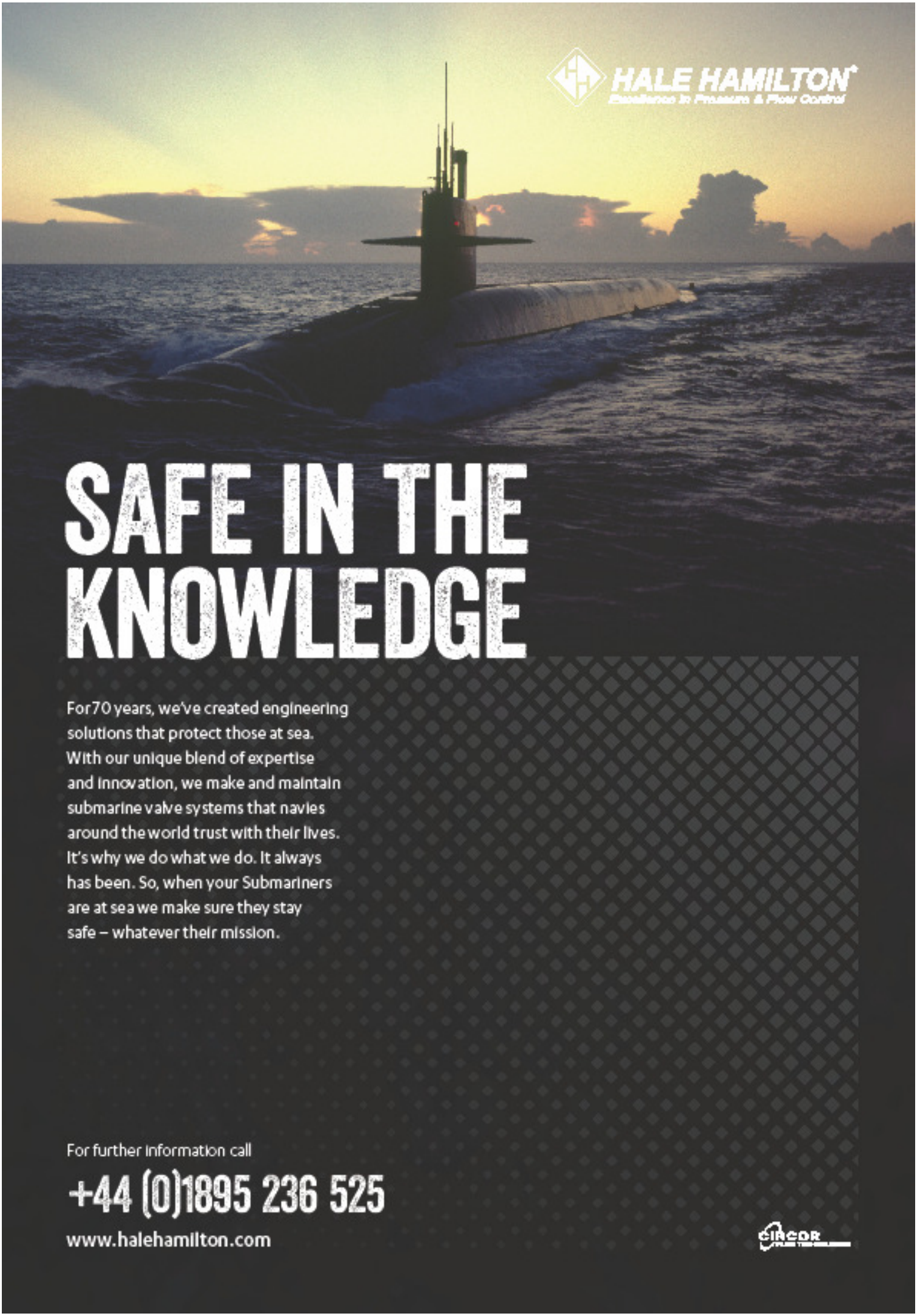
everything remotely possible [tm]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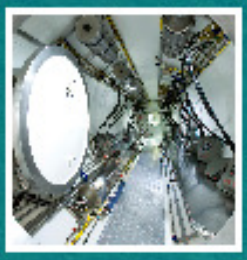

