

March 2013

## Subsea Military Platforms



MEMS opens a world of new opportunities in Hydrography

Feature Story – Page 10



PHOTO CREDIT: NIELS VISSER

# REMOTELY OPERATED VEHICLES



A global leader in inspection-class underwater ROVs (Remotely Operated Vehicles), VideoRay makes it easy and affordable to inspect, observe, and explore underwater. The hydrodynamic and flexible design make VideoRay the ultimate platform for sensors and accessories to expand your operational window and capabilities.

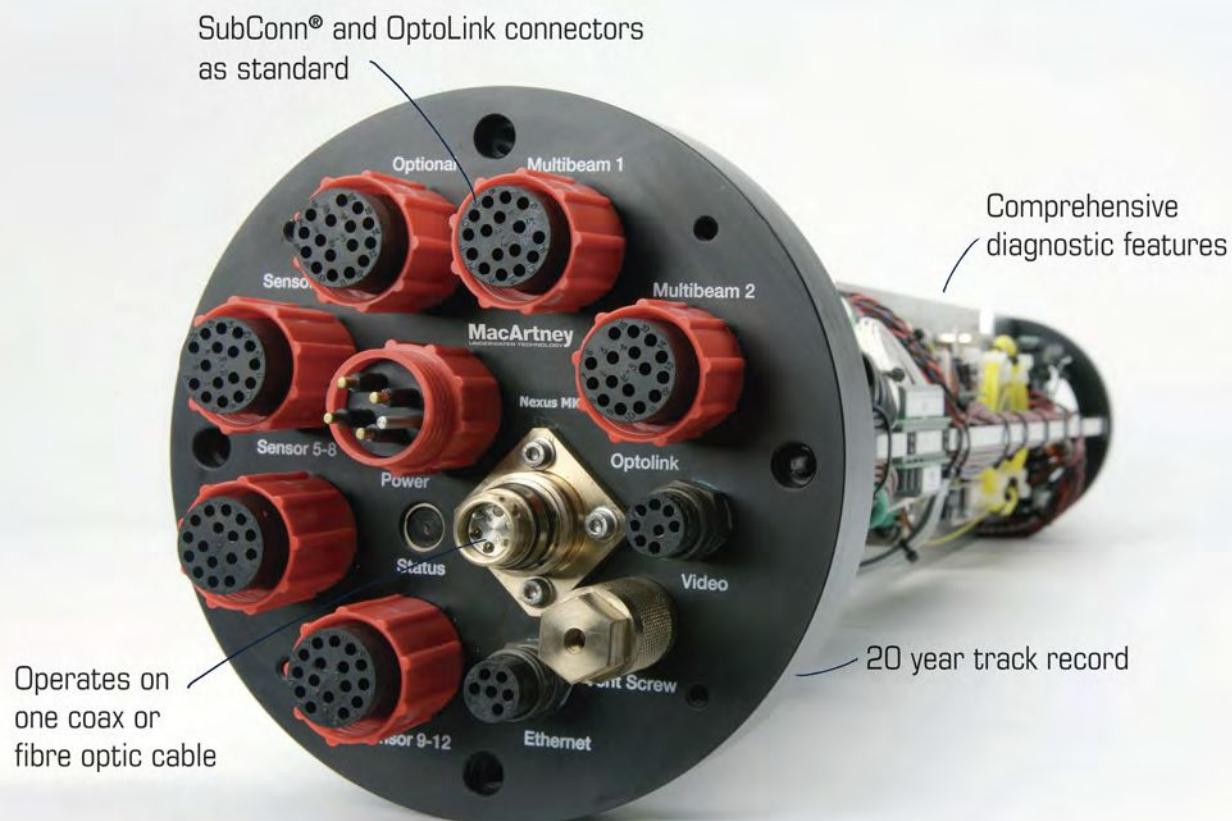
Explore at [www.videoray.com](http://www.videoray.com).

**INSPECT • OBSERVE • RECOVER • EXPLORE**

[WWW.VIDEORAY.COM](http://WWW.VIDEORAY.COM)

# NEXUS

## Multiplexers



### Worldwide solutions

Denmark | Norway | United Kingdom | USA | France  
Netherlands | Germany | Brazil | Bahrain | Australia | Singapore

*By  
MacArtney*

# MINIROVS FOR PROFESSIONALS



LBV150/200-4 - defining portable ROV capability.



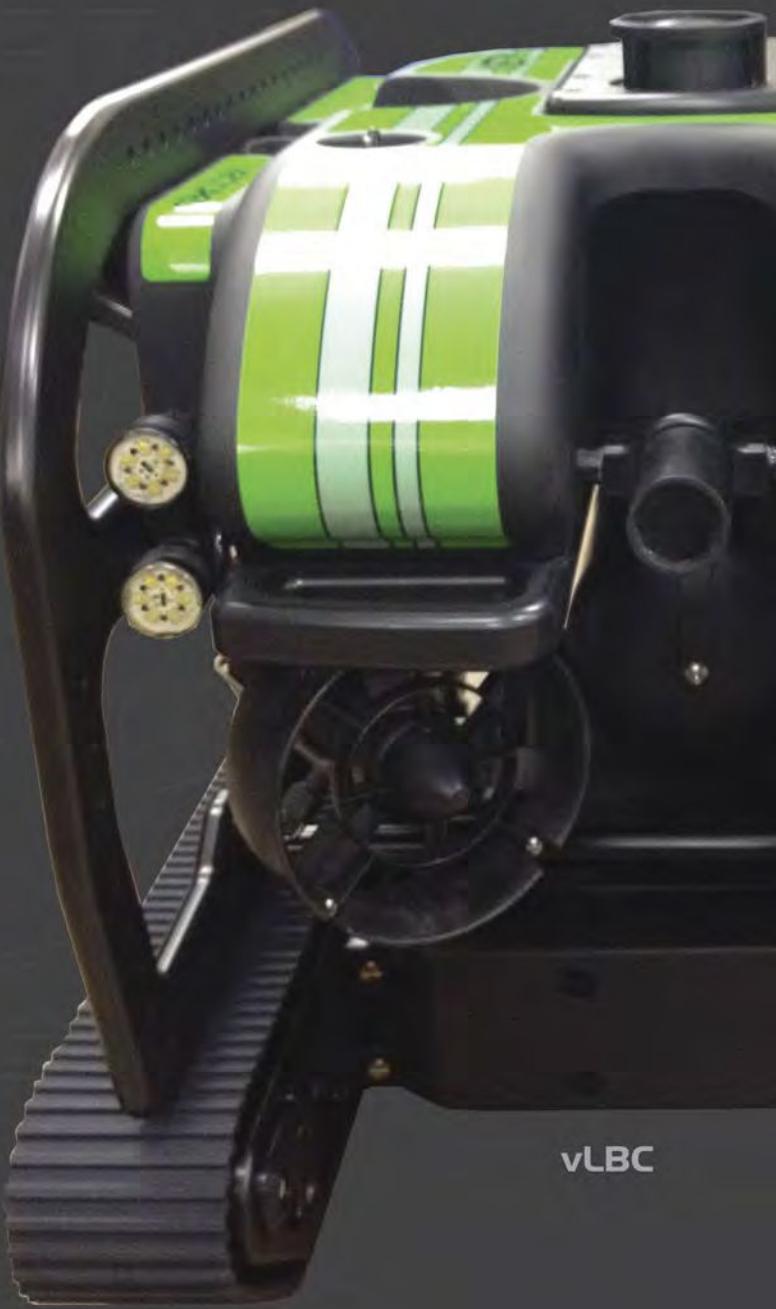
LBV300-5 - versatile dual vertical thruster ROV system.



vLBV300/950 - ultimate powerful and stable vectored platform.



LBC/vLBC - revolutionary hybrid for unprecedented stability.



vLBC

## Little Benthic Vehicles

**INDUSTRY BENCHMARK**  
[WWW.SEABOTIX.COM](http://WWW.SEABOTIX.COM)

**Seabotix**

SeaBotix, Inc. leads the industry with the most comprehensive and capable MiniROV solutions. Products ranging from the shallow water LBV150-4 systems to the unmatched performance of the vLBV300 to the exceptional stability of the LBC. A diverse suite of systems for demanding professional applications including military, police, commercial, scientific, aquaculture, hydro and more.



SNK Ocean Co Ltd's 130HP 3000 Meter Depth HAKUYO ROV



NRCan's Arctic Explorer AUV over the ice



ISE Ltd.

1734 Broadway Street

Port Coquitlam, BC V3C 2M8 Canada

*All things underwater*

T 1.604.942.5223

F 1.604.942.7577

[www.ise.bc.ca](http://www.ise.bc.ca) [info@ise.bc.ca](mailto:info@ise.bc.ca)



# in this issue

## Ocean Industry



- 13** Ocean Industry Briefs
- 18** Maritime Transportation
- 22** Ocean Science
- 28** Ocean Energy
- 34** Defense

## Departments

- 8** Editorial
- 74** Offshore at a Glance
- 76** Stockwatch
- 78** Product News
- 85** Media Showcase
- 86** Calendar
- 86** Events
- 88** People & Company News
- 91** Ocean Industry Directory



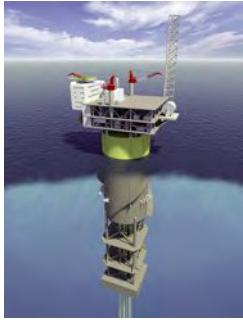
**Technology Systems Corp.**

**Ocean News & Technology** ISSN# 1082-6106 is published 11 times a year by Technology Systems Corporation, 8502 SW Kansas Avenue, Stuart, FL 34997, telephone 772-221-7720. Copyright ©2013 Technology Systems Corp. All rights to editorial content are reserved. No article, photograph or illustration may be reproduced in whole or part without the written permission of the publisher. Unless otherwise stated in writing by the contributor, all images submitted to TSC may be used in other promotional materials belonging to TSC without permission. Subscriptions are free to qualified individuals or companies. For all others, call TSC for subscription information.

Printed in the USA.



## Offshore Industry



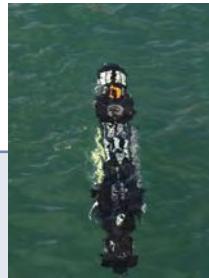
- 41** Offshore Industry Headlines
- 44** Upstream Oil & Gas
- 58** Underwater Intervention
- 64** Maritime Communications
- 68** Subsea Cables

## Cover Photo



Meteorology and oceanography officers Lt. Cmdr. Shane Stoughton, left, and Lt. Cmdr. Ana Tempone deploy a drifting buoy used to measure ocean currents from the fantail aboard the Nimitz-class aircraft carrier USS Carl Vinson (CVN 70).  
*(U.S. Navy photo by Mass Communication Specialist Seaman George M. Bell/Released)*

## Feature Story



- 10** MEMS opens a world of new opportunities in Hydrography

## Editorial Focus

- 16** Biogeochemical Monitoring of the Oceans Using Autonomous Profiling Floats
- 32** The Alpha To The Omega—Subsea Military Platforms
- 39** Factors to Consider when Updating a Mooring Field with Synthetic Fiber Rope

**Ocean News & Technology** News for the Ocean Industry [www.ocean-news.com](http://www.ocean-news.com)  
More News, More Technology, More Data

# in the next issue

## Editorial Focus

- Offshore Technology
- Ocean Mapping & Survey

## Product Focus

- Connectors, Cables & Umbilicals

# Safeguarding life, property and the environment



# Sesam<sup>TM</sup> HydroD

Advanced stability  
and hydrodynamic  
analysis made easy

Sesam HydroD is the premier software choice for stability and hydrodynamic analyses of ships and offshore structures. By integrating processes like modelling, analysis and results processing in the same graphical user environment, users will save time while simultaneously delivering even higher quality analyses.

Read 10 good reasons why thousands of users worldwide  
rely on Sesam on [www.dnvsoftware.com/ONH](http://www.dnvsoftware.com/ONH)

"We have to improve our knowledge continuously to deliver  
successful projects and using Sesam helps us achieve this."  
Sasha Mandic, Engineering Manager at Frigstad Engineering

Request a demo on [www.dnvsoftware.com/ONH](http://www.dnvsoftware.com/ONH)

Complete solutions • Most user friendly • Most value for money • Professional service

MANAGING RISK



# Editorial

By Ladd Borne

## Ocean News & Technology

EDITOR IN CHIEF  
Ladd Borne

OFFSHORE ENERGY EDITOR  
Ray Tyson

SUBMARINE CABLE EDITOR  
John Manock

S.R. V.P. BUSINESS DEVELOPMENT  
MJ McDuffee

PRODUCTION COORDINATOR  
Amy Hamm

ART DIRECTOR  
Suzanne Short

COPY EDITOR  
Robyn Schuricht

CIRCULATION  
Samantha Burn  
[subscriptions@ocean-news.com](mailto:subscriptions@ocean-news.com)

### ADVERTISING SALES

SR. V.P./SALES & MARKETING  
MJ McDuffee  
Tel: +1 (772) 219 3027  
Fax: +1 (772) 221 7715  
[mj@tscpublishing.com](mailto:mj@tscpublishing.com)

NORTH AMERICAN AD SALES:  
Lisa Chilik  
Tel: +1 (574) 261 4215  
Fax: +1 (574) 255 1006  
[Lchilik@tscpublishing.com](mailto:Lchilik@tscpublishing.com)

TEXAS/LOUISIANA AD SALES:  
Amy Dukes  
Tel: +1 (713) 557 8057  
Fax: +1 (281) 497 6608  
[adukes@tscpublishing.com](mailto:adukes@tscpublishing.com)

INTERNATIONAL AD SALES:  
Zinat Hassan  
Tel/Fax: +44 (0) 845 6522 483  
Mobile: +44 (0) 781 1200 483  
[zhassan@tscpublishing.com](mailto:zhassan@tscpublishing.com)

### ADVISORY BOARD

DR. JOHN PINA CRAVEN  
Honolulu, Hawaii

PHILIPPE PIERRE COUSTEAU  
Washington, D.C.

EDWARD CARGILE  
Oceanside, California

DR. PHIL HART  
Pennington, New Jersey

KEVIN HARDY  
San Diego, California

DAN WHITE  
Stuart, Florida

DAN & PEGGY WHITE SR.  
Tampa, Florida



## Greetings from the new Editor in Chief

Growing up in south Louisiana, I could not help but be impacted by the oil industry as it is such a large and positive part of the economy. Once I moved to Florida, I found myself working as an engineer on the JSL research submersibles at Harbor Branch Oceanographic and spent 20 years as part of the ocean research community. So, it was a natural fit for me to be able to work on Ocean News & Technology magazine despite my having to switch to using the other hemisphere of my brain.

As the new Editor in Chief of Ocean News & Technology, I am very excited about the future of this publication and the ocean industries we cover. It is both an honor and a challenge.

Luckily for me, the magazine is widely circulated and well respected due to the hard work of Dan White and the staff over the past 20 plus years. One metric of the magazine's success that impresses me most is that it is read by such a diverse group from our industry. Our readers range from CEOs to scientists to ship captains to divers to computer scientists. And they come from businesses such as oil companies, universities, the government, aquaculture, and equipment suppliers. Ocean News & Technology is read in over 120 countries.

The industry is at a very exciting time—when is it not? We are seldom lacking for news here at ON&T, and from the looks of all the forecasts for future growth, I don't think we ever will be lacking.

So many sectors that we report on are growing. The offshore oil and gas industry shows no signs of slowing down, with LNG predicted to continue its skyrocketing growth.

Ocean research, environmental awareness, and monitoring are all growing as the effects of global warming continues to be studied and governments regulations dictate more and more assessment and mitigation.

Offshore communications and the undersea cable industry are expected to continue to grow, as mentioned in the editorial last month, due to the global exponential increases in data requiring ever larger transfer rates.

And renewable energy is poised to take off in the near future here in the U.S. Lagging behind Europe for some time now, the U.S. has finally begun construction on its first offshore wind turbine farm.

All the supporting cast are seeing the affects, from commercial shipbuilding, and cable manufacturers, to offshore support service suppliers. AUVs have matured to the point where they are everyday tools, and hybrid ROVs are making strides. I look forward to witnessing and reporting on all the new opportunities and growth that the industry is experiencing.

Ocean News & Technology will continue to grow with you. Over the years, in addition to evolving the magazine to better fit the industry and our readers, we have strived to bring you the latest technological offerings.

For one, you can get the magazine digitally for your computer, laptop or mobile device. (It looks amazing on the iPad, by the way.) You can also subscribe to our free E-news where top stories are delivered to your inbox weekly.

In the next few months, we will be revamping our website to be more intuitive, and cleaner looking, while providing more recent news and information. Also we will better utilize social media, especially LinkedIn, to make Ocean News & Technology on LinkedIn the industry meeting place where you can ask questions, give help, or just browse to see what is currently trending in the industry.

As far as the print magazine, I hope to continue to improve it and bring you quality, relevant news and informative, interesting articles. A great deal of our success depends on our readers and authors. I encourage you to contact me with any feedback you may have on the magazine.

Thank you for reading Ocean News & Technology Magazine!

Ladd Borne  
Editor-in-Chief



# The Widest Range of Vehicles in the Industry

From the two most experienced and respected brands

-- **Sub-Atlantic™ and Perry™**

## GLOBAL SERVICE FOOTPRINT

Our worldwide network of service centers provides continued support and solutions after you take delivery. From our headquarters in Houston and Aberdeen, and our support centers in Brazil, United Arab Emirates and Singapore, we offer continued support and customized tooling solutions to our customers.



To learn how Forum can help you solve your next subsea challenge email:  
[everythingremotelypossible@f-e-t.com](mailto:everythingremotelypossible@f-e-t.com)  
visit: [www.f-e-t.com/subsea](http://www.f-e-t.com/subsea)

**FORUM™**

**SUBSEA TECHNOLOGIES**  
*everything remotely possible™*

# MEMS opens a world of new opportunities in Hydrography

By: Alexis GUINAMARD, CTO SBG Systems

In the last few years, hydrography has faced some huge technology evolutions. SONAR has strongly evolved to provide more comprehensive data while robotics was entering the market. Remotely operated vehicles (ROVs) and autonomous underwater vehicles (AUVs) are indeed used more and more to complement survey vessel and divers' actions. From SONAR data georeferencing to ROV and AUV control, inertial and positioning data are crucial. Following the technology trends of hydrography, manufacturers of inertial systems constantly challenge themselves to improve their solutions and meet new requirements. The result? New technological opportunities for users.