jfdglobal.com

A part of James Fisher and Sons plc

SMERWG 2017

Micropore

Micropore Inc. has developed a family of products based on their patented ExtendAir® process that encapsulates reactive adsorbent powders in a stable polymer sheet. The sheets are comprised primarily of fine CO_2 adsorbent powder (similar in particle size to talcum powder) and are frequently as dense or denser than granules. Micropore offers lithium hydroxide and calcium hydroxide adsorbents for powered and unpowered (passive) use in removing carbon dioxide in a wide range of applications. Micropore is providing adsorbents for routine and emergency carbon dioxide control for submarines, diving/first responder rebreathers, mine refuge/CBRN shelters, personal protection escape devices, spacecraft and anesthesia machines in hospitals or field operating rooms. The lithium based adsorbents as tested by multiple NATO and Pac Rim Navies have superior performance at low temperatures or high pressures (optimized for DISSUB conditions).

Rolled ExtendAir® Curtain
NSN 6810-01-560-3015

ExtendAir® cylindrical cartridges (NSN 6810-01-560-3015) provide 59% more adsorbent mass per given volume over lithium hydroxide granules. In addition to duration improvements, the encapsulation of the adsorbent eliminates the toxic dust associated with handling granules. Micropore's lithium hydroxide curtains have been rigorously tested by the World's Navies. They are proven to outperform any passive solution in a DISSUB environment and are installed by Navies worldwide.

Folded Curtains in Ammo Box
NSN 4240-01-543-3287

PowerCube® Adsorbent
NSN 4240-01-626-9829

For powered operations, Micropore offers both lithium and calcium based adsorbents. Air is forced through the flow channels of the ribbed ExtendAir® sheets. Forced air includes lung powered systems (rescue rebreathers) and fan powered systems. The PowerCube® is a replacement for granules in submarine scrubbers. PowerCube® adsorbent stores in the same volume as the granular cans with 33% more mass thus allowing longer submerged durations or larger crews. PowerCubes® were successfully land-based tested by Naval Engineering Test Establishment (test sponsor Canadian MOD, Royal Dutch Navy and Royal Norwegian Navy). **The Royal Dutch Navy has successfully conducted dock-side submarine test and underway full scale trials.**

6 PowerCube® adapters installed in Dutch submarine

Micropore has successfully tested a new scrubber cartridge at the JFD National Hyperbaric Test Facility. Testing was conducted down to 300 meters of seawater with a heliox atmosphere. In all 12 tests were conducted and the ExtendAir® cartridges consistently outperformed the granule product currently in service.

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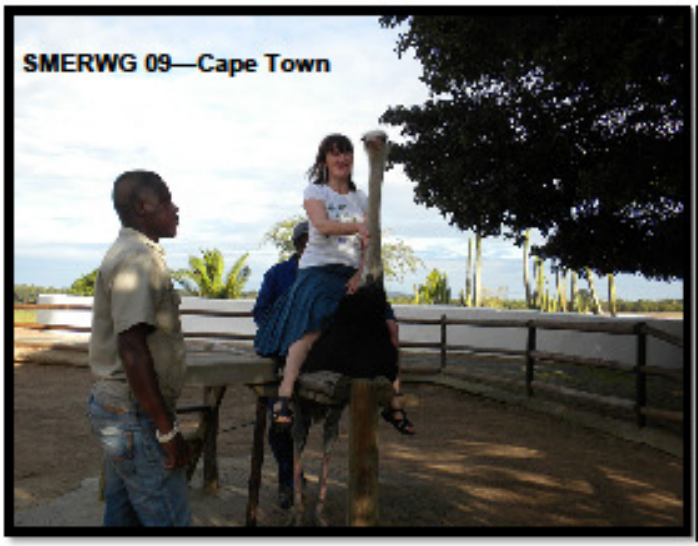
1000 Konica Drive · Elkton, MD 21921
Contact us at: Rick.Oddo@Microporeinc.com; Tom.Daley@Microporeinc.com; www.ExtendAir.com

NATO SMERWG

Social Events

2005 to 2010



Breathe easy

Molecular Products Ltd supplies a large number of the world's Navies with products to maintain a breathable atmosphere by removing carbon dioxide and harmful gases, and generating oxygen.

- Military specification products
- Pre-filled, high quality CO_2 and CO absorbers
- Products capable of large volume, high rate CO_2 and CO absorption
- World leading oxygen generators designed to be safe and easy to use
- Technical consultation and ongoing product support

molecular

Molecular Products Ltd.

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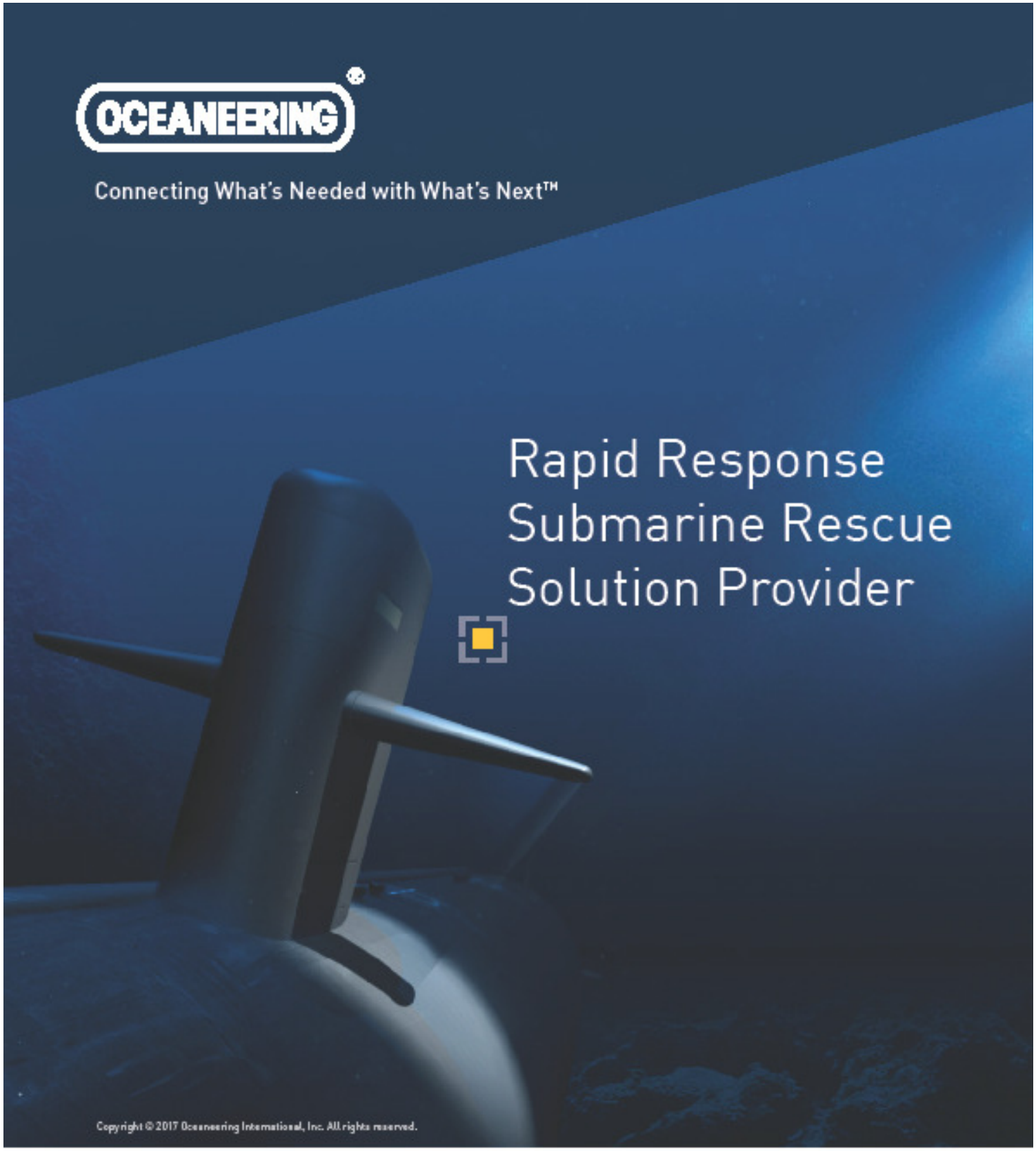