### Inertial systems: Crucial for hydrography by ROV and AUV

Inertial systems provide roll, pitch, heading, velocity, and position. This information is essential to help ROV drivers in their maneuvers, to fully control AUVs, and to georeference data from SONAR. In the hydrographic data acquisition process as far as in navigation, a major part of the data accuracy relies on inertial system performance, but also on their functions. In fact, if inertial systems are often used as a stand-alone solution for tilt and heading, their performance in navigation is greatly improved when coupled with aiding equipment such as DVL, USBL, LBL, GPS, depth, and sound velocity sensors.

Mostly used in hydrography, Fiber Optic Gyroscopes (FOG) and compass offer different levels of performance. FOG inertial systems, known to be expensive, offer full functionality including attitude, yaw, position, and connections with aiding equip-

ments. On the other hand, compass is an affordable solution, but only provides heading. The gap between these two technologies is wide, and choice was very limited. Consequently, engineers had to compromise between cost, functions, and performance. Thanks to important recent developments, Micro-Electro-Mechanical Systems (MEMS) fulfill the gap between FOG and magnetic compass performance. They appear as a serious alternative for underwater vehicle orientation, navigation, and SONAR data georeferencing.

### MEMS: The answer to ROV and AUV challenges

Well known for its small size, low price, and robustness, MEMS was also perceived as a limited performance solution. In the past 5 years, attitude accuracy jumped from the industrial grade ( $<0.35^\circ$ ) to achieve the tactical ( $<0.05^\circ$ ), allowing MEMS to enter the underwater navigation market.

Studying the last trend predictions, it is time for professionals to consider MEMS-based inertial systems for ROV and AUV orientation and positioning. Indeed, underwater vehicles will tend to be smaller, require less power consumption, and cost less, while embedded sensors, such as SONAR, will provide even more accurate and comprehensive data. To win this challenge, R&D professionals can find in inertial systems a way to develop efficient solutions and add value to their projects. Inertial measurement units (IMU) may represent a large part of expenses, space occupancy, and performance. In various cases, the miniature, low-power consumption, affordable, and high performance MEMS technology offers a clever alternative compared to compass and FOG technologies.



Photograph: Simon Calcutt - CAUV team

## High-value solution for ROV

For ROV orientation and navigation, the industrial grade range is recommended. These sensors usually deliver from 0.35° to 1° attitude accuracy. Costing between \$1,000 and \$5,000, industrial-grade inertial sensors offer an accurate heading. More robust and reliable than a flux gate compass, they deliver additional roll and pitch while occupying the same space. MEMS-based Attitude and Heading Reference System (AHRS) is a high-value solution, especially for ROV orientation and heading. With more functionalities than a compass, it handles magnetic disturbances and stays consistent in maneuvers. SBG Systems offers more functions to help drivers navigate their ROV. At this first level of accuracy, SBG added navigation data in a unique miniature sensor. The IG-500E inertial navigation system combines data from IMU and USBL. ROV track accuracy is, thereby, greatly improved by computing the trajectory among two USBL data.

## MEMS now compete with FOG for AUV navigation

While the FOG inertial unit price starts around \$60K, tactical grade MEMS costs between \$16K and \$40K. Being ten times smaller, less-power consumption, and much cheaper, the accuracy of MEMS sensor was the only area missing to make this technology a serious candidate at FOG replacement. Now delivering from 0.05° attitude and offering the same functions, tactical grade MEMS inertial navigation systems now compete with FOG sensors. These high-end inertial measurement units fuse inertial data with information from DVL, USBL, GPS, depth, and sound velocity sensors to deliver precise information for AUV control and SONAR data georeferencing. The most challenging part of MEMS accuracy development remains the heading.

FOG systems measure earth rotation to deliver heading. Without this north finder feature, manufacturers had to find another way to determine heading. Therefore, they designed complex data fusion algorithms to combine gyroscope, magnetometer, and GPS information to eventually provide a <0.5° heading.

How does it work? At the surface, the inertial system takes a first GPS fix to determine its position. Then, the vehicle dives underwater to survey the seabed. During this time, the inertial navigation system delivers dead reckoning navigation at a high update rate to take over the GPS. Additionally during this underwater course, the inertial sensor will naturally drift, which is why the AUV regularly ascends. At the surface, it takes another GPS input that will

automatically readjust the inertial drift.

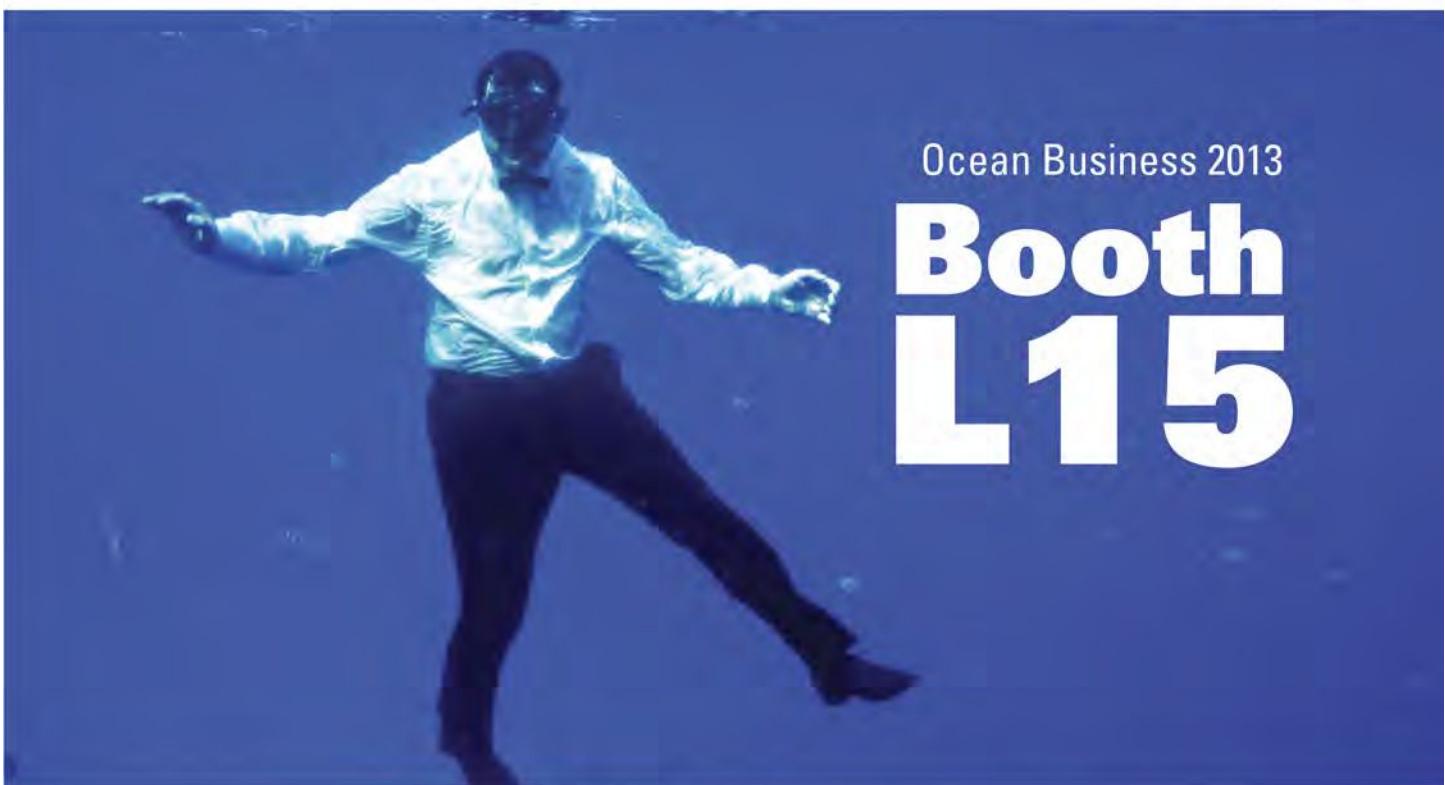
If MEMS technology cannot meet every project requirements, it stays an efficient and cost-effective alternative to consider when the vehicle ascends regularly to the surface.

Now able to compete with high-end systems, MEMS technology is a smart alternative for ROV navigation, AUV control, and SONAR data georeferencing. Focusing on the same direction as underwater vehicle development, they are, more than ever, able to meet demanding underwater projects where size and cost matter.

Manufacturers know that evolution in hydrography is far from over; the development of 3D SONAR, bathymetry from UAV, and data fusion between terrestrial and sea data are some examples of evolutions that will continue to make technologies challenge.

*Photograph: CAUV*





Ocean Business 2013

**Booth  
L15**

## We help you see below

Join us for the first part of the RESON World Tour - Underwater Technology Seminars 2013. On Monday April 8, we will be hosting the RESON Ocean Business 2013 seminar at the Jury's Inn Hotel in Southampton. Here you can hear the latest news from RESON.

During Ocean Business 2013, we will be running boat demonstrations, and we will be demonstrating the very latest 2013 year model SeaBat multibeam system and PDS2000 survey data acquisition, processing and visualization software.

The RESON name is the hallmark of class leading sonar equipment, transducers, hydrophones, and survey software that you can count on. Headquartered in Denmark, RESON has a global presence with offices and representatives around the world.



RESON OB13 info:  
[www.reson.com/events](http://www.reson.com/events)



# OCEAN INDUSTRY

## In this Section

<b>Ocean Industry Briefs</b>	<b>13</b>
<b>Maritime Transportation</b>	<b>18</b>
<b>Ocean Science</b>	<b>22</b>
<b>Ocean Energy</b>	<b>28</b>
<b>Defense</b>	<b>34</b>

## Teledyne Technologies to acquire RESON

Teledyne Technologies Incorporated (Teledyne) and the shareholders of RESON A/S (RESON) jointly announced today that they have entered into a definitive agreement for the acquisition of RESON by a wholly owned subsidiary of Teledyne. RESON, headquartered in Slangerup, Denmark, provides high-resolution marine acoustic imaging and measurement solutions. Terms of the transaction were not disclosed. The closing of the transaction, which is subject to customary conditions, is anticipated to occur in the first quarter of 2013.

With over 30 years of experience and approximately 1,400 RESON echosounders sold worldwide, RESON is a leading provider of multibeam sonar systems and specialty acoustic sensors for hydrography, global marine infrastructure and offshore energy operations. RESON's multibeam sonar systems range from portable high-resolution shallow water systems used on autonomous underwater vehicles (AUVs) to full ocean depth, vessel-mounted oceanographic systems.

"RESON ideally complements both our marine instrumentation and digital imaging businesses and will represent our third acquisition in the last 12 months focused on three-dimensional imaging," said Robert Mehrabian, chairman, president and chief executive officer of Teledyne. "With RESON, Teledyne will possess the ability to provide detailed 3D imaging solutions, ranging from full ocean depth survey, shallow water and coastal zone imaging, terrestrial and airborne mapping, and even deep space science applications."

"The Board and the shareholders, Maj Invest Equity, DKA Capital, and Dansk Erhvervsinvestering, have supported RESON in the belief that the company would capitalize on its leading technology position in multibeam sonar," said Michael Brock, chairman of RESON. "We are very pleased with RESON's success and believe that Teledyne will be a good owner for the business and will continue to deliver value to customers and partners, building on RESON's strong brand and market position."

"We at RESON have grown revenue by more than 50% over the last 2 years, and this is an achievement of which we as a management team are truly proud," said Kim Lehmann, chief executive officer of RESON. "We are pleased and excited to be joining Teledyne and to continue to develop our position in multi-beam sonar solutions and to become part of a leading group of marine instrumentation companies."

For more information, visit [www.teledyne.com](http://www.teledyne.com).

## WOC to facilitate industry action on U.S. ocean policy and marine spatial planning

The World Ocean Council (WOC) is launching a 2-year effort to improve ocean business community understanding, collaboration and participation in U.S. ocean policy and marine spatial planning (MSP) developments.

The WOC program includes:

- Organizing a national business conference on U.S. ocean policy in 2014.
- Developing an ocean business community roster in each of the nine MSP regions.
- Establishing ocean business leadership forum in three of the MSP regions.

Private-sector involvement is essential to achieving balanced and lasting outcomes to marine policy and management efforts. For example, without business involvement in MSP—which seeks to guide the intensity and location of uses in an area—there is a significant risk that planning will not fully consider existing and potential economic activities and will miss out on key marine resource, use, and ecosystem information held by industry. Business participation in MSP is critical to ensuring it delivers its proposed benefits to responsible industry operators, such as

## BOEM fees to increase

The Bureau of Ocean Energy Management (BOEM) is adjusting seven cost recovery service fees due to inflation. The last time adjustments to the fees were made was in 2008. The fee increases became effective 2 February 2013 and impact lessees, operators, permittees, and right-of-way (ROW) holders.

## NOAA announces free nautical BookletCharts™ for boaters

One of NOAA's handiest navigation products, especially for recreational boaters, has been Coast Survey's experimental BookletCharts™—nautical charts that are easy to download and print from home computers. Coast Survey has now moved the BookletCharts from experimental stage into official production. Nearly 1,000 newly updated BookletCharts are available free on the web. NOAA's new official BookletCharts cover the 95,000 mi of U.S. coastline and the Great Lakes. The BookletCharts contain most of the information found on NOAA's full-scale nautical charts, but it is presented as reduced-scale. Since the Booklet Charts are easy to access from the Web, easy to print, and easy to carry in a pocket, NOAA officials hope that tens of millions of recreational boaters who may not normally use charts will use these. You can download the charts from [www.nauticalcharts.noaa.gov/staff/BookletChart.html](http://www.nauticalcharts.noaa.gov/staff/BookletChart.html).

## Pirates targeting marine gas oil

Piracy in Southeast Asia is increasing as pirates target ever more expensive marine gas oil. The rising fuel price and the adoption of slower steaming are making ships easier to attack.

"The statistics would seem to suggest it's on the rise in Asia," said an anonymous source from a Hong Kong-based ship management company. "It's now very dangerous for slow vessels with low freeboards to pass through piracy areas."

So far in 2013, nine attacks have occurred around Southeast Asia, while only one attack was recorded in Somalia due to increased policing.

There is also the human cost of piracy, and while it is not quantifiable in economic terms, it is nonetheless a high cost, with crew being taken hostage, some killed, some being held for up to 18 months, and the associated trauma. But now, pirates are finding just siphoning fuel is easier, involves less risk, and is very profitable.

Some private companies, such as Typhon, are launching marine convoy protection service this year that involves accompanying ship operators in transit through piracy hotspots.

streamlined permitting.

Although the WOC effort is focused on the U.S., the outputs will be of importance to the ocean business community in other countries and regions where ocean policies and MSP are under development, such as Europe, Canada, Australia, and elsewhere.

The Sustainable Ocean Summit (SOS)—22-24 April, 2013, Washington, D.C.—includes an important session on MSP that will provide input to the new WOC program by addressing the following:

- What is the business case for MSP?
- How can ocean industries ensure they are informed and engaged in a coordinated, pro-active manner?
- What is needed to ensure that MSP reflects the needs and opportunities of industry involvement?

The WOC is recruiting an ocean policy/marine spatial planning program officer.

For more information, visit [www.oceancouncil.org](http://www.oceancouncil.org).

## **ABS Group presenting on root cause analysis investigation methodologies**

ABS Group will present at the Total Investigation Management: Incident and Accident Conference in Brisbane, Australia.

Charles Mitchell, Vice President, ABS Group will discuss utilizing root cause analysis to explore investigation methodologies to make each investigation efficient and effective.

Topics he will discuss include evaluating current investigation processes, comparing capability and reliability of alternative investigation methodologies, selecting the best methods based on required time and processes of investigation processes, improving investigation accuracy, and measuring the effectiveness of investigation method implementations based on accuracy, time, and cost.

Mitchell has more than 33 years of engineering management and systems analysis experience that includes process technical safety, major hazards/consequence management, and technical safety analysis. He directs ABS Group operations in Australia and will be available for discussion after the presentation.

ABS Group performs root cause analysis and incident investigations as well as valuable follow-up services, including report development, experienced guidance management system

development and implementation, management of change programs, procedure development, training, security analyses, and risk assessments.

For more information, visit [www.abs-group.com](http://www.abs-group.com).

## **Chief Scientist appointed for MARS**

The first Chief Scientist for the national facility developing and providing autonomous vehicles for UK marine research has been appointed.

Dr. Russell Wynn will act as the focal point between the Marine Autonomous and Robotics Systems (MARS) group – which went live in April 2012 at the National Oceanography Centre (NOC) - and its user community.

MARS was set up as part of NOC's National Marine Facilities Sea Systems to provide autonomous and robotic systems on behalf of the Natural Environment Research Council (NERC). By 2016, it aims to be recognised as the world leader in the integrated provision of autonomous vehicles for marine science, characterized by effective deployments, novel capabilities, and strong partnerships.

In establishing MARS, NOC brought its Autosub 3, Autosub 6000, and Long-range AUVs together with its fleet of 11 gliders and has recently incorporated the Isis ROV team. Initially formed under the leadership of Professor Gwyn Griffiths, his recent retirement created the opportunity to establish the new, part-time position of Chief Scientist.

Wynn brings a wealth of experience in the use of autonomous systems for science, having personally led or participated in a number of projects using AUV, ROV, and glider technology. He currently leads the NOC Marine Geoscience research group, which is a major user of MARS infrastructure, and he plans to draw in other appropriate scientific expertise from across NOC as required.

Wynn joins at an exciting time with substantial capital investment of £3.3 million already provided by the Department for Business, Innovation and Skills (BIS) in 2012, while NERC has partnered with the Technology Strategy Board and the Defence Science and Technology Laboratory to run a £1 million Small Business Research Initiative to develop new unmanned surface vehicle concepts.

More recently, it has been announced that NERC will receive capital funding of £10 million over the next 2 years for research and technology development of marine robotics as part of the “Eight Great Technologies” initiative.

For more information, visit [noc.ac.uk](http://noc.ac.uk).

## **OneOcean Corporation beta release its ClipCard™**

Ocean data can come in more than 100 file formats, reach terabytes in size, and take 1 week to download. Users have limited tools for managing their own holdings and even more limited means of exchanging huge files with others. Because of the sheer magnitude of the data, valuable information remains dormant behind firewalls or on shelves, much of it used only once and then forgotten.

With ClipCard, it is now possible to instantly view and share key information from big ocean data—anytime, anywhere—without the need to transfer the data itself.

ClipCard presents a rich abstract of big data in a useful object that is created anytime data are uploaded to the cloud. ClipCard is linked to its source, but is only a fraction of the size, so it can be viewed and shared anywhere. ClipCard helps users understand what big data contains and gives them the means to transfer the source data through the cloud when they need it.

OneOcean has partnered with Amazon.com, leveraging Amazon Web Services to provide a robust global cloud storage and fulfillment infrastructure. With Amazon's industry-leading web services technology, OneOcean users have multiple options for managing, accessing, and exchanging their data on every continent.