We design, build, operate, and maintain the world's largest fleet of commercial subsea vehicles and innovative diving systems for the most extreme subsea environments. Our experience and expertise was why the U.S. Navy trusted us to develop the requirements and specifications for the U.S. Submarine rescue system in 1995.

Over 20 years later, Oceaneering still integrates our advanced subsea technologies–strategically located around the world. We are certified to conduct subsafe boundary installations and repairs, and have an unparalleled understanding of the full spectrum of submarine rescue requirements.

Connect with what's next at Oceaneering.com/OTECH

OceanWorks international

ENGINEERING YOUR SUBMARINE RESCUE SOLUTIONS

Products

SUBMARINE RESCUE SYSTEMS

- Tethered and Untethered Deep Water Rescue Vehicles
- Shallow Water Rescue Solutions including Submarine Rescue Chambers (SRC)
- Transfer Under Pressure/Hyperbaric Chambers
- Launch and Recovery Systems and Ship Interface/ Adaptation Systems

SUBMARINE INTERVENTION AND ESCAPE

- Atmospheric Diving System (ADS)
- Remotely Operated Vehicles (ROV)
- Remotely Operated Rescue Vehicles
- Submarine Emergency Ventilation and Decompression Systems
- Emergency Life Support Stores

Services

- QUALITY ASSURANCE / CERTIFICATION
- ENGINEERING AND ANALYSIS
- TRAINING
- MAINTENANCE
- OPERATIONS

High Quality. Proven Reliability.

OceanWorks International is an internationally recognized subsea technology company, specializing in the design and manufacture of manned and unmanned subsea systems and specialized equipment for the oil and gas, military, scientific and other marine markets. We offer a full range of subsea system engineering, design, analysis, fabrication, testing, and project management services.

OceanWorks offers a full range of Atmospheric Diving System and Submarine Rescue System hardware and services for both commercial and military applications.

OceanWorks International
Unit 120 - 6741 Cariboo Road, Burnaby, BC Canada
Tel: +1-604-415-0088 Fax: +1-604-420-7125
www.oceanworks.com sales@oceanworks.com

PHOENIX INTERNATIONAL

UNDERWATER SOLUTIONS WORLDWIDE

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PRODUCTS

» SUBMARINE RESCUE

- Deep Water Remotely Operated Rescue Vehicles (RORV)
- Shallow Water Rescue Solutions
- Transfer Under Pressure/Hyperbaric Chambers
- Launch and Recovery Systems and Ship Interface/ Adaptation Systems



» SUBMARINE INTERVENTION AND ESCAPE

- Atmospheric Diving System (ADS)
- Remotely Operated Vehicles (ROV)
- Submarine Search and Localization Systems
- Submarine Emergency Ventilation and Decompression Systems
- Emergency Life Support Stores



» COMMAND, CONTROL, AND COMMUNICATIONS (C3) SOLUTIONS

» SIMULATORS

Phoenix collaboratively teams with

MAG

for submarine rescue maintenance and operations

SERVICES

» OPERATIONS, MAINTENANCE, AND FINANCIAL MANAGEMENT OF ALL SYSTEMS AND SERVICES

» OPERATIONS

- Start to Finish Rescue and Exercise Planning and Execution
- Mobilization/Demobilization
- Aircraft/Vessel/Port Services Management
- Performance Evaluation and Optimization

» MAINTENANCE

- Schedule Development and Implementation
- Performance Monitoring/Trend Analysis
- Comprehensive Troubleshooting and Analysis
- Rapid/Responsive Corrective Action and Restoration to Service
- Sub-Contractor Monitoring and Assessment

» QUALITY ASSURANCE/CERTIFICATION

- Detailed Research and Planning
- Work Package and Retest Development and Writing
- Certification Maintenance (Lloyd's Register, American Bureau of Shipping, Det Norske Veritas, P9290)
- Document Retention/Record Keeping
- Configuration Control/Cross System Compatibility

» LOGISTICS

- Parts Procurement and Management
- Services Contracting
- Transportation (Air, Rail, Ground, Water) Contracting and Coordination
- Receipt Inspection

» TRAINING

- Training and Qualification Plan Development
- Operator Qualification and Proficiency Maintenance
- Recurring/Refresher and Responsive/Corrective
- Classroom and On-the-Job, In Port and At Sea

» ENGINEERING AND ANALYSIS

- Structural and Mechanical
- Electrical
- Systems

» ASSEMBLY/FABRICATION

» ADVANCED TESTING AND SYSTEMS INTEGRATION


SMERWG 11—Amsterdam


SMERWG 12—Amsterdam


SMERWG 13—Amsterdam

SMERWG 14—Amsterdam

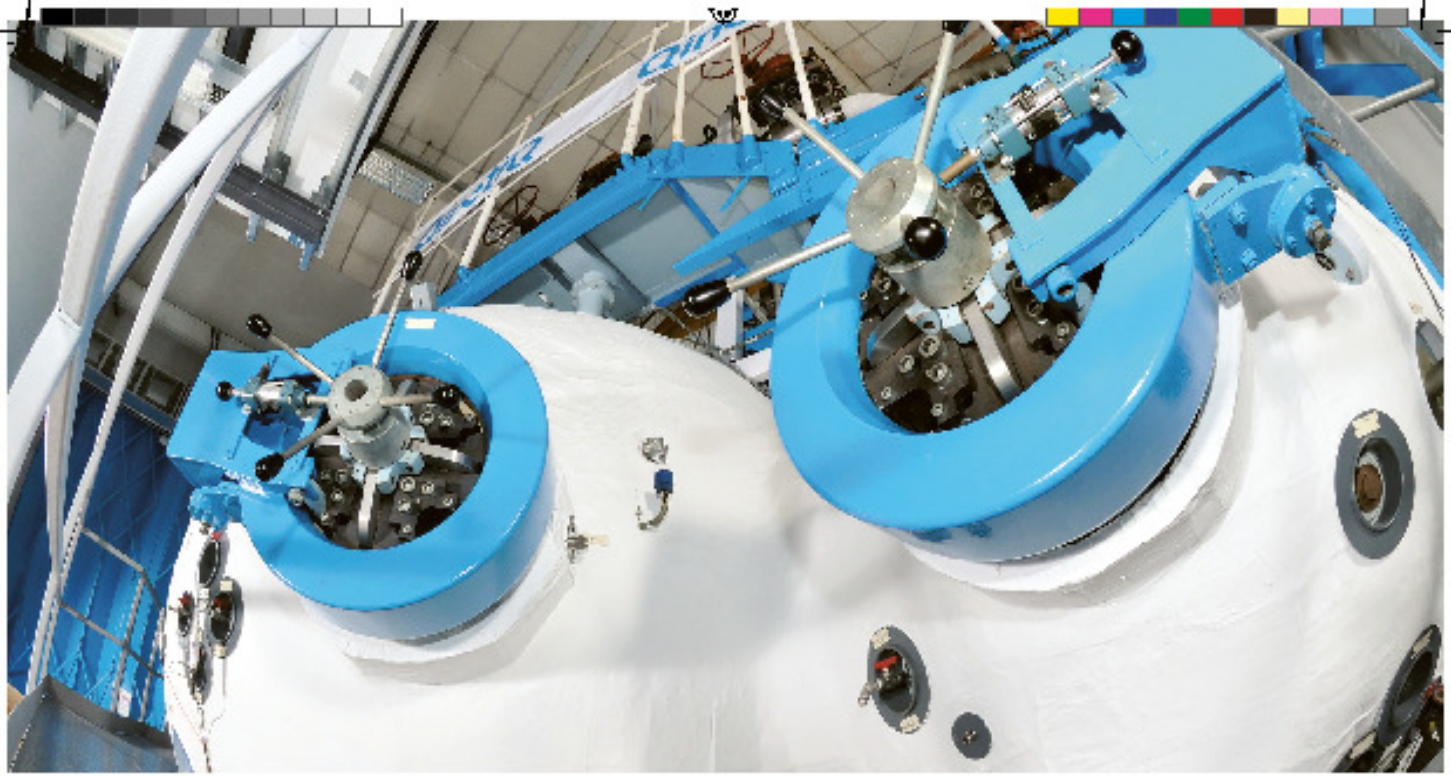

SMERWG 15
Garmisch-Partenkirchen


SMERWG 16—Portsmouth, UK

NATO SMERWG

Social Events

2011 to 2016



Submarine Escape Equipment Testing

The QinetiQ Hyperbaric Trials Unit (HTU) is used for the test and evaluation of escape systems and components to 150 bar. The HTU has a unique capability to recreate the actual pressure conditions of escape from a submerged submarine, independent of the performance of the components under test. This capability is essential for the evaluation of submarine escape equipment against any defined test standards.

SEIE under test in the HTU

"By using the HTU to support component selection and demonstrate component performance/ calibration prior to installation we reduced the risks of the project and proceeded to sea trials with confidence in the final escape tower design."

Davide Mioni, Senior Project Engineer,
Submarine Platform Subsystems, Fincantieri.

About QinetiQ SMERAS Support Services

QinetiQ provides a range of tried and tested SMERAS Support Services that have been delivered to many of the world's submarine fleets, including fully instrumented tower trials (FITT) and Guardbook advice for the UK Royal Navy, Italian, Dutch, Norwegian and Canadian Navies. QinetiQ is the long established partner for SMERAS research, test and evaluation for the UK Royal Navy and are world leaders in research into physiological effects in the SMERAS environment.