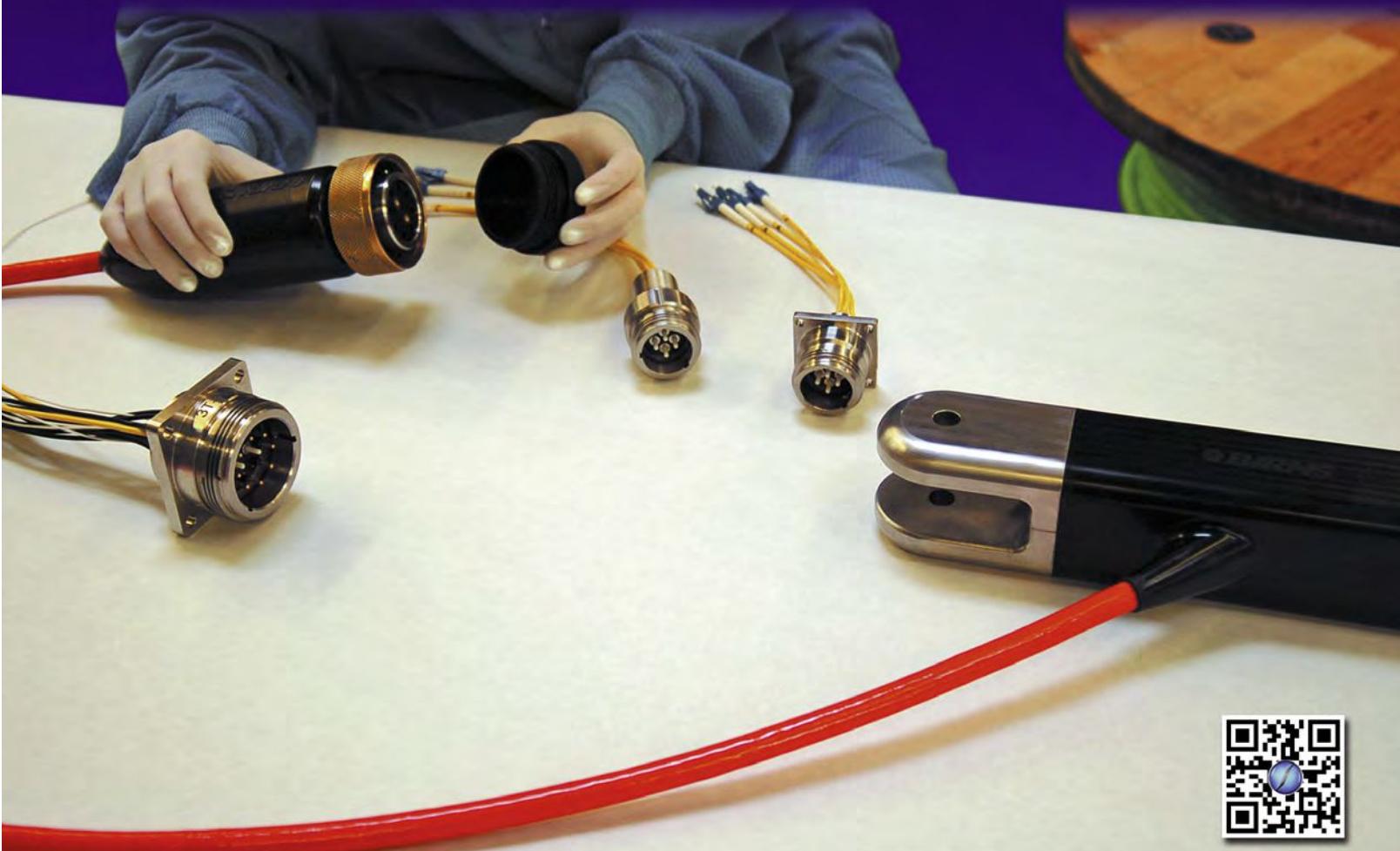
“Data is growing exponentially in volume, velocity, and variety. The challenge is putting it to work efficiently and effectively - getting it out of its silos and into the hands of the people who need it,” said Ed Lazowska, Bill and Melinda Gates chair of computer science and engineering at the University of Washington. “OneOcean is working on a promising approach that could have a major impact on how big data is managed and shared across industry, academia, and government.”

For more information, visit [www.oneoceancorp.com](http://www.oneoceancorp.com).

# Electro-Opto-Mechanical Cable Terminations

## Blending Strength with Finesse

BIRNS' Electro-Opto-Mechanical (EOM) cable assemblies provide immense performance capabilities and are developed with precision to preserve the integrity of the delicate optical fibers. They deliver huge levels of power, signal and data and withstand extreme environments, while capable of providing load strengths of > 50,000 lbs.



When we were asked for a custom EOM solution for a sophisticated subsea system, our engineering team developed this robustly engineered EOM Kevlar strength member tow cable. It features a forked clevis, with a unique side exit design to facilitate cable routing, and includes deep submergence BIRNS Millennium™ 3O and 3T optical and electro-optical hybrid connectors.

Whether your system requires steel, Kevlar, Vectran, or other strength members, SM or MM fibers, low or high voltage electrical conductors—BIRNS can engineer a custom EOM solution for you.

[www.birns.com](http://www.birns.com)



ISO 9001:2008 Certified by DNV  
NAVSEA PRO-020 Certified

**BIRNS®**

1720 Fiske Place, Oxnard, CA 93033-1863, U.S.A.  
T +1.805.487.5393 • F 805.487.0427 • Toll-Free 1.888.BIRNS.88

# **Biogeochemical Monitoring of the Oceans Using Autonomous Profiling Floats**

ST 82

*By: Andrew H. Barnard, Ph.D., WET Labs, and  
Thomas O. Mitchell, Ph.D., Sea-Bird Electronics*



*Profiling float head with integrated optical sensors*

*Photograph by Christoph Gerigk © Sea-Bird Electronics*

**M**onitoring of the ocean response to climatic and anthropogenic forcing is critical to understanding the impacts on the global carbon cycle and its ecosystems' responses. Fundamental changes in the oceans' biogeochemical cycles, driven largely in response to increased atmospheric CO<sub>2</sub> concentrations, are already underway. Increasing evidence of large-scale ocean acidification and resultant deoxygenation has emphasized the need to understand the impacts on biogeochemistry and ecosystem dynamics.

Additionally, increased anthropogenic loading of nutrients into the oceans is also occurring, which may alter the ocean nutrient inventory, potentially driving large changes in ocean productivity.

The Argo network of ocean autonomous floats has been providing critical physical information on the upper ocean temperature and salinity vertical distributions for well over a decade. This global array of over 3,000 floats

has dramatically improved our understanding of ocean circulation, temperature and heat content, and salt and freshwater distributions of the world's oceans. The sustained nature of the program has also provided the opportunity to observe decadal-scale climatic changes. Underlying this program are the technological advances in autonomous profiling floats, which are now capable of providing reliable, stable temperature, conductivity, and pressure measurements for 5 years and beyond. This, in large part, has been enabled by the Sea-Bird Electronics SBE 41 CTD sensor head, which is the de facto standard for temperature and conductivity measurements for the Argo program.

Presently, the biological and biogeochemical properties are chronically undersampled on a global scale, as no such large-scale biogeochemical monitoring program exists similar to the Argo program. While ocean color satellite imagery has provided ocean basin-scale information on surface chlorophyll distributions, routine sampling of the vertical distributions of the biogeochemical properties on ocean basin-scales has yet to be accomplished. Emerging technological advances in both sensor technologies and autonomous profiling platforms are providing a pathway to accomplish this goal.

Over the past decade, several technological advances in sensing biogeochemical properties have been made. New generations of smaller, low-power-consumption sensors designed for long-term ocean sensing have been developed. These include optical dissolved oxygen, chlorophyll fluorescence, optical backscattering, colored dissolved organic matter fluorescence (CDOM), beam attenuation, and nitrate sensors. The Sea-Bird Scientific suite of companies, Sea-Bird Electronics, WET Labs, and Satlantic, have focused on advancing these sensing technologies and have developed a broad suite of sensor products for long-term sensing applications. Biogeochemical sensors such as an optical dissolved oxygen sensor, an extensive selection of bio-optical sensors, and an optically based nitrate sensor have been developed, many of which are specifically designed for use in autonomous platforms, including versions for deep (2,000 m) profiling applications. This broad product suite of biogeochemical sensors for long-term observing has paved the way for incorporation into global observing networks.

While the autonomous profiling floats for the Argo program were initially designed for physical observations, float technologies are evolving to include a broad range of biogeochemical measurements. Several pilot projects have been undertaken over the past 5 years to demonstrate the long-term sensing capabilities of the biogeochemical sensors on autonomous float platforms. The promising results from these limited biogeochemical float deployments have already contributed to an improved understanding of interpretations of ocean color satellite chlorophyll distributions, particulate organic carbon flux, and dissolved oxygen minimum regions of the oceans. These advances

in biogeochemical sensors and float platform technologies are enabling broad-scale deployments of biogeochemical floats in the global ocean.

Building on these successful efforts, Sea-Bird Scientific has developed an autonomous profiling float product to meet the biogeochemical sensing needs, the Navis BGC float. The focus of this work was to simplify integration of bio-optical sensors through seamless integration and improve the reliability and scientific interpretation of the data through co-location of the bio-optical and physical measurements. Biogeochemical floats by design must carry and collect data from numerous integrated and external sensors. The Navis BGC float benefits from a recently improved SBE 41 CTD head. This sensor head is composed of conductivity, temperature, and pressure sensors and electronics based on field-tested Sea-Bird Electronics designs. In addition to

the standard CTD data collection, the SBE 41 has six additional channels that can capture time-synchronized data with a single scan of the CTD. The channels on the SBE 41 are capable of supporting any mixture of six serial and four analog external sensors and offer up to 1 amp of 5-17V software-programmable power per channel pair. These channels are individually monitored to track current flow and are switchable to enable power savings for low-duty-cycle sensors. Analog inputs are acquired using a differential input

24-bit ADC. The Navis BGC float uses two of the channels for specific Sea-Bird Scientific sensors: the SBE 63 oxygen optode and the WET Labs MCOMS with its fluorescence, backscatter, and CDOM optical sensors. The Satlantic SUNA nitrate sensor, along with other sensors, can be bolted on. As a complement to pressure bin-averaged data returned via telemetry, all data from every scan during every profile from each individual instrument are archived on the Navis BGC float. This comprehensive dataset can be retrieved if the float is recovered and provides additional utility in data analysis and fine-structure investigation. The ability of the Navis BGC float to provide integrated CTD, oxygen, fluorescence, backscatter, and CDOM measurements as well as external sensor data provides a flexible platform that allows scientists and researchers to focus on the underlying data collected, with limited need to spend time correlating data scans stored in different data collection systems with different sampling rates and time stamps.

## Conclusion

Understanding the impacts of climate change on the global ocean ecosystems will require new and novel ways to sense the biogeochemical properties of the upper ocean on a sustained basis. Autonomous profiling floats equipped with biogeochemical sensors offer a viable, cost-effective, and reliable solution for long-term ocean monitoring of not only temperature and conductivity, but also dissolved oxygen and bio-optical parameters as well as nitrate. For more information on sensors and autonomous profiling float platforms for biogeochemical sensing applications and to view recent float data, please visit [www.sea-birdscientific.com](http://www.sea-birdscientific.com) and [navis.sea-birdscientific.com](http://navis.sea-birdscientific.com).

**U.S. Transportation Secretary LaHood establishes National Freight Advisory Committee**

U.S. Transportation Secretary Ray LaHood announced the establishment of a National Freight Advisory Committee to provide recommendations aimed at improving the national freight transportation system. A strong freight transportation system is critical to the nation's economy and essential for helping meet President Obama's goal of doubling U.S. exports by 2015. The recent transportation bill, Moving Ahead for Progress in the 21st Century, (MAP-21), signed by President Obama in July 2012, established a national freight policy and called for the creation of a National Freight Strategic Plan. By engaging stakeholders representing diverse geographic, modal, and policy interests, such as safety, labor, and the environment, the Advisory Committee will provide recommendations to the Secretary of Transportation on how the U.S. Department of Transportation (DOT) can improve its freight transportation policies and programs. The DOT is soliciting nominations for members of the National Freight Advisory Committee. Instructions on how to submit nominations will be available in the Federal Register Notice. The collaboration of stakeholders will serve to promote involvement and compliance with proposed plans and performance measures. The effort will support the implementation of larger freight policy initiatives, including the Department's Freight Policy Council, an internal body of DOT leadership created by Secretary LaHood to facilitate cross-modal implementation of MAP-21 freight provisions. The Advisory Committee will comprise at least 25 voting members from outside of DOT who have various perspectives on freight transportation, including mode, region, policy areas, freight customers and providers, and government entities and will meet at least three times per year.

**HII opens Houston office to pursue energy business for Avondale subsidiary**

Huntington Ingalls Industries (HII) announced that it is opening an office in Houston, Texas for business development efforts to pursue opportunities in the energy infrastructure market for its Avondale subsidiary. "We have a great workforce at Avondale with unique engineering and manufacturing capabilities that have been demonstrated for many decades," said Mike Petters, HII's president and chief executive officer. "Additionally, these skilled men and women are located in the heart of a region where there is more manufacturing demand than the current suppliers can meet, particularly in the energy markets. Coupling this talent with our world-class facilities leads us to believe we have everything in place at Avondale to excel in this market," added Chris Kastner, HII's corporate vice president and general manager, corporate development, who is leading this effort for Avondale. "We are in active discussions with respected companies in the oil and gas infrastructure market. We've satisfied ourselves that the engineering and construction elements of these projects are very comparable to shipbuilding, and we are working very hard, both internally and with prospective customers, evaluating and competing for new opportunities. These upcoming large projects should be made in America by American craftsmen and craftswomen." Avondale will transition into this market by building upon the shipyard's 30-plus years of modular engineering and construction expertise and nearly 75 years of experience in heavy manufacturing. Located on the Mississippi River near New Orleans, the 268-acre facility has the potential to employ up to 10,000 highly skilled craft personnel.

**Platform supply vessel 3300 launched for World Wide Supply**

Damen Shipyards Galați (Romania) has launched the World Diamond, the first of a series of six fully equipped platform supply vessels for Norwegian offshore company World Wide Supply. The PSV 3300 series is part of Damen's newly designed range of platform suppliers.

Like the other five ships, the World Diamond was built and completed in Galati in cooperation with Damen Shipyards Gorinchem (The Netherlands), which provides the design, engineering, and main equipment.

Damen cooperates with a number of specialized suppliers and co-makers: Helmers (insulations, upholstery and furniture), Eekels (electrical equipment and installations), Den Breejen (painting and conservation, and Johnson Control together with De Haan Galati (air conditioning and ventilation).

The main purpose of the vessel is transport of different cargoes (fuel, drinking water, salt brine, cement, barite, drilling mud, drilling pipes, etc.) and crews to and from offshore drilling rigs and production platforms in support of hydrocarbon exploration and production activities. The PSV 3300 can also carry conventional containers on deck for diverse cargo. Furthermore, this DP2 platform supplier has fire-fighting capabilities and is provided with oil recovery equipment.

To reduce the environmental impact of its vessels and improve efficiency, Damen adheres to its E3 principles: environmentally friendly, efficient in operation, and economically viable. Combining the needs of the planet, the people operating the ship, and the owner's need to make a profit, the need for a new design emerged: hull shape, coatings, the location of oil tanks, refrigerants, recovery of waste heat, and engine emissions. The PSV 3300 CD fulfills the latest requirements of clean design and environmental protection standards of the major classification societies.

Damen Shipyards Group (est. 1927) operates more than 45 shipyards, repair yards, and related companies worldwide. Damen employs over 6,000 people in 34 countries, has delivered over 5,000 vessels since 1969, and delivers up to 150 vessels annually. Based on its unique, standardized ship-design concept and short delivery times, Damen is able to guarantee consistent quality.

For more information, visit [www.damen.com](http://www.damen.com).

## Regulations to improve the energy efficiency of international shipping enter into force

New regulations aimed at improving the energy efficiency of international shipping entered into force on 1 January 2013.

The amendments to the International Convention for the Prevention of Pollution from Ships (MARPOL) were adopted in July 2011. They add a new Chapter 4 Regulations on energy efficiency for ships to MARPOL Annex VI to make mandatory the Energy Efficiency Design Index (EEDI) for new ships and the Ship Energy Efficiency Management Plan (SEEMP) for all ships. Other amendments to Annex VI add new definitions and the requirements for survey and certification, including the format for the International Energy Efficiency Certificate.

The regulations apply to all ships of 400 gross tonnage and above. However, under Regulation 19, the Administration may waive the requirements for new ships up to a maximum of 4 years.

The EEDI is a non-prescriptive, performance-based mechanism that leaves to the industry the choice of technologies to use in a specific ship design. As long as the required energy-efficiency level is attained, ship designers and builders would be free to use the most cost-efficient solutions for the ship to comply with the regulations.

The SEEMP establishes a mechanism for operators to improve the energy efficiency of ships. Ships are required to keep a ship-specific Ship Energy Efficiency Management Plan (SEEMP) onboard.

Other MARPOL amendments that entered into force on 1 January were the amendments to MARPOL Annex VI to designate certain waters adjacent to the coasts of Puerto Rico and the U.S. Virgin Islands as the U.S. Caribbean Sea Emission Control Area for the control of emissions of nitrogen oxides (NOx), sulphur oxides (SOx) and particulate matter under Regulations 13 and 14 of MARPOL Annex VI.

Another amendment makes old steamships exempt from the requirements on sulphur content of fuel oil used on board ships in both the North American and U.S. Caribbean Sea ECAs. The new US Caribbean Sea ECA takes effect 12 months after entry into force, that is 1 January 2014.

For more information, visit [www.imo.org](http://www.imo.org).

## IMCA Publishes guidance on safety in shipyards

Safety lies at the heart of the vast majority of the guidelines published by the International Marine Contractors Association (IMCA). The latest, "Guidance on Safety in Shipyards" (IMCA SEL 032/M 221), is certainly no exception to the rule.

The guidance document adopts a staged approach to the management aspects of a docking project, including

pre-qualification, setting expectations; scope of work, form of contract, site visits; pre-docking phase, detailed expectations; kick-off, implementation phase; and project close-out and vessel handover. A number of relevant appendices are also provided that can be used as the starting point for developing in-house documentation for planning and undertaking docking projects.

For more information, visit [www.imca-int.com](http://www.imca-int.com).

**GeoFac**

**Information**

**GIS / IT Resources**

**Onsite / Offsite**

**Application Development**

**GeoSpatial Systems**

**Power, Process, Offshore**

**Utilities, Oil & Gas, Water**

[www.geofac.com](http://www.geofac.com)

**GSI**  
GeoFac Systems Inc.  
A Continental Shelf Associates Company  
561-307-4246

### Tanker overcapacity to gradually ease after 2013

Another tough year is on the horizon for tanker owners as the market continues to struggle under the pressure of overcapacity. Global oil consumption only managed a timid growth in the fourth quarter of 2012, with global crude oil loadings increasing by 0.6%.

OECD consumption shrank by 1.0%, despite U.S. Gulf Coast refiners increasing imports of heavy crude from the Middle East Gulf by 2%. This contrasted with a 2.7% increase in non-OECD countries as weak U.S. demand for light crude forced West African producers to export to eastern markets.

Tonnage demand in the tanker market increased 0.6% to 325 million dwt in the fourth quarter, and Drewry expects this to increase by 2.6% to 330 million dwt in 2013. However, 26.4 million dwt of fresh tonnage is due for delivery in 2013. The last quarter of 2012 saw the tanker fleet expand by 4.3 million dwt to reach over 412 million dwt.

Capacity expansion in the dirty tanker segment was faster than for clean

tankers, at 3.4% compared with 2.5%. In both categories, almost all additions took place in larger vessels segments such as VLCC, Suezmax, and LR2. The fleet of smaller vessels shrank, suggesting that owners are being attracted to the economies of scale offered by larger vessels. Deliveries continue to outpace strong demolitions, which reached their second highest level for 5 years with over 11 million dwt demolished.

A persistent weakness in freight rates, in conjunction with high bunker prices, limited availability of credit, and very low earnings have discouraged owners from placing new orders, despite falling prices. With earnings at unattractive levels, owners remained reluctant to take deliveries as delivery slippage reached 38% in 2012. Even the strategy of yards to attract owners by offering vessel designs with improved efficiency in the scenario of rising fuel cost does not seem to be working at this stage.

The orderbook has now shrunk to a mere 12% of the existing fleet, which suggests that the pace of supply growth

will lose some steam after 2013. With less than 13 million dwt of tanker tonnage ordered in 2012, Drewry expects the tanker fleet to grow at relatively slower pace of about 3% CAGR during 2013-17, to 487 million dwt. This is down from 14.9 million dwt and 36 million dwt in 2011 and 2010, respectively.

A good recovery in tonnage demand is anticipated from 2014 onwards, with a gradual improvement in the global economy and a corresponding increase in oil demand, particularly in Asia, the Middle East, and Latin America. A gradual increase in average voyage length due to the shift in trading patterns should also result in higher tonnage demand for oil tankers.

Demand is forecast to rise steadily at about 5% a year through 2013-17, to about 405 million dwt. Tanker utilization is, thus, expected to improve after 2013 as demand growth gathers steam and supply growth slackens, which should translate into improved earnings for owners.

For more information, visit [www.drewry.co.uk](http://www.drewry.co.uk).

# Outstanding Performance

We offer advanced subsea imaging technologies for a wide range of industry sectors from Oil & Gas to Renewables, Defence to Survey.

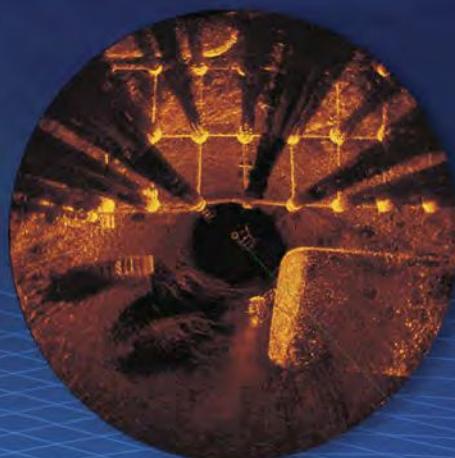


Visit: [www.tritech.co.uk](http://www.tritech.co.uk) to discover more.

Visit us on Stand D6

at Ocean Business  
9 – 11 April, Southampton

UK • NORTH AMERICA • BRAZIL



Visit us on: [in](#) [You](#)  
[Tube](#)

**Tritech**  
シ

# Ekinox Series

# NEW

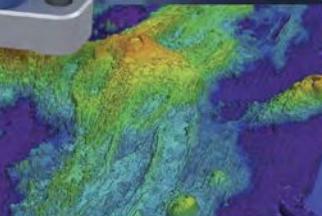
# HIGH ACCURACY MEMS MRU & Inertial Navigation System



BRINGS COST-EFFECTIVE  
MEMS TO FOG'S ACCURACY

- » 0.05° attitude, 2 cm GNSS position
- » NMEA, Ethernet & Web interface
- » 5 cm Heave on 4 monitoring points

 DVL, SBL, USBL, GPS/GNSS, EM Log,  
Depth and Sound Velocity sensors



### Bamford named new assistant administrator for NOAA's National Ocean Service

Holly A. Bamford, Ph.D., has been named the new assistant NOAA administrator for the agency's National Ocean Service (NOS), succeeding David M. Kennedy who was named the new NOAA deputy under secretary for operations. Prior to her appointment, Bamford served as deputy assistant administrator for NOS. "Holly not only brings strong scientific credentials to this position, but she also has significant leadership and management expertise. She is particularly well qualified for this position, and I'm confident in her ability to lead NOS as it works to support healthy communities and economies," said Jane Lubchenco, Ph.D., under secretary of commerce for oceans and atmosphere and NOAA administrator. As assistant administrator, Bamford oversees NOS, which serves as the lead Federal agency providing science-based solutions to address economic, environmental, and social pressures on our oceans and coasts. NOS observes, measures, assesses, and manages the nation's coastal, ocean, and Great Lakes areas; provides critical navigation products and services that contribute \$729 billion annually to the Gross Domestic Product; and conducts response and restoration activities to protect vital coastal resources.

### CSA Offers New Ocean Sound Business Line

CSA Ocean Sciences Inc. (CSA) is pleased to announce its new business line, Ocean Sound Solutions. The Ocean Sound Solutions group focuses on world-class acoustic solutions for the marine environment by investigating sources of sound and their potential impacts. With CSA's professional and highly skilled acousticians, the technical expertise and experience of its personnel enables it to provide a variety of acoustic services to our clients 24/7. Regardless of sound source type, biological or anthropogenic, CSA's Ocean Sound Solutions staff can detect, classify, locate (DCL), and measure these sources using a variety of methods. CSA's acoustic services consist of acoustic data collection, modeling, assessment of masking and cumulative impacts, towed passive acoustic monitoring (PAM) systems for mitigation compliance, acoustic data mining, and remote PAM through its web-based real-time monitoring system. With the introduction of its Internet-based, global, real-time software solution, [www.oceansound.com](http://www.oceansound.com), the acoustic team is able to detect, classify, locate, mitigate, monitor, and archive natural, biological, and artificial sounds. This unique solution for acoustic monitoring utilizes SONS-DCL software, which can accommodate input from a variety of sources, including towed arrays, fixed buoys, autonomous recorders, and gliders. This system can be used in both nearshore and offshore waters for a variety of purposes such as bioacoustics monitoring, population density estimates, sound source characterization, facility security, or other research/industry requirements. For more information on CSA's Ocean Sound Solutions Business Line or CSA's other services, visit [www.csaocean.com](http://www.csaocean.com).

## Rapid changes in the Arctic ecosystem



Several groups take possession of the sea ice habitat of every ice station: water samples from the melting pools, the ice itself, and the water beneath—everything is investigated for plants, animals, and microorganisms. Photo: Mar Fernandez, Alfred Wegener Institute

Huge quantities of algae are growing on the underside of sea ice in the Central Arctic in 2012, the ice algae *Melosira arctica* was responsible for almost half the primary production in this area. When the ice melts, as was the case during the ice minimum in 2012, these algae sink rapidly to the bottom of the sea at a depth of several thousands of meters. Deep-sea animals such as sea cucumbers and brittle stars feed on the algae, and bacteria metabolize what's left, consuming the oxygen in the seabed. This short-term reaction of the deep-sea ecosystem to changes in sea ice cover and ocean productivity has now been published in the scientific journal *Science* by a multidisciplinary team of researchers around Prof. Dr. Antje Boetius from the Alfred Wegener Institute (AWI), Helmholtz Centre for Polar and Marine Research, and from the Max Planck Institute for Marine Microbiology in Bremen.

Scientists and technicians from 12 nations traveled the Central Arctic on the research icebreaker Polarstern in late summer 2012. In and under the ice, they used a large number of ultra-modern research devices and methods such as camera-guided sampling devices and under-ice ROVs. Prof. Antje Boetius, who leads the Helmholtz-Max Planck Research Group on Deep-Sea Ecology and Technology, has a first answer to the all-important question of how the Arctic is changing due to warming: "Far quicker than has so far been expected! The seabed at a depth of more than 400 m was littered with clumps of ice algae which had attracted lots of sea cucumbers and brittle stars," explains the microbiologist.

The algal deposits with diameters of up to 50 cm covered up to 10% of the seabed. The researchers were able to count them using an Ocean Floor Observation System (OFOS). Also for the first time in the ice-covered Arctic, Helmholtz-Max Planck researcher Dr. Frank Wenzhöfer was able to measure the bacterial and faunal oxygen consumption directly in the deep sea using micro-sensors. Life was thriving under the algae cover: bacteria had started to decompose the algae as evident from a greatly reduced oxygen content in the sediment. By contrast, the sea-bed in the adjacent algae-free areas was aerated down to a depth of 80 cm and had virtually no algal residues.

For more information, visit [www.awi.de](http://www.awi.de).

## Climate change clues from tiny marine algae: ancient and modern

Microscopic ocean algae called coccolithophores are providing clues about the impact of climate change both now and many millions of years ago. The study found that their response to environmental change in terms of how quickly they grow varies between species.

Coccolithophores, a type of plankton, are not only widespread in the modern ocean, but they are also prolific in the fossil record because their tiny calcium-carbonate shells are preserved on the seafloor after death—the vast chalk cliffs of Dover, for example, are almost entirely made of fossilised coccolithophores.

The fate of coccolithophores under changing environmental conditions is of interest because of their important role in the marine ecosystem and carbon cycle. Because of their calcite shells, these organisms are potentially sensitive to ocean acidification, which occurs when rising atmospheric carbon dioxide ( $\text{CO}_2$ ) is absorbed by the ocean, increasing its acidity.

There are many different species of

coccolithophore, and in an article, published in *Nature Geoscience* recently, the scientists report that they responded in different ways to a rapid climate warming event that occurred 56 million years ago, the Palaeocene-Eocene Thermal Maximum (PETM).

The study, involving researchers from the University of Southampton, the National Oceanography Centre, and University College London, found that the species *Toweius pertusus* continued to reproduce relatively quickly despite rapidly changing environmental conditions. This would have provided a competitive advantage and is perhaps why closely related, modern-day species considered to be its descendants (such as *Emiliana huxleyi*) still thrive today.

In contrast, the species *Coccolithus pelagicus* grew more slowly during the period of greatest warmth. This inability to maintain high growth rates may explain why its descendants are less abundant and less widespread in the modern ocean.

"This work provides us with a whole new way of looking at living and fossil coccolithophores," said lead author Dr.

Samantha Gibbs, senior research fellow at University of Southampton Ocean and Earth Science.

By comparing immaculately preserved and complete fossil cells with modern coccolithophore cells, the researchers could interpret how different species responded to the sudden increase in environmental change at the PETM, when atmospheric  $\text{CO}_2$  levels increased rapidly and the oceans became more acidic.

"We use knowledge of how coccolithophores build their calcite skeletons in the modern ocean to interpret how climate change 56 million years ago affected the growth of these microscopic plankton," said co-author Dr. Alex Poulton, a research fellow at the National Oceanography Centre.

"This is a significant step forward and allows us to view fossils as cells rather than dead 'rocks.' Through this, we can begin to understand the environmental controls on oceanic calcification as well as the potential effects of climate change and ocean acidification."

For more information, visit [www.oceanacidification.org.uk](http://www.oceanacidification.org.uk).

**Leaders in Underwater Connector Technology and System Solutions**

# WITH 45 YEARS IN PROVIDING UNDERWATER CONNECTIVITY SOLUTIONS SEA CON® LEADS THE WAY IN CONNECTOR TECHNOLOGY

ELECTRICAL DRY-MATE  
ELECTRICAL WET-MATE  
OPTICAL HYBRID DRY-MATE  
ELECTRICAL UNDERWATER MATEABLE  
OPTICAL UNDERWATER MATEABLE  
UNDERWATER SWITCHES  
ELECTRICAL / OPTICAL PENETRATORS

Scan for SEA CON's FREE Product Catalog CD

[www.seaconworldwide.com](http://www.seaconworldwide.com)

in    f    t    YouTube

EXHIBITING AT OFFSHORE MEDITERRANEAN CONFERENCE (OMC) 2013  
EXHIBITING AT US HYDRO 2013  
EXHIBITING AT OCEAN BUSINESS 2013

MARCH 20TH - 22ND    RAVENNA, ITALY  
MARCH 25TH - 28TH    NEW ORLEANS, LOUISIANA, USA  
APRIL 9TH - 11TH    SOUTHAMPTON, UK

BOOTH #A20    BOOTH #4    BOOTH #N6

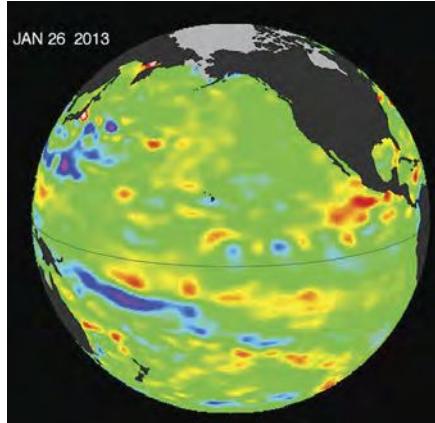
### Pacific Locked in ‘La Nada’ Limbo

Sea-surface height data from NASA’s Jason-2 satellite show that the equatorial Pacific Ocean is still locked in what some call a neutral, or “La Nada” state. This condition follows 2 years of strong, cool-water La Niña events.

A new image, based on the average of 10 days of data centered on 26 January 2013, shows near-normal conditions (depicted in green) across the equatorial Pacific. The image is available at <http://sealevel.jpl.nasa.gov/images/latestdata/jason/2013/20130126P.jpg>.

This latest image highlights the processes that occur on time scales of more than a year, but usually less than 10 years, such as El Niño and La Niña. These processes are known as the inter-annual ocean signal. To show that signal, scientists refined data for this image by removing trends over the past 20 years, seasonal variations, and time-averaged signals of large-scale ocean circulation.

The height of the water relates, in part, to its temperature and, thus, is an indicator of the amount of heat stored in the ocean below. As the ocean warms,



its level rises; as it cools, its level falls. Yellow and red areas indicate where the waters are relatively warmer and have expanded above normal sea level while green (which dominates in this image) indicates near-normal sea level, and blue and purple areas show where the waters are relatively colder and sea level is lower than normal. Above-normal height variations along the equatorial Pacific indicate El Niño conditions, while below-normal height variations indicate La Niña conditions. The temperature of the upper ocean can have a significant influence on weather patterns and climate.

For more information, visit <http://sealevel.jpl.nasa.gov>.

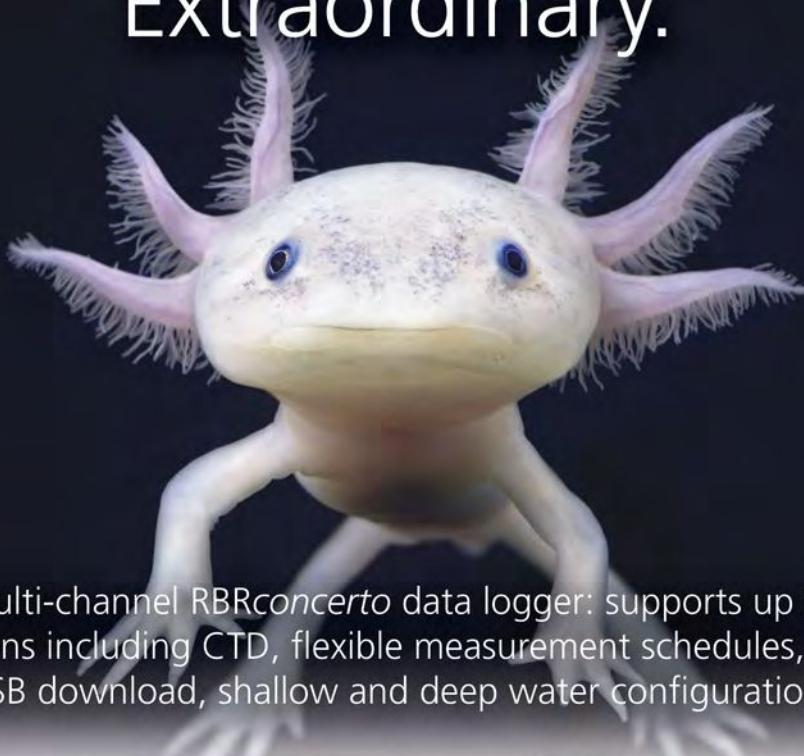
### Univ. of Miami modeling helping to clarify effect of dispersants on Deepwater blowout

In a recent article in *Nature News*, reporter Mark Schrophe detailed the various efforts underway to establish the effects of the chemical dispersants used on the 2010 Deepwater Horizon (DWH) oil spill. The work will not only tell us about the past, but will also inform any future decisions in case of a similar emergency. Among the efforts Schrophe highlights in his article is the work of University of Miami (UM) associate professor Claire Paris-Limouzy and her colleagues.

The team was the first to examine the effects of the use of unprecedented quantities of synthetic dispersants on the distribution of an oil mass in the water column based on a modeling approach. Working collaboratively, they developed and tested models that demonstrate that the application of oil-dispersing chemicals had little effect on the oil surfacing in the Gulf of Mexico.

Paris-Limouzy and the team estimated the distribution of oil droplet sizes with and without injection of disper-

# Extraordinary.



The new multi-channel RBRconcerto data logger: supports up to 5 sensor combinations including CTD, flexible measurement schedules, up to 6Hz sampling, USB download, shallow and deep water configurations available.

# RBR



rbr-global.com

sants at the wellhead. They then applied a novel oil-mass tracking model of the Connectivity Modeling System (CMS) developed shortly after the DWH incident using a RAPID award from the National Science Foundation (NSF) and presented a 3D simulation of the DWH spill showing the unfolding of the disaster to examine the effect the synthetic dispersant may have had on the oil transport in the water column. The model indicated that the oil may have been dispersed by the turbulent discharge contributing to the observed so-called deep plume. The subsea application of dispersant did not have its expected outcome, according to a peer-reviewed article that appeared in the journal Environmental Science and Technology in November 2012.

For more information, please visit [www.rsmas.miami.edu](http://www.rsmas.miami.edu).

### New fish discovered in one of the deepest points on Earth

University of Aberdeen scientists have returned from a voyage to one of the deepest points on the planet where they discovered a new species of fish and gained new knowledge of life at



previously unexplored depths.

In 7 days of ocean sampling—to the north of New Zealand, near the Kermadec Islands at depths of between 1 and 6.5 km deep—they took over 6,500 photographs of deep sea fish and caught about 100 fish.

The research expedition—Involving scientists from the University of Aberdeen's Oceanlab, NIWA, and Museum of New Zealand Te Papa Tongarewa—explored waters well below the depth that light penetrates on the edge of the Kermadec Trench. It is one of the deepest places on Earth, with depths exceeding 10 km.

The scientists onboard the research vessel RV Kaharoa used landers with cameras attached that free-fall to the seafloor as well as baited fish traps to

attract the animals. The equipment was designed and built at Oceanlab.

Voyage leader Dr. Alan Jamieson, from Oceanlab said, "We are never quite sure what we will find on these expeditions to unchartered territories. We had set out to find out more about the deep-sea fish communities, and we were delighted to find both new species and new depth records for fish."

Funding for this voyage was primarily from the Marine Alliance for Science & Technology for Scotland (MASTS) and is supported by NIWA's Deep-sea Communities project funded by the Ministry of Business, Innovation and Employment (MBIE).

For more information, visit [www.oceanlab.abdn.ac.uk](http://www.oceanlab.abdn.ac.uk).

## THE FULL PICTURE FOR DEEP SEA EXPLORATION

For over 30 years Kongsberg Maritime has been leading the way in manufacturing underwater cameras, lamps and imaging sonar for today's demanding ROV, Plough, Trencher and AUV navigation, surveillance and inspection tasks in the deepest and most challenging applications around the globe. More recently, Kongsberg Maritime's cameras were used in manned deep-sea applications in record breaking depths in excess of 7,000 metres.

Innovative design and technology, unrivalled build quality and exceptional image quality ensure Kongsberg Maritime's products offer the best price-performance and reliability.



KONGSBERG

A collage of Kongsberg Maritime products including several underwater cameras of different sizes and types, some mounted on articulated arms, and a large ROV system operating in the ocean.

- Dependable colour zoom inspection cameras
- Affordable HD cameras
- Extremely low light BIT navigation cameras
- Cost saving 3D cameras
- Powerful HID and LED lamps
- Robust digital pan & tilt and rotator units

Visit us on  
Stand N1



## THE FULL PICTURE

Telephone: +44 1224 226500

[km.camsales.uk@kongsberg.com](mailto:km.camsales.uk@kongsberg.com)

[www.km.kongsberg.com](http://www.km.kongsberg.com)

### Shimmering water reveals cold volcanic vent in Antarctic waters

The location of an underwater volcanic vent, marked by a low-lying plume of shimmering water, has been revealed by scientists at the National Oceanography Center, Southampton.

Writing in the journal PLOS ONE, the researchers describe how the vent, discovered in a remote region of the Southern Ocean, differs from what we have come to recognize as "classic" hydrothermal vents. Using SHRIMP, the National Oceanography Centre's high-resolution, deep-towed camera platform, scientists imaged the seafloor at Hook Ridge, more than 1,000 m deep.

The study, funded by the Natural Environment Research Council (NERC), aimed to build on our knowledge of how deep-sea creatures associated with hydrothermal activity evolve and migrate between different regions.

Hydrothermal vents are like hot springs, spewing jets of water from the seafloor into the ocean. The expelled water, if hot enough, is rich in dissolved metals and other chemicals that can nourish a host of strange-looking life via a

process called "chemosynthesis." The hot water, being more buoyant than the surrounding cold seawater, rises up like a fountain or "plume," spreading the chemical signature up and out from the source.

The Hook Ridge vent, however, was found to lack the high temperatures and alien-like creatures that we now associate with hot hydrothermal vents. Instead, there was a low-lying plume of shimmering water caused by differences relative to the surrounding seawater in certain properties, such as salinity.

"Geochemical measurements of the water column provided evidence of slightly reducing, localized plumes close to the seafloor at Hook Ridge," said Dr. Alfred Aquilina, lead author and former research fellow at University of Southampton Ocean and Earth Science, which is based at the Centre.

"We, therefore, went in with sled-mounted cameras towed behind the Royal Research Ship James Cook and saw shimmering water above the seafloor, evidence of hydrothermal fluid seeping through the sediment."

So why were there no strange creatures around the vent? The team inves-

tigated this particular area of the deep-sea because prior measurements of the water column above Hook Ridge detected chemical changes consistent with a hydrothermal plume. On investigation, there was also a small relict "chimney" of precipitated minerals on the seafloor, which suggests that the hydrothermal fluid flowing from the vent was once warmer.

The researchers, therefore, propose that hydrothermal activity at Hook Ridge is too irregular to provide the vital chemicals that support chemosynthetic life.

Dr. Aquilina explained why this was an important finding: "This region was investigated because hydrothermal systems in this part of the Southern Ocean may potentially act as stepping stones for genetic material migrating between separate areas in the world ocean," he said.

"The more hydrothermal vents we can find and investigate, the more we can understand about the evolution and dispersal of the creatures that live off the chemicals expelled in these dark, deep environments."

For more information, visit [www.noc.ac.uk](http://www.noc.ac.uk).

**HY**tech

**WORLD CLASS** Through People, Technology & Dedication

For more information about our products, please contact us at +1 508-563-6565

[www.hydroid.com](http://www.hydroid.com)

**HYDROID**  
A KONGSBERG COMPANY

KONGSBERG

# Smaller, Faster, Less Power...Better



## ***Making Impossible Jobs Possible***

The M Series is the world's smallest full-featured 2D Multibeam Imaging Sonar available. Each M Series sonar includes Teledyne BlueView's all new ProViewer™ 4.0 operating software unlocking a world of new features to make your underwater operations faster and easier, including: new user friendly interface, crisp, smooth sonar imagery with zoom, lower power consumption, real-time target tracking, easier image capture and movie export, and much more. Go to [www.blueview.com/M900-Series.html](http://www.blueview.com/M900-Series.html) for details.



For more information call +1 (206)545-7260,  
or email [swa\\_info@teledyne.com](mailto:swa_info@teledyne.com)

[www.blueview.com](http://www.blueview.com)

 **TELEDYNE BlueView**  
Everywhere you look™

**Offshore wind power to grow ten-fold by 2020 with UK leading the way**

The global offshore wind power market, fuelled by the depletion of fossil fuel reserves, the declining cost of wind power generation, and impressive investment from the UK, is expected to explode over the next decade, states research and consulting firm GlobalData. The company's new report forecasts the global offshore wind power market to increase from a 2012 cumulative installed capacity of 5.1 GW in 2012 to a far greater 54.9 GW by the end of the decade, growing at a Compound Annual Growth Rate (CAGR) of 34.5%. The UK is a major player in the offshore wind power market thanks to its substantial financial commitment and ideal location, contributing more than half of the global installed capacity last year, with 2.7 GW. Jonathan Lane, GlobalData's head of consulting for power and utilities, says, "While risks for offshore developers remain, in particular the potential rationing of Contracts for Difference (CFD) under the levy control framework, the still nascent transmission regime, and the competition from nuclear power, the UK government is firmly supporting offshore wind via the Energy Bill." Offshore wind is expected to make a large impact on the UK's 2020 renewable energy targets and a major expansion is planned. Correspondingly, GlobalData expects the country's offshore wind power installed capacity to hit 21 GW by the end of 2020, increasing almost 800% from 2012. According to the firm's latest report, the offshore wind power industries of several other countries are also expected to undergo massive expansion over the next decade. Germany, in particular, has plans to grow its offshore wind sector substantially in the future, announcing a target of 25 GW installed capacity by 2030 and 95 GW by 2050. Between the 2012 and 2020, however, GlobalData forecasts the Germany's offshore wind power installed capacity to climb from a modest 220 MW to 8 GW.

**EPRI calculates U.S. riverine hydrokinetic potential at 3% of annual electricity demand**

The Electric Power Research Institute (EPRI) recently completed a mapping and assessment of hydrokinetic resources in rivers of the continental U.S. and found that these undeveloped resources could provide 3% of the nation's annual use of electricity. The assessment is part of an effort by the U.S. Department of Energy to characterize U.S. hydrokinetic waterpower resources, including river, wave, tidal, ocean thermal, and ocean current. The assessment analyzed 71,398 river segments across the 48 contiguous states and additional river segments in Alaska. It yielded a total theoretical resource estimate of 1,381 TWh/yr for the continental U.S., which is equivalent to approximately 25% of annual U.S. electricity consumption. The technically recoverable resource estimate for the continental U.S. is 120 TWh/yr, which represents approximately 3% of annual U.S. electricity consumption. The results show that the Lower Mississippi region contributes almost half (47.9%) of the technically recoverable resource estimate; Alaska 17.1%; the Pacific Northwest region 9.2%; and, the Ohio region 5.7%. Collectively, these four regions comprise 80% of the technically recoverable hydrokinetic resource in the continental U.S. By comparison, EPRI's 2011 wave energy assessment, which calculated ocean wave potential, found an estimated 2,600 TWh/yr and 1,120 TWh/yr of theoretically and technically recoverable resources, respectively. These assessments are a major improvement over estimates for hydrokinetic waterpower resources EPRI completed in 2007, noting that better data and analytical tools are now available that provide a more accurate picture of these resources.

**Canadian Government supports Atlantis Resources Corporation tidal energy project**

Atlantis Resources Corporation, a world-leading marine energy company, has been awarded a \$5 million grant by the Canadian Government's Sustainable Development Technology Canada (SDTC) fund towards a 1+ MW tidal energy project in the Bay of Fundy, Nova Scotia.

The company will work together with Lockheed Martin and Irving Shipbuilding to customize, build, deploy, and monitor their 1+ MW turbine at the Fundy Ocean Research Centre for Energy test site in the Bay of Fundy.

The project will marry Atlantis' international experience in building and operating commercial-scale tidal turbines with the local expertise of Lockheed Martin Canada and Irving Shipbuilding.

Lockheed Martin, which has 225 full-time employees in Nova Scotia, will be responsible for engineering design elements, production and procurement of major turbine components, and systems integration and testing.

Irving Shipbuilding will oversee elements of fabrication and assembly of the device in conjunction with other local suppliers at its Woodside Industries facility. It is anticipated that skilled trades, including burners, steel fitters, iron workers, and welders will be required for the project once production begins.

"Canada is quickly becoming a leader in alternative energy development, and Lockheed Martin is proud to be working with top technology companies such as Atlantis to deliver affordable, reliable, and responsible power generation to the region," said Rosemary Chapdelaine, president of Lockheed Martin Canada.

"SDTC is proud to add this project to its portfolio, now valued at more than \$2 billion. When purchased and used by the Canadian industry, the clean technologies developed by portfolio companies will enable a variety of sectors to increase their share of global markets," said Dr. Vicki Sharpe, president and CEO of SDTC. "As Canada works to diversify its export markets, working with new trading partners in emerging countries, these innovative technologies will help make Canadian natural resources and products more globally attractive and competitive."

For more information, visit [www.atlantisresourcescorporation.com](http://www.atlantisresourcescorporation.com).

## Energy Department launches new database to support sustainable development of ocean energy resources

As part of an international collaboration with the International Energy Agency, the Energy Department launched a new database that includes results of environmental monitoring and research efforts on wave, tidal, and current energy development worldwide. Called "Tethys," after the Greek titaness of the ocean, the database will help industry regulators and energy project developers deploy sustainable ocean energy projects in an environmentally responsible manner.

Developed through a partnership with the International Energy Agency's Ocean Energy Systems Initiative (OES), the Tethys database and an accompanying report identify research on potential environmental effects and monitoring methods for ocean power. The database and report also provide the emerging global ocean energy industry with real-world data—documenting interactions between wave, tidal, and current devices; marine wildlife; and oceans' physical systems—that will help safely explore and expand the use of clean, renewable energy sources like ocean power.

The Tethys database also features an interactive map of ocean energy environmental monitoring and research projects around the world to aid developers and regulatory agencies in siting and permitting future projects. The Energy Department encourages researchers in this area to submit their work to the database to further expand and improve this valuable resource.

For more information, visit [www.energy.gov](http://www.energy.gov).

## Tocardo and Repsol enter partnership to develop offshore tidal energy

Tocardo International, the leading producer of tidal and free-flow water turbines, and Repsol, the international integrated energy company, announce a partnership between the two companies.

The Repsol New Energy Ventures and Tocardo partnership will provide a platform for both companies to develop offshore tidal energy, combining Tocardo's knowledge of tidal and river free-flow water turbines with Repsol's access to energy markets around the world.

Tocardo can further accelerate the development of its offshore engineer-

ing capabilities using Repsol's knowledge of the energy industry and will be able to tap into many of the fledgling renewable energy markets that Repsol has identified.

Late last year, Tocardo also entered a partnership with international offshore engineering company Huisman Equipment. The combined Tocardo, Huisman, and Repsol resources can deliver on turnkey tidal energy projects.

Hans van Breugel, CEO of Tocardo, said, "With increasing international interest in tidal and in-stream power generation, we will confirm our position as first to market in selling commercially produced water turbines. Tocardo, working with Huisman and Repsol, is now in a position to deliver on key projects."

For more information, visit [www.tocardo.com](http://www.tocardo.com).

**Sea Robotics**

**USVs with a Mission**  
from environmental monitoring to surveillance & security

- Hydrographic Surveys
- Bathymetric Surveys
- Environmental Monitoring
- Surveillance & Security
- Hull Inspection

[www.searobotics.com](http://www.searobotics.com)

Contact us today for more information  
7721 SW Ellipse Way, Stuart, Florida 34997, USA  
1-561-627-2676 • [info@searobotics.com](mailto:info@searobotics.com) • [www.searobotics.com](http://www.searobotics.com)

## Resolute Marine Energy receives preliminary permit for Yakutat, Alaska wave project

Resolute Marine Energy (RME) announced that its preliminary permit application to the Federal Energy Regulatory Commission (FERC) has been approved, marking the official start of the Yakutat, Alaska Wave Energy Project.

On 25 July 2012, RME filed an application for a preliminary permit under Section 4(f) of the Federal Power Act to study the feasibility of the Yakutat Alaska Wave Energy Project. The project involves a 25-sq.mi area within Alaska's submerged lands off Yakutat, a remote community in the southeast portion of Alaska. As presently planned, the project will consist of an array of RME's SurgeWE<sup>TM</sup> wave energy converters for a total installed capacity of 750 kW. The project would offer an estimated annual generation of over 3,000 MWh.

For more information, visit [www.resolutemarine.com](http://www.resolutemarine.com).

## NCKU (Taiwan) selects the AXYS WindSentinel

AXYS Technologies Inc. (AXYS) is pleased to announce that it has been contracted by the National Cheng Kung University (NCKU) in Taiwan to supply the WindSentinel™ wind resource assessment buoy.

The purchase has been funded by a National Science Council grant under the Master Program of the National Science and Technology Program—Energy for Offshore Wind. The system will be used to support Taiwan's development of 3 GW of offshore wind projects.

At this first stage, the WindSentinel will be deployed in the Super Tank at NCKU's world-renowned Tainan Hydraulics Lab (THL).

AXYS are represented in Taiwan by SINO Instrument Enterprise Co.

The WindSentinel™ will be constructed at the AXYS facility in Sidney, BC, Canada, with deployment scheduled for Summer 2013.

For more information, visit [www.axystechnologies.com](http://www.axystechnologies.com).

## EU offshore wind energy sector posts solid 2012

Europe installed and grid connected 293 offshore wind turbines in 2012—more than one per working day. This brings the total to 1,662 turbines in 61 offshore wind farms in 10 European countries.

The 293 turbines installed in 2012 represent 1,165 MW, an increase of 33% compared to 2011 installations of 874 MW. This brings total offshore wind energy capacity to 4,995 MW.

Overall, the UK remains the leader, with nearly 60% of Europe's total offshore capacity, followed by Denmark (18%), Belgium (8%), and Germany (6%).

The turbines installed in 2012 represent investments of around €4 billion in offshore wind farms. Offshore prospects for 2013 and 2014 are positive with 14 offshore projects under construction due to increase installed capacity by a further 3,300 MW and bring total offshore capacity in Europe to 8,300 MW.

For more information, visit [www.ewea.org](http://www.ewea.org).

## CLASS II ROVs FOR INSPECTION & LIGHT WORK



Depth rated to 300 m



Depth rated to 800 m

### Configure according to your needs with optional skids!

- Powerful, while compact in size
- Top performance viewing system
- Highly equipped in standard version
- Easy to add optional equipment



Manipulator arm



Tiltable imaging sonar



Side scan sonar



NDT CP+Thickness+Brush



Metal detector

**eca HYTEC**™  
[www.eca-robotics.com](http://www.eca-robotics.com)

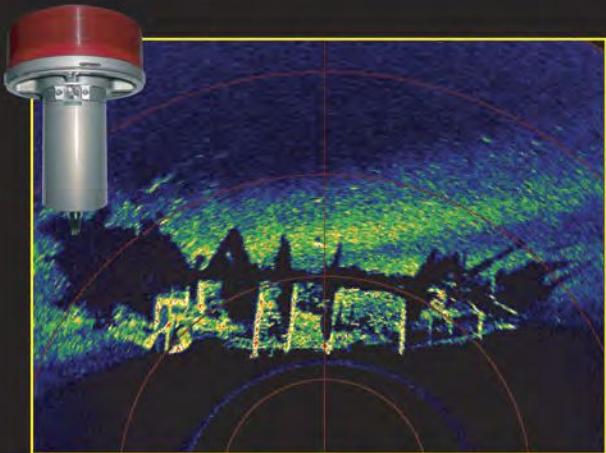
Visit us at Ocean Business, 9 – 11 April 2013, booth N9

[ecahytec.sales@ecagroup.com](mailto:ecahytec.sales@ecagroup.com)

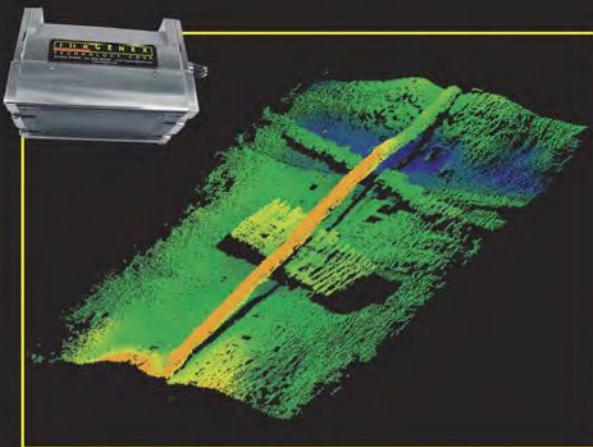
# Affordable Solutions for Sonar Systems

Please visit us at  
Ocean Business 2013  
Stand M7

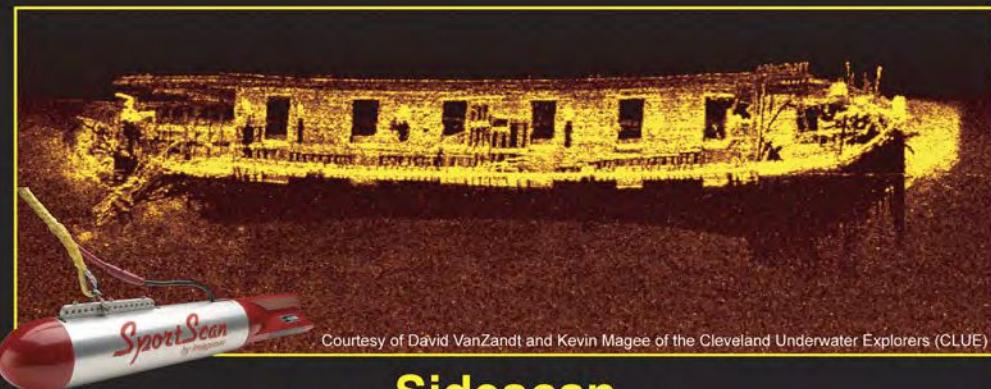
R E D E F I N I N G I M A G E C L A R I T Y



Mechanical Scanning



Multibeam



Sidescan

IMAGENEX TECHNOLOGY CORP. 209-1875 Broadway Street, Port Coquitlam, BC, V3C 4Z1 Canada  
TEL: (604) 944-8248 FAX: (604) 944-8249 e-mail: [Imagenex@shaw.ca](mailto:Imagenex@shaw.ca)

[www.imagenex.com](http://www.imagenex.com)

IMAGE  
MADE  
BY  
AGILE  
MEDIA  
TECHNOLOGIES

# The Alpha To The Omega — Subsea Military Platforms

By: James McFarlane, President  
International Submarine Engineering Ltd.

**T**esla demonstrated a remote controlled submersible boat controlled by “coded pulses via Hertzian waves” in 1898.

In the 1960s, there was a sudden bursting of the limits. It was a period of technical revolution. The Concord flew, and men landed on the moon. In the ocean, Jacques Piccard and Don Walsh reached the Challenger Deep in the Mariannas (the deepest part of the ocean) in the DSV “Trieste.” It was towed into position by the USSS DE535 Lewis. Mixed gas diving was investigated by Jacques Cousteau in France, Hannes Keller in Switzerland, Captain George Bond with the USN, Phil Nuytten with Can-Dive in Canada, Lad Handleman with Cal Dive, and Henri Delauze with COMEX in France.

It was John F. Kennedy in the 1960s who said: “Knowledge of the oceans is more than a matter of curiosity. Our very survival may hinge upon it.” It was the military in the 1960s that started the subsea technology ball rolling.

In the late 1960s and through the 70s and 80s subsea equipment developed and

systems operations moved rapidly ahead. We left those times with concepts for most of the vehicles we have today. Developments in undersea work capabilities were ushered in, namely mixed gas diving, manned submersibles, remotely controlled vehicles (ROVs), autonomous unmanned vehicles (AUVs) in that order.

Thirty years later, we have the technology, yet it still hasn’t been consistently applied to the military. Why not? Although it is fully understood that budgetary restrictions limit more complex subsea technologies to be used by navies worldwide.

For the last 38 years, International Submarine Engineering has been directly involved in the development of ROVs that provide stand off to operators, all of which are air transportable.

### ROVs

With tethers of various lengths and configuration of several different sonar and equipment arrangements, an ROV can search the bottom down to the depths beyond any harbor worldwide. ROVs already used in naval exercises have proved that the vehicle can find and eliminate bottom and moored mines faster and more efficiently than any other method.

Consistent success in finding and handling near-surface, mid-water, and bottom mine targets by ROVs is a given. At the request of the USN, ISE’s TrailBlazer was used to locate and recover multiple



*“They will be produced capable of acting as if possessed of their own intelligence, and their advent will create a revolution.”*

*Nicola Tesla*

mid-water mines in the Gulf Stream. Divers had been employed without success. Another such mission involved the location of mines in the harbor at Charleston, South Carolina. Divers had spent 8 hrs looking for the mines; they found only one. TrailBlazer was deployed and found all of the remaining mines within 30 min.

The largest ROV is a Pressurized Rescue Module System (PRMS)—a submarine rescue system built for the U.S. Navy by Oceanworks International and ISE. PRMS accommodates 16 individuals and 2 crew members.

(PRMS)—a submarine rescue system built for the U.S. Navy by Oceanworks International and ISE. PRMS accommodates 16 individuals and 2 crew members.

Rapid transport is a key factor in deployment. The RCN's ROV is a good example of this. Ground, ship and air transportable, it is packed with its console into an A-2 transport container. The RCN's work-class TrailBlazer ROV provides the RCN with a system that enables mid-water and bottom mine countermeasures as well as salvage and torpedo recovery.



#### Semi-submersibles

A variety of missions are achieved with the semi-submersible AUVs, including mine countermeasures (MCM), expeditionary warfare (EW), and ECM. ISE has provided two versions of semi-submersible AUVs to militaries: Dolphin semi-submersibles and Dorado (SeaKeeper).

The Dolphin semi-submersible was developed for surveying. The USN later configured versions of Dolphin for MCM and EW. Six Dolphins were configured for surveying in Canada. Two of them were delivered to the U.S. Navy for EW and two more were used at the Stennis Space Center for surveying.

Four of the semi-submersibles were sold to USN, two of which used during first Gulf War while deployed onboard the USS Cushing. Two were also used at Dahlgren, Virginia for testing a variety of EW equipment. Dahlgren shipped its two vehicles to NASA Stennis where they were used to do survey work. The Stennis vehicles worked under the direction of Dr. Brian Bourgois, who wrote a paper relative to the semi-submersible in which he commented that the vehicles should see Fleet use and would save 40% during these operations.

The Royal Canadian Navy's semi-submersible is an RMS platform, with an active sonar towfish fitted with a multibeam side-scan sonar capable of depths of



250 m at speeds up to 10 kts and in sea states up to 6+. As the vehicle has a surface-piercing mast, it is able to operate and transmit sonar data over a high bandwidth radio data link, permitting real-time data transfer at line of sight standoff ranges from the MCM vessel as well as use of differential global positioning system (DGPS) feed for accurate target positioning.

With time of deployment of the essence in military applications, an example of semi-submersibles rapid transportability and capability was performed during Exercise Frontier Shield 2007 in Portsmouth, New Hampshire. It successfully demonstrated the Expeditionary Warfare Concept by arriving from the Canadian West Coast via CC-117 and being deployed for operation in an all inclusive time of 7.5 hrs. All mine-like targets were found within 2 hrs following deployment and reported to the Commodore commanding the exercise on a real-time basis.

Just prior to the 2010 Winter Olympics in Vancouver, British Columbia, the Canadian Navy's Dorado performed multiple surface and sub-surface security sweeps of Vancouver Harbor. The vehicles presence maneuvering in the harbor was considered to be a threat deterrent in and of itself.

#### Military application AUVs

We know that the most widely used military AUV is the torpedo. While it may be possible to meet some mine warfare application requirements, such as MCM Recce, with a single sensor AUV, others such as Rapid Environmental Analysis (REA) must be undertaken with a suite of sensors that are going to be difficult, if not impossible, to host within the hull of a small AUV. A medium-size AUV, on the other hand, provides the volume and the power to accommodate a full suite of REA sensors.

Developed to gather data to establish the boundary of Canada's Arctic Sovereignty, the medium-diameter Arctic Explorer AUV, equipped with multiple sonars that were tasked with mapping large sections of the Arctic seafloor. Remaining submerged for up to 10 days at a time, the AUVs were recharged as necessary while submerged using a proprietary underwater mating connection. This connection allowed for the recharging of the vehicle, while at the same time allowing for the transfer of acquired data.

We can't ignore the significant achievements in maritime security performed by the first large-diameter AUV ever built in the world, the Theseus AUV. Designed to lay fiber optic cable in the Arctic, Theseus was deployed on two separate missions. During the second mission, Theseus laid 110 nmi of fiber optic cable. On the way out, the AUV was full duplex on the fiber, returning autonomously on the 110 nmi return home.

***"We shall not cease from exploration  
and the end of all our exploring  
will be to arrive where we started  
and know the place for the first time."  
TS Eliot***

For the most part, tethered and un-tethered sub-surface and surface marine vehicles have demonstrated a low-cost, safe, rapid response capability that has had somewhat limited use to date. It is time to embrace these air deployable, large, stand off platforms.

**U.S. Navy awards General Dynamics \$42 million for USS Hartford maintenance and modernization**  
The U.S. Navy has awarded General Dynamics Electric Boat a \$41.6 million contract modification to perform routine maintenance and modernization work on the USS Hartford (SSN-768), a Los Angeles-class attack submarine. Electric Boat is a wholly owned subsidiary of General Dynamics. Under the terms of the contract, Electric Boat will perform a dry-docking, selected-restricted availability, which consists of maintenance work, upgrades, and modernization activities required to ensure the submarine is operating at full technical capacity. The work will take place at the Electric Boat shipyard in Groton and involve up to 417 employees at its peak. It is scheduled for completion in July 2013. The contract was initially awarded in April 2012 and has a potential value of \$58.7 million if all options are exercised.

**SAIC awarded two U.S. Navy contracts**

Science Applications International Corporation (SAIC) was awarded a prime contract by the U.S. Space and Naval Warfare Systems Center (SSC) Atlantic's Command, Control, Communications, Computers, Combat Systems, Intelligence, Surveillance, and Reconnaissance (C5ISR) System of Systems Engineering and Integration (SoSEI) Program for both strategic and tactical platform requirements. The single-award, indefinite-delivery/indefinite-quantity contract has a 1 year base period of performance, two 1 year options, and a total contract ceiling value of approximately \$667 million if both options are exercised. Work will be performed primarily in Charleston, South Carolina and Norfolk, Virginia. SAIC also announced it was awarded a prime contract by the U.S. Naval Surface Warfare Center (NSWC) Carderock Division to provide logistics and program management services for the Navy Corrosion Control Assistance Teams (CCAT). The single-award, cost-plus fixed-fee contract has a 1 year base period of performance, two 1 year options, and a total contract value of approximately \$23 million, if all options are exercised. Work will be performed primarily in Norfolk, Virginia; Little Creek, Virginia; Mayport, Florida; San Diego, California; Everett, Washington; and Yokosuka, Japan.

**U.S. Navy purchases additional AN/SSQ-125 sonobuoy systems**

The U.S. Navy has awarded a subcontract to ERAPSCO, a joint venture between Sparton and Ultra Electronics (ULE) subsidiary USSI, for the delivery of sonobuoys. Under the \$10.1 million and \$7.8 million production deals to Sparton Electronics and USSI respectively, ERAPSCO will supply AN/SSQ-125 multistatic active coherent (MAC) source sonobuoys. Featuring digital signal processing and compass capabilities, the A-size, expendable AN/SSQ-125 MAC sonobuoy enables airborne navy personnel to perform bearing verification, target localization, and tracking. In addition, the underwater signalling and receiving device enables the operator to accurately detect very quiet diesel submarines or underwater vessels in attack mode even in adverse conditions. Capable of generating a variety of waveforms, the AN/SSQ-125 can be used to locate and identify acoustic emissions or reflections from enemy submarines and transmit signals to the navy airborne anti-submarine warfare forces.

**Aircraft carrier Gerald R. Ford (CVN 78) topped off with 555-Metric Ton island**

Huntington Ingalls Industries (HII) celebrated significant progress as the 555-metric ton island was lowered onto the nuclear-powered aircraft carrier Gerald R. Ford (CVN 78) at the company's Newport News Shipbuilding (NNS) division. The island will serve as the command center for flight deck operations aboard the first of the next-generation class of aircraft carriers.

Susan Ford Bales, daughter of the late President Gerald R. Ford and Betty Ford, serves as the ship's sponsor and participated in the event. "Shipbuilders—thank you for your extraordinary work," she said. "You are a national treasure. Thank you very much."

Ford Bales also placed items under the island during the mast-stepping, an ancient Roman ceremony in which coins were put into the mast of a ship to ensure safe passage and good luck. Ford Bales placed a sandstone piece made of the same sandstone used in the construction of the White House and the U.S. Capitol. The piece was embedded with a unique coin designed by Ford Bales as well as five official seals representing her father's service to the nation.

Gerald R. Ford is being built using modular construction, a process where smaller sections of the ship are welded together to form large structural units, equipment is installed, and the large units are lifted into the dry dock. The 60-ft long, 30-ft wide island represents the 452nd lift of the nearly 500 total structural lifts needed to complete the ship. At this stage in construction, Ford is about 90% structurally complete.

The island is redesigned on Ford to incorporate the latest technology in flat-panel array radar systems and dual-band radar that provides improved functionality. It is shorter in length, but stands 20 ft taller than islands on previous aircraft carriers. Its placement is 140 ft further aft and 3 ft further outboard than previous carriers to improve flight deck access for aircraft operations. The first-in-class ship also features a new nuclear power plant, electromagnetic catapults, improved weapons movement, an enhanced flight deck capable of increased aircraft sortie rates, and growth margin for future technologies and reduced manning.

For more information, visit [www.huntingtingalls.com](http://www.huntingtingalls.com).

## Royal Canadian Navy to use ISE Aurora towfish

ISE is pleased to announce the award of a contract from MacDonald, Dettwiler and Associates Ltd. (MDA). ISE will provide two commercial, off-the-shelf, high-speed Aurora Towfish, which will be used to support mine detection missions and route survey operations for the Royal Canadian Navy's Maritime Coastal Defence Vessels. The Aurora towfish will include modifications to integrate new sensors and navigation equipment, including an L3 Klein side-scan sonar and an R2Sonic bathymetric multibeam echosounder. The modular design of the vehicle makes it a simple matter to exchange sonar payloads.

The Aurora towfish has been proven as a viable component of the Royal Canadian Navy's Route Survey system. In conjunction with the Dorado Semi-submersible Technical Demonstrator, Aurora has been used in many sea operations and evaluations since 1999. Further capabilities of Aurora were demonstrated during an evaluation in Esquimalt January 2008. There, Aurora was integrated and tested with the

HMCS WhiteHorse Route Survey System Payload. Trials in Saanich Inlet and approaches to Esquimalt Harbour demonstrated Aurora's capability to deploy various sonar modules in operational survey conditions.

The towfish is active in the sense that it can maintain horizontal position and depth as well as avoid obstacles. Each towfish possesses its own controller. Earlier towfish have been fitted to variants of the DORADO Remote Minehunting System (RMS) for more than a decade.

For more information, visit [www.ise.bc.ca](http://www.ise.bc.ca).

## Hydroid littoral battlespace sensing AUVs enter full rate production

Hydroid, Inc., a subsidiary of Kongsberg Maritime announced that its contract to provide Littoral Battlespace Sensing (LBS) AUVs to the U.S. Navy's Space and Naval Warfare Systems Command (SPAWAR) has moved directly from the Engineering Development Model (EDM) phase to full rate production (FRP).

The decision to make the rare move from the EDM phase directly to FRP

was made by the U.S. Navy's Milestone Decision Authority (MDA), the Navy's Program Executive Office for Command, Control, Communications, Computers and Intelligence (PEO C4I), after more than a year of extensive testing and evaluation determined that Hydroid's LBS-AUV systems were ready for deployment. In response to the MDA's approval, SPAWAR has ordered the immediate production of three LBS AUVs (REMUS 600s) and one Shipset, including a launch and recovery system (LARS), a LARS flat rack, a mission van, a maintenance van, and vehicle support equipment.

The AUVs ordered by SPAWAR will be equipped with advanced technologies for the collection of oceanographic and meteorological data, as well as technologies for processing and dissemination of these data. This technology will enable superior decision-making based on information collected by a system of networked sensors and shared through a network of interoperable Naval and Joint networks information systems.

For more information, visit [www.hydroid.com](http://www.hydroid.com).

# DEEPINGENUITY PROLIFIC SOLUTIONS ROCK-SOLID PERFORMANCE



SCHEDULE YOUR  
FACTORY ACCEPTANCE TEST  
TODAY

VISIT US AT  
[BLUEFINROBOTICS.COM](http://BLUEFINROBOTICS.COM)  
AND LEARN MORE

 **BLUEFIN**  
ROBOTICS

## GE completes trials of advanced linear induction machine

Stall testing on a new advanced linear induction machine, a core component in the EMCAT (Electro Magnetic CATapult) launch track system designed to launch manned and unmanned aircraft from various platforms, has been successfully completed by its developer, GE Power Conversion. Catapults incorporating the powerful new medium voltage advanced linear induction machine (MV ALIM) will be capable of launching aircraft as large as the latest F35-C from aircraft carriers, while smaller versions (EMKITS) will be used to launch unmanned aerial vehicles (UAVs) from mobile or fixed installations.

The MV ALIM can produce more than 230 kN of thrust, the tests showed. Graham Bellamy, senior engineering leader at GE Power Conversion, Naval, believes that in terms of thrust density, this is the most powerful single linear motor ever energized.

"The tests on the MV ALIM are the culmination of more than a decade of



substantial investment and development in EMCAT," he said. "Stall testing satisfied all major test objectives of this new MV LIM. Thousands of launches have been proven previously on the smaller EMKIT variant, which allows aircraft weighing up to 11 tons at speeds of up to 50 m/s to be launched. Smaller aircraft can be accelerated to speeds of up to 120 m/s."

The new EMCAT MV ALIM now enhances this capability, providing launch options for a wider range of aircraft take-off weights, ranging from 50 kg to more than 32 tons. The unique modular design of the machine frames, together with the pulsed power supply, conversion, and switching systems, provide scalable launch track lengths to suit various maximum aircraft launch weight capacities and launch platforms—effectively tailoring runway length as required. The extensive

use of commercial, off-the-shelf equipment has helped contain costs while increasing availability and technology readiness levels.

For more information, visit [www.genewscenter.com](http://www.genewscenter.com).

## Lack of funding affects USS Lincoln refueling and overhaul

The aircraft carrier USS Abraham Lincoln (CVN 72) refueling complex overhaul (RCOH) will not start due to a lack of funding, the Navy said.

Lincoln was expected to move to Newport News shipyard next week to begin the overhaul. However, as a result of the fiscal constraints resulting from the ongoing continuing resolution (CR), the contract for the refueling complex overhaul (RCOH) has not been issued to Huntington Ingalls Industries, Inc.

Lincoln will remain pierside at Naval Station Norfolk until sufficient funding is received to start the execution of the RCOH. In the meantime, the ship's Sailors continue to conduct maintenance.

In their 50-year life spans, one RCOH is scheduled for the midpoint of

**DEEP OCEAN**  
ENGINEERING

- Power
- Performance
- Easy to Deploy

**Visit us at  
Ocean Business 2013  
Booth W4**

# TRIGGERFISH T4N ROV

...WHEN SIZE,  
PERFORMANCE AND RELIABILITY MATTER

DOE, INC. 2528 Qume Drive, Ste 11 San Jose, CA 95131 USA Tel: 408-436-1102 Fax: 408-436-1108 [www.deepocean.com](http://www.deepocean.com) [sales@deepocean.com](mailto:sales@deepocean.com)

an aircraft carrier's service life. Lincoln was commissioned 23 years ago on 11 November 1989.

The impact of postponing CVN 72's RCOH is three-fold:

- The time scheduled for the RCOH will have to be lengthened because the overhaul won't begin when it was expected;
- Delayed redelivery of Lincoln to the fleet; and
- Impacts to industry (takes away money/jobs and can delay subsequent scheduled availabilities).

Cancelling or delaying maintenance creates a significant backlog of deferred maintenance and affects future year schedules and costs as well as future readiness. The delay in Lincoln's RCOH will affect other carrier work. Because of the short time available between sequential dockings, the delay will also result in day-for-day impacts to the defueling of the recently inactivated Enterprise (CVN 65) and the start of USS George Washington's (CVN 73) RCOH.

A yearlong CR impacts funds for fuel, parts, ship and aircraft repairs, base operations, maintenance for buildings, roads and runways, and salaries for our government employees and contractors.

The fiscal uncertainties created by not having an appropriations bill and the measures the Navy is forced to take as a result place significant stress on an already strained force and undermine the stability of a fragile industrial base.

### New waterjets could propel LCS to greater speeds

The Navy's fifth Littoral Combat Ship (LCS), Milwaukee, will be the first to benefit from new high-power density waterjets aimed at staving off rudder and propeller damage experienced on high-speed ships.

The product of an Office of Naval Research (ONR) Future Naval Capabilities (FNC) program, the waterjets arrived last month at the Marinette Marine shipyard in Wisconsin where Milwaukee (LCS 5) is under construction.

"We believe these waterjets are the future," said Dr. Ki-Han Kim, program manager in ONR's Ship Systems and Engineering Research Division. "Anything that we can do to keep ships ready to go will ultimately benefit our warfighters."

Chief of Naval Operations Adm. Jonathan Greenert's 2013-2017 Navigation Plan calls for fielding improved ships to support counter-

rorism and irregular warfare missions at sea and ashore. The LCS will play a big role in the Navy's plan as a modular, adaptable vessel for use against diesel submarines, littoral mines, and attacks by small surface craft.

Developed by Rolls-Royce Naval Marine in Walpole, Massachusetts in collaboration with ONR and Naval Surface Warfare Center, Carderock Division, the new Axial-Flow Waterjet Mk-1 can move nearly half a million gallons of seawater per minute, providing more thrust per unit than current commercial waterjets. Four of the new waterjets will propel the LCS to speeds greater than 40 kts.

Researchers believe the smaller, more efficient waterjets will help the LCS avoid excessive maintenance costs associated with cavitation — a phenomenon that occurs when changes in pressure create air bubbles on rotating machinery, such as marine propellers. Repeated occurrences can cause whole chunks of metal to wear away, leading to frequent repairs and replacements.

For more information, visit [www.onr.navy.mil](http://www.onr.navy.mil).

### Exercise Cobra Gold

The opening ceremony for Exercise Cobra Gold 2013 (CG 13) in Chiang Mai province, Thailand, marked the beginning of the 32nd iteration of the largest multinational exercise in the Asia-Pacific region.

Service members from 15 nations attended the ceremony and are participating in CG 13 to develop greater interoperability among forces, improve relationships, and further develop the ability to solve regional challenges.

The event was presided over by a delegation of Thailand and U.S. leaders, all expressing their excitement about the continued success of Cobra Gold.

The exercise, which ended 21 February 21 improved the forces' capabilities to plan and conduct combined-joint operations and provide an opportunity to build relationships and improve interoperability across the range of military operations.

Cobra Gold is designed to advance regional security and ensure effective response to regional crises by exercising a robust, multinational force of nations sharing common goals and security commitments in the Asia-Pacific region.

For more information, visit [www.mcipac.marines.mil](http://www.mcipac.marines.mil).

**Surviving this intolerant environment...**



**...demands very exacting tolerances.**

For leading oceanographic equipment manufacturers, lightweight, impervious, non-conductive ceramic is the clear choice for cells packed with delicate satellite transmitters and set afloat in this unforgiving environment. And for over 20 years, these companies have chosen Ceramco for our assurance that each cell is free of cracks and machined to create a perfect seal between cavity and cover.

If your next ceramics application can't tolerate anything less than superior quality and responsiveness, call Ceramco.



**CERAMCO, INC.**

CUSTOM TECHNICAL CERAMICS

CELEBRATING 30 YEARS IN BUSINESS

AN ITAR REGISTERED MANUFACTURER

1467 East Main Street, Center Conway, NH 03813 USA

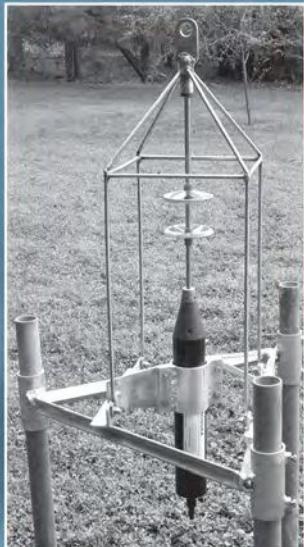
Phone (603) 447-2090

[www.ceramcoceramics.com](http://www.ceramcoceramics.com)

# NOBSKA: The Perfect Current Meter

We at **NOBSKA** realize that there isn't a perfect Current Meter. If anyone tells you there is, BEWARE!!!  
The perfect current meter does not exist, but the right one for you may exist.  
This Chart can help you select the right **NOBSKA** Current Meter.

Model	3-D Vel	3-D Compass	3-D Tilt	Battery	RS-232	Memory	Comment
MAVS-4SD	.	.	.		.		2000 m. Real Time
MAVS-4SL	.	.	.	.	.	.	2000 m. Logging
MAVS-4DD	.	.	.		.		6000 m. Real Time
MAVS-4DL	.	.	.	.	.	.	6000 m. Logging
MAVS-4WTG	.	.	.	.	.	.	Directional Wave/Tide
MAVS-4LAB	.				.		For Flume or Lab Tank
MAVS-4Analog	.	.	.	.	.	.	4 Chan Analog Output



## OPTIONS

Pressure, Temperature, Conductivity, Turbidity, RS-485, 90 Deg Right Angle Bent Sensor, Power and Comm Box, Mooring Frame, Sensor Guard Cage, Long Cable for Real Time Data Transmission

All **NOBSKA** Current Meters are Single Point Meters and utilize the Differential Travel Time measuring technique. This technique does not require scatterers in the water to make the measurement. A major benefit: you can measure the smallest currents in any kind of water—clear, turbid, fresh or saline. Another benefit is that the circular faired rings support the sensors, keep wake turbulence at a minimum and provide an ideal cosine response. Another major feature is the THROW-AND-GO operation whereby either you or we can preset the MAVS for its deployment schedule in the lab and then simply deploy it at the most convenient time.

Go to [www.nobska.net](http://www.nobska.net) and click on [WhyMAVS.ppt](#) to learn more



**NOBSKA**  
*Owned by Scientists - Serving Science*

Sales & Marketing: 27195 Neaptide Dr • Punta Gorda, FL 33983 • Tel: 941-766-0706 • Fax: 941-766-0707 • Email: [dan-schaaf@att.net](mailto:dan-schaaf@att.net)

Corp. Headquarters: P.O. Box 308, 12 Nobska Circle • Woods Hole, MA 02543 • Tel: 508-548-6450 • Email: [a.williams@nobska.net](mailto:a.williams@nobska.net)

<http://www.NOBSKA.net>

# Factors to Consider when Updating a Mooring Field with Synthetic Fiber Rope

*By: Skip Yale, Account Manager, Yale Cordage*

In the mid-1980s, Maine-based rope manufacturer Yale Cordage helped a marina in South Freeport, Maine install a new fixed dock system using Uniline™ to hold the docks in place instead of traditional chain moorings. Two years ago, one of the lines was removed and put through a break test to assess its strength after more than 25 years in the water. The test results showed that this specialty polyester rope retained over 80% of its original cataloged strength. Because the critical core fibers were protected by a latex coating and a neoprene liner as well as a durable braided jacket, the rope was not damaged and did not need to be replaced. In a metal chain application where the normal replacement cycle is just 3 years, the 30-plus-year longevity offered by a synthetic-like Uniline™ is a key differentiator. Its proven success led to its application beyond fixed dock systems.

All along the coastline, a great majority of marinas rely on mooring fields composed of chain moorings. Recently, harbormasters and mariners alike have expressed growing interest in updating these frameworks with high-tech synthetic lines. The ropes most commonly used for this purpose are polyester-based brands such as Uniline™ and high-modulus polyethylene (HMPE) versions like Unitrex. Durability, functionality, longevity, and cost are all factors that can prompt a switch, and it is important to understand exactly how each of these areas will be affected by moving to one option versus the other.

One of the most lauded advantages of a traditional chain mooring system is its proven resis-

tance to external forces. Early generations of nylon or polyester marine rope were known for losing strength to UV exposure, salt, dirt, grit, mussels, sea slugs, and even human intervention and, consequently, were not considered a viable option compared with chain. By contrast, the newer marine ropes have protective external layers that defend the rope's core fiber from external damage, allowing today's PET and HMPE products to surpass not only their synthetic predecessors, but also their chain equivalents, both in resistance to abrasion and overall break strength.

Another benefit to the synthetic mooring systems is its impact on the environment. Synthetic systems employing a high elongation section allow for greater density of moorings; the result is a system that does not have a length of chain sweeping across the bottom. This method prevents consistent scraping of the seafloor, enabling sea life and vegetation to move and grow.

So what does all this cost? PET ropes cost roughly the same as metal chain, and HMPE ropes can cost twice as much; however, the longevity of a synthetic rope system significantly lowers the cost per year of that product. Since the life cycle of a chain option is only 3 years, the break-even point for an investment in HMPE comes in the fourth year; by the end of the rope's service life, the yearly cost is one-fifth that of the chain. After the initial investment of a new field design, synthetics allow for significant labor savings in the form of infrequent replacement and easier inspection, adding further value to a proposition that's already making waves.

# What's In Your Offshore Light Tower?



The leading manufacturer of  
Offshore Light Towers!

US Patent 7,988,343



Call for additional specifications and pricing:



800-925-4966

2306 Engineers Road  
Belle Chasse, LA USA 70037-1196  
[www.gulfengine.com](http://www.gulfengine.com)

# OFFSHORE INDUSTRY

## Offshore boom to boost equipment suppliers this year: Barclays report

Recent deepwater discoveries combined with a shortage of drilling vessels should make for a big year for offshore equipment supplies, according to a recent Barclays report.

Platform and rig builders are struggling to keep up with the demand for offshore drilling rigs, as exploration throughout the Gulf of Mexico, Brazil, and Africa continues to grow. And many offshore projects are moving from exploration to production, further increasing the demand for offshore equipment.

"We anticipate roughly 80 jack-ups and 50 floaters (drillships) will be delivered into the offshore market over the next 2 years and expect that relatively few of these units will displace rigs currently working," Barclays wrote.

About 40% of the 50 drillships have been contracted through 2014, a further indication of a growing demand for the equipment that will be needed for drilling. The increase in activity should shake loose additional financing, Barclays said, enabling service companies to make needed investments in additional drilling rigs.

## Obama nominates REI chief Sally Jewell for U.S. Interior secretary

Sally Jewell, a retail executive and former banker and oil company engineer, was nominated by President Obama to replace Ken Salazar as U.S. Secretary of the Interior. Her background won praise from conservationists and some industry groups, but her nomination drew skepticism from some Republicans.

"I look forward to hearing about the qualifications Ms. Jewell has that make her a suitable candidate to run such an important agency, and how she plans to restore balance to the Interior Department," said U.S. Senator Lisa Murkowski of Alaska, the top Republican on the Senate Committee on Energy and Natural Resources.

Jewell, 56, is currently chief executive of outdoor retailer REI. She worked for Mobil on oil fields in Oklahoma from 1978 through 1981, when she joined Rainier Bank, which was hiring engineers to help them understand how to go about making loans to oil companies. She

worked in banking for 20, staying with Security Pacific, which acquired Rainier Bank, until 1992, and working for WestOne Bank from 1992 through 1995, and for Washington Mutual from 1995 through 2000.

In 1996, Jewell joined the board of REI and in 2000 was named chief operating officer. In 2005, she succeeded Dennis Madsen as chief executive officer. She has sat on the boards of Premera, the National Parks Conservation Association, and the University of Washington Board of Regents. She helped found the Mountains to Sound Greenway Trust. In 2009, Jewell received the National Audubon Society's Rachel Carson Award for her leadership in and dedication to conservation.

## Australia's oil, gas wages highest in industry averaging \$171,000/yr

Australia's oil and gas workers enjoyed the highest average salaries in the industry in 2012 due to a skills shortage, with expatriates pocketing \$171,000 a year, according to a report prepared by Hays Oil and Gas Job Search.

Despite uncertain global economic conditions, wages in the oil and gas industry rose globally by 8.5% in 2012 to \$87,300, the study said, noting that follows an average increase of 6.5% in 2011.

"There would be few industries with such a track record of growth over the last few years in what has been, in the most part, an uncertain economic environment."

World oil production in 2012 grew by 2% from the previous year to 89.17MMb/d and is expected to increase 1% this year, according to the U.S. Energy Information Administration.

Expatriates in Norway came in second, according to the survey, conducted among more than 25,000 employees. Among local hires, Australians workers were also the highest earners, with an average wage of \$163,600. The average wage in the U.S. was significantly lower at \$123,800.

### In this Section

Offshore Industry Headlines	41
Upstream Oil & Gas	44
Underwater Intervention	58
Maritime Communications	64
Subsea Cables	68
Offshore at a Glance	74
Stockwatch	76

## Cyber attacks against industry to drive \$1.87B in security spending by 2018

As a highly critical sector, the oil and gas infrastructure should be one of the most secure, both physically and digitally. This is not the case, according to ABI Research.

A multi-billion dollar industry, trading one of the most valuable commodities on the market, is connecting its industrial control systems full of unpatched vulnerabilities to the Internet, where cybercriminals roam in all impunity, ABI learned, noting that these systems are poorly protected against cyber threats—at best, they are secured with IT solutions that are ill-adapted to legacy control systems such as SCADA.

These findings are part of ABI's Cyber Security Research Services, which include market data, research reports, insights, and surveys.

"The lack of appropriate security has already allowed a number of destructive cyber attacks to lay waste to some of the most high-profile companies in the industry," said Michela Menting, ABI's senior cybersecurity analyst.



"From Night Dragon to Shamoon, oil and gas companies have been the victims of sophisticated cyber threats since 2009. Many of these attacks have caused significant financial damages—and, yet, the industry is painstakingly slow in deploying proper cybersecurity measures adapted to the infrastructure."

The lax approach can also be dangerous. For example, illegal interception and modification of commands to pipelines could cause massive environmental disasters or even life-threatening situations. ABI calculates that cybersecurity spending on oil and gas critical infrastructure should pick up considerably in 2014 and reach \$1.87 billion by 2018. This includes spending on IT networks, industrial control systems, and data security; counter measures; and policies and procedures.

### Record year for global oil and gas deals in 2012: Ernst & Young study

With an average of more than four transactions announced every day in 2012, the oil and gas sector has remained one of the most active global sectors for mergers and acquisitions. According to Ernst & Young's Global Oil and Gas Transactions Review, oil and gas transactions recorded a staggering \$402 billion in 2012, representing a 19% increase compared to 2011's \$337 billion. It found that 92 transactions exceeded \$1 billion in value compared to just 71 in 2011. This was despite a marginal decrease in oil and gas transaction volumes from 1,664 deals in 2011 to 1,616 in 2012.

Upstream remained the most active segment, with \$284 billion worth of transactions accounting for 71% of total deal values. North America continued to be the most dominant region for activity, accounting for about 52% of the upstream transactions volume. However, within North America, transaction volumes were supported by a rapidly growing Canadian deal market while the U.S. market contracted.

Transactions values in the downstream segment were flat at \$42 billion, with volumes also fairly stagnant at 162 transactions, 6% lower than 2011. The decline is particularly evident in the United States and South America, where transaction volumes have reduced by eight and seven transactions respectively.

The number of transactions in the midstream segment in 2012 decreased by 19% from 111 in 2011 to 90 in 2012. The reported deal value decreased significantly, from \$87.3 billion in 2011 to \$50.3 billion in 2012. North America accounted for 78% of all midstream transactions, but this was a decline from the 83% dominance of the region in 2011.

The fastest-growing segment for transaction volumes was oilfield services, repeating last year's healthy growth. Total oilfield service volume of 212 deals was up almost 10%. The aggregate deal value in 2012 dropped by a third to \$26 billion.

### BP faces new \$34B claim from states for Gulf of Mexico oil spill

BP is facing a new \$34 billion claim from local and southern State governments in the United States, including Louisiana and Mississippi, for financial losses and property damage incurred as a result of the Deepwater Horizon oil spill in the Gulf of Mexico. The States have been affected by the pollution that took place after the explosion on the BP-operated Macondo well in April 2010, which



Deepwater Horizon ablaze in U.S. Gulf

killed 11 people, reported The Guardian.

BP said the method adopted to calculate the claims was "seriously flawed" and that it would not have to make additional financial provisions. However, the company admitted to being hit by a \$4.1 billion "charge" in the last quarter of 2012, taking the total amount it has set aside to \$42.2 billion.

The U.S. District Court for the Eastern District of Louisiana recently approved BP's plea to resolve all Federal criminal charges against the company, in relation to the Deepwater disaster. BP agreed to pay \$4.5 billion in a settlement with the Department of Justice last November and pleaded guilty to 14 criminal charges.

The company may have to shoulder further financial implications as it prepares for a final civil trial, which was scheduled to begin February 26, and was trying to reach an out-of-court settlement to avoid a court trial.

### U.S. judge approves Transocean Ltd.'s 400M criminal settlement

A Federal judge in New Orleans has approved Transocean Ltd.'s \$400 million criminal settlement with the U.S. Justice Department over the 2010 Deepwater Horizon accident, the company said, noting that the company pleaded guilty to one criminal misdemeanor violation of the Clean Water Act for failing to properly monitor the well at the time of the deadly blowout in the U.S. Gulf.

Transocean, owner of the drilling rig that exploded, will pay a \$100 million fine within 60 days and \$150 million each over the next 3 to 5 years to the National Fish and Wildlife Foundation and the National Academy of Sciences for oil-spill response and habitat rehabilitation. Transocean also agreed to pay \$1 billion in fines for civil violations of the Clean Water Act, but that settlement had to be approved separately by another judge. The settlement agreements were announced in early January.

### Nexen-CNOOC's \$15.1B deal clears final big hurdle with U.S. approval

The U.S. Committee on Foreign Investment reportedly approved CNOOC Ltd.'s \$15.1 billion acquisition of Nexen, clearing the last significant hurdle for China's biggest overseas acquisition to date. Canada and Britain also approved the deal. U.S. and British authorities needed to sign off because Nexen controlled significant assets in the Gulf of Mexico and the North Sea.

The U.S. approval came after the companies agreed to resubmit their application in front of the committee, a multi-agency group in Washington that vets significant foreign investment in the United States.

The approval marks a significant milestone for CNOOC, which had pushed hard into the U.S. energy patch in the middle of the last decade, bidding for Unocal Corp. However, that deal ultimately died amid political opposition in the United States, and Chevron Corp. eventually bought the company.

### Avincis Group receives first of 16 new Sikorsky S-92 helicopters

Avincis Group received the first of its record order of 16 new Sikorsky S-92 helicopters. The order, placed in December 2011, is the largest single purchase of S-92s ever made.

Known for their robust design, safety features and performance, the new heli-



copters will be used by Avincis' subsidiaries around the world to provide transportation for offshore oil and gas workers and for search and rescue work. Headquartered in the UK, the Group provides central resources, global standards and systems, and expertise to its 13 local operating companies. The S-92s, which will be delivered over the next 3 years, will form part of Avincis' global fleet of around 350 rotary and 50 fixed-wing aircraft that fly from 295 bases in ten countries.

All 16 S-92s will feature equipment and systems necessary for operations in the North Sea region in accordance with the European Aviation Safety Agency's requirements. These include five flotation devices, two auto-deployable life rafts, satellite flight following communications, and a main rotor blade ice protection system. The S-92 was expected to reach the 500,000 flight hours milestone in February, the company said.

# EnerMech weighs up African expansion with \$4.7M deal

EnerMech Ltd. has stepped up its presence in the African oil and gas sector with the \$4.7 million acquisition of heavy load testing company Water Weights International SA (Pty) Ltd. The mechanical engineering group will use Water Weights International's (WWI) strategic relationships to accelerate growth of its main business lines in South Africa and in key East and West African countries.

EnerMech will invest up to \$31.6 million in its African operations over the next 3 years and expects its workforce to grow to 250 in the same period.

EnerMech managing director Doug Duguid said the deal was a perfect fit with the company's existing cranes and lifting division and would provide a platform for swift expansion across the African continent.

"In light of the large number of significant oil and gas discoveries in West and East Africa, we believe there will be many opportunities to introduce and establish our business lines, including cranes and lifting, valves, hydraulics, process, pipeline and umbilicals, equipment rental, and training services," Duguid added.

Cape Town-based WWI specializes in the proof load testing of cranes, lifting equipment, and structures and serves the marine, shipping, engineering, industrial, and offshore sectors. Its water-filled proof load bags are viewed as a more economical and safer method of load testing than traditional solid weight forms of testing.

The deal is not connected to UK-based Water Weights Ltd., which was formed in Aberdeen in 1979, and for whom WWI has acted as representatives in Cape Province for almost 30 years.

The new entity will be known as EnerMech Water Weights SA (Pty) Ltd., and WWI managing director Neil Scheibe will remain in post, ensuring continuity of business relationships and service. Twenty-five staff will transfer to the new company, which will relocate to larger premises near to Cape Town's main container terminal in Paarden Eiland.



*EnerMech acquisition Water Weights International specialize in proof load testing of cranes and lifting equipment*

## Offshore drilling in UK jumped 33% in 2012: Deloitte group

Drilling activity offshore the UK last year rose 33%, according to the latest survey by Deloitte's petroleum services group. Sixty-five exploration and appraisal wells were drilled across the UK continental shelf, up from 49 the previous year.

The upsurge, Deloitte said, is in large part due to high oil prices and various incentives phased in by the government to stimulate fresh activity.

Last year also brought a surge in offshore asset wheeling and dealing, with 80 transactions completed in the UK sector, up 30% from the previous year total. About 43% were outright purchases of fields, compared with only 14% of the 2011 UK transactions. This is another indicator of rising investor confidence,

according to Deloitte.

Interest in UK field development reached a 10-year high. The Department of Energy and Climate Change granted approval for 21 new field projects and 8 projects that involve investment in older fields for redevelopment. More than 90% of new field developments in the UK were eligible for tax allowances following measures introduced in the 2012 budget last March.

"North Sea oil and gas production may have passed its previous zenith, but in the recently announced tax reliefs, the UK government has what appears to be a useful strategy to manage the decline in North Sea's reserves," said Derek Henderson, energy partner for Deloitte in Aberdeen, Scotland.

"This creates what every industry sector needs—confidence—and invest-

ment in developing new fields and delivering production will benefit from the kind of environment which we are currently experiencing."

## U.S. is turning into energy 'superpower': API

A revolution in oil and natural gas development hasn't just spurred economic growth and new job creation in the United States, it's turning the nation into an "energy superpower," according to the American Petroleum Institute (API).

"There is a new energy reality of vast domestic resources of oil and natural gas brought about by advancing technology," Karen Moreau, executive director of API's New York State Petroleum Council, told reporters 4 February in Washington.

The United States produces more natural gas than any nation in the world, she said, and its daily production of more than 6 MMbbl is the third largest in the world.

For the first time in generations, "we are able to see that our energy supply is no longer limited, foreign, and finite; it is American and abundant," Moreau said.

That has helped to put the United States "in a position to become a global superpower on energy," she said, and the nation is well on its way to returning to its position of "undisputed global leader in energy."

"If we seize that opportunity now and support it with sound policy decisions on taxes, regulations, and access, we can lead on energy for decades and realize the economic and energy security benefits of that leadership," she said.

## Steven Chu stepping down as Obama's Energy Dept. secretary

Energy Secretary Steven Chu, who oversaw expanded Federal support for low-carbon energy, said he was stepping down. Chu, in a letter to Energy Department (DOE) employees, said he would remain with the department at least until the end of February, and perhaps beyond "so that I can leave the Department in the hands of the new Secretary."

The Nobel Prize-wining physicist took the DOE helm shortly before the agency received \$35 billion under the 2009 stimulus law. Grants and loans to help specific green-energy companies brought big political headaches for Chu and President Obama when a handful of them failed or struggled—in particular, the 2011 collapse of the solar panel manufacturer Solyndra, which received a half-billion-dollar federal loan in 2009.

**McDermott wins platform and flowline contract**  
 McDermott International, Inc. said its Indonesian subsidiary was awarded a contract by PC Muriah Ltd., an affiliate of Petronas Carigali Sdn. Bhd., to develop offshore surface facilities and an infield flowline for the Kepodang Field, located about 180 km northeast of Semarang, Central Java, in water depths of up to 70 m. The award includes the procurement, construction, installation, and commissioning of a 5,802-t central processing platform; a 1,298-t wellhead platform; a 2.7-km, 10-in. diameter infield flowline; and installation of remote control facilities at the onshore receiving facilities. Transportation and installation will involve a diverse range of vessels from the McDermott fleet, including a 300-class float-over barge that will install the central processing platform's 3,078-t topsides. Project completion, including hookup and commissioning, is expected to be in the fourth quarter of 2014.

**Technip awarded contract for the Gannet field**  
 Technip was awarded by Shell U.K. Ltd. an engineering, procurement, installation, and construction contract for the Gannet F Reinstatement project, located in the North Sea, 180 km east of Aberdeen, at a water depth of 95 m. The contract concerns the replacement of the Gannet F flowline at the Gannet Alpha Platform and covers the fabrication and pipelay of an 11.8-km pipe-in-pipe, installation of a 4.5-in. gas lift pipeline, and trenching and installation of an 11.9-km umbilical. Technip's operating center in Aberdeen, Scotland will execute the contract, which is scheduled to be completed in the second semester of 2013. The group's spoolbase in Evanton, Scotland will fabricate the pipe-in-pipe and DUCO Ltd.; Technip's wholly owned subsidiary in Newcastle, England will manufacture the umbilical. Technip's pipelay vessel, Apache II, will be used for the offshore campaign.

**Subsea 7 gets \$140M contract offshore Mexico**  
 Subsea 7 S.A. announced an award to its Mexican joint venture from Pemex valued at approximately \$140 million. The contract comprises the engineering, fabrication, and installation of a 16-km pipe, two slug catchers, and two cantilever structures for the Line 60 Project in the Bay of Campeche in the Gulf of Mexico. The contract is the first award to the joint venture. Offshore operations were due to commence in the first quarter of 2013, with pipelay activities being conducted in third quarter with the Seven Borealis.

**INPEX taps Wood Group for Abadi FEED contract**  
 INPEX Masela Ltd. has contracted Wood Group Kenny to perform the front-end engineering and design for the Abadi LNG project offshore Indonesia. The \$8.6 million contract covers the major subsea production facilities for the project. First phase production is set at 2.5 mm metric tons/yr of LNG produced through an FLNG plant on the field in Masela block, Arafura Sea, Indonesia. Wood Group Kenny in Indonesia, with support from Perth and Melbourne, Australia, will address the subsea, umbilical, riser, and flowline systems. The FLNG itself will be part of a separate FEED contract.

## Marubeni takes big stake in Tubular Bells; startup on schedule for Q2 2014

Japan's Marubeni Corp. has acquired a 49% stake from Oklahoma-based Williams Partners LP in an oil and gas platform project in deepwater Gulf of Mexico. The floating spar platform, which is part of the Tubular Bells field being developed by Hess Corp. and Chevron Corp., will process 60,000 bbls of oil and 135 MMcf/day of gas a day.

The two companies also plan to partner in petrochemical projects, which would use shale gas extracted in North America, according to a statement—that didn't give a value for the transaction.

Meanwhile, development of the Tubular Bells field is said to be proceeding on schedule, with the drilling campaigns under way and construction of the spar platform ongoing. Project operator Hess Corp. last month provided an update at the Topsides conference held in Galveston, Texas.

The drilling program began last year, and the Stena Forth drillship has been onsite since April. It had drilled nine topholes and was drilling the second well. Construction of the spar platform was underway in Texas and Louisiana, with the engineering and construction of the project being conducted almost entirely within the United States.

The initial subsea development will be made up of two drill centers connected to three production wells and two water injection wells. There is a possibility that two additional production wells and one additional water injection well may be added to the field development.

The subsea facilities will be tied back to the floating production spar (FPS), with a 50-person accommodation capacity. Hess will initially operate the production facility. In addition to 60,000 bbls/day of oil and 135 MMcf/day of gas production, the spar platform is designed to handle 40,000 bbls produced water treating capacity and 60,000 bbls of water injection per day. Export from the FPS will be through Williams' existing pipeline systems, including its 12-in. oil line and its 12-in. natural gas line. First production is planned for the second quarter of 2014. The primary target lies at about 24,000 ft reservoir depth below about 10,000 ft of salt.

The Tubular Bells project was sanctioned in 2011, with Hess having a 57.14% working interest as operator. Chevron has the remaining 42.86% interest. The discovery was made in October 2003. The egg-shaped, deep Miocene discovery spans parts of blocks 682, 683, 724, 725, 726, and 727 of Mississippi Canyon. The discovery well, located in a water depth of about 4,297 ft, was drilled to a total depth of around 31,128 ft. The field contains recoverable reserves of more than 120 million boe.



Stena Forth at work in U.S. Gulf



production is planned for the second quarter of 2014. The primary target lies at about 24,000 ft reservoir depth below about 10,000 ft of salt.

## Gulf of Mexico



### Central Gulf of Mexico lease sale to be held 20 March in New Orleans

Central Gulf of Mexico Lease Sale 227 has been scheduled for 20 March in the Mercedes-Benz Superdome in New Orleans, Louisiana. The sale will offer 38.6 million acres offshore Louisiana, Mississippi, and Alabama for oil and gas exploration and development.

Sale 227 encompasses 7,299 blocks located from 3 to about 230 mi offshore in water depths ranging from 9 to more than 11,115 ft.

The sale will be the second offering under the Obama administration's Outer Continental Shelf Oil and Gas Leasing Program for 2012-2017 and the first of five Central Gulf of Mexico lease sales that will be held under the program.

### BP may not bid in next U.S. Gulf licensing round: CEO Bob Dudley

BP may decide not to bid for oil leases in the 20 March Central Gulf of Mexico sale, because the company already holds a large number of tracts in what it considers to be one of its most important regions, chief executive Bob Dudley told reporters 5 February.

"We didn't, as a matter of course, bid on the last round of leases in the Gulf and may not in the next one. We have such a large position in the Gulf of Mexico that it's questionable how much we want to add to that," Dudley said.

BP is one of the largest producers of oil and gas in the U.S. Gulf and one of its most active explorers. The region is a priority for BP, which sees it as one of the main drivers of medium- and long-term growth for the company.

However, in November, the Obama administration temporarily blocked BP from obtaining new contracts with the U.S. government, citing a "lack of business integrity" that resulted in the Deepwater Horizon oil spill in April 2010. The suspension prevents BP from acquiring new leases or other government contracts, such as supplying fuel to the U.S. military, until BP can prove it meets Federal business standards, the Environmental Protection Agency said in November.

### Pulse wins contract to monitor Bigfoot platform in U.S. Gulf

Pulse Structural Monitoring, Inc. has won a major contract with Chevron USA Inc. to provide an integrated monitoring system for the Big Foot extended tension leg platform (ETLP) in the Gulf of Mexico. Monitoring the Big Foot ETLP will require a combination of components to ensure the integrity of the tensioner assembly, the tensioner, and the top tension risers, the company said.

Pulse's proprietary INTEGRI range, a line of modular sensing instrumentation tools, will be used for offshore monitoring, including integrated real-time data processing and transmittal to shore.

Pulse has a strong track record of reliability with more than 500 subsea applications worldwide and has logged more than two million operational hours. The INTEGRI range has a proven track record in severe deepwater environments like that of the Gulf of Mexico.



**Marine Sciences and Environmental Services**


**USV**  
*Unmanned Surface Vessel*

- Ideal for remote, inaccessible, contaminated, and hazardous bodies of water
- Portable and easily shipped – can be operated by a two-person team worldwide
- Real-time data collection and viewing and on-board computer for client software
- Ethernet and serial connections allow interfacing of a multitude of survey sensors

**Credibility • Experience • Performance**

*CSA provides high-quality technical and scientific services to energy, government, academic, and commercial clients*

  
**CSA**  
 CSA Ocean Sciences Inc.  
 Phone: 772-219-3000  
[www.csaocean.com](http://www.csaocean.com)

### Signet shipbuilding delivers new 140ft by 40ft heavy deck barge

In May 2012, Signet Maritime Corp. commenced construction on a newbuild 140-ft by 40-ft deck barge, SIGNET 141, at its Signet shipbuilding and repair division. The barge, designed by Farrell and Norton Naval Architects of Newcastle, Maine, will provide an additional asset to assist customers in the growing Port of Pascagoula, where it will be based for charter throughout ports in the U.S. Gulf. The barge has an LOA of 140 ft, beam of 40 ft, molded depth of 9 ft, a light draft of 1 ft 5 in. and will handle 800 long tons of cargo with deck strength of 2,000 pounds per square foot.

This improved design will afford Signet the opportunity to assist with movement of cargo in the port and surrounding areas. The SIGNET 141 was christened on 20 December 2012 and represents a continuation of added strength designs built at the Signet shipbuilding and repair facility in Pascagoula.

"We are pleased to have committed this contract to our shipyard facility in Pascagoula, and they have once again proven their reliability and quality construction practices in building superior

marine vessels," Signet president J. Barry Snyder said. "I was in the shipyard almost every day during construction, and I can report first-hand that the attention to detail and adherence to strict quality procedures is the key reason for Signet's confidence in our facility."

### Crowley christens new U.S.- flag tanker 'Florida' in Philadelphia

Crowley Maritime Corp. recently christened its newest tanker, Florida, at the Aker Philadelphia Shipyard and will soon put the 330,000-barrel ship to use in the U.S. GoM for a major energy customer. The U.S.-flag vessel is the second of two American built, operated, and crewed tankers Crowley purchased last year from Aker.

The Florida, which will provide 50 American seagoing and shore-side jobs, will soon be placed into service delivering domestic oil to U.S.-based refineries. The tanker Pennsylvania, which was purchased from Aker and delivered in September, is currently at work in the U.S. Gulf.

Both tankers are capable of carrying 330,000 barrels of petroleum products



Tanker 'Florida' headed to U.S. Gulf

and chemicals. The Veteran Class design is based on the well-proven as-built Athenian Class 46,000 DWT product tanker from Hyundai Mipo Dockyards. The standard design was changed to conform to U.S. registry and U.S. coastwise trade requirements. The U.S.-flag vessels are the 13th and 14th in the Veteran Class built at Aker. The design provides Crowley customers with ABS-classed vessels that have been thoroughly tested and refined for performance and reliability. With a length of 183.2 m, a breadth of 32.2 m, and a depth of 18.8 m, the tankers come in at 45,800 DWT with a draft of 12.2 m. Powered by the first Tier II large-bore engines, MAN-B&W 6S50MCs, the speed of the Pennsylvania and the Florida is expected to average 14.5-plus kts.

# Submarine Cable World™

Daily Newsfeed • Industry Analysis • Consulting Services

**Subscribe to the Submarine Cable World Daily NewsFeed™**

**The 2013 Report is Available NOW! Order today!**

**Delivered electronically every weekday, the Submarine Cable NewsFeed™ includes the latest developments in:**

- Submarine Fiber Optic Communications
- Power Cables
- Marine Cable Installation & Maintenance Services
- Regulation of Cables
- International Telecom Carrier Activities
- International Internet Markets

**Order the 2013 Radar Screen Report**

- Review of the contract awards