QinetiQ SMERAS Support Services cover:

- Concept Design & Development • Tower Escape Systems
- Surface Abandonment • DISSUB Survival
- Submersible Rescue • Audit Assessment
- Submarine Atmosphere Control and Monitoring

QinetiQ SMERAS Support Services are supported by a unique range of world class facilities including the QinetiQ Hyperbaric Trials Unit. QinetiQ also provides a rapid response team of Submarine Escape Training Tank (SETT) qualified personnel, ready to go to sea and conduct trials at any time.

Most importantly QinetiQ delivers advice independent of any supplier.

QinetiQ
Cody Technology Park, Ively Road, Farnborough, Hampshire, GU14 0LX United Kingdom
Tel: +44 (0)8700 100942 Email: Maritime@QinetiQ.com

QinetiQ

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and Surface Survival
Personnel Equipment

NATO UNDERWATER DIVING WORKING GROUP (UDWG) 2017 INDUSTRY RECEPTION

Sonistics co-ordinated the 2017 UDWG Industry Reception in Halifax, Nova Scotia, Canada on Wednesday 17th May with 12 companies sponsoring the event.

The UDWG standardises Diving Techniques, Clearance Diving Operations, Amphibious Warfare Operations, Ship's Diver Operations, Salvage Operations, Underwater Construction Operations, Equipment and Table Validation Procedures, Medical Guidance for Diving Operations and Diving and Seabed Operations below 50 metre. UDWG staffs proposals for operational standardisation in all aspects of military Underwater Diving.

The Industry Reception offers delegates the opportunity to experience new products and services plus creates dialogues between industry and delegates which can be beneficial to both.

The 2017 Industry Reception was held in the iconic Viarail ticket office which gave plenty of room for exhibits, a hot and cold buffet table and a bar.

UDWG 17 Industry Reception sponsored by:
Analox : Ansell : Aqua Lung : Avon Protection : Cobham : Dråger : Interspiro : JFD : Micropore : pd² : Waterproof Diving

The 2018 UDWG is to be held in Copenhagen, Denmark
Contact sam@sonistics.com for information about NATO UDWG 18 Industry Reception

www.sonistics.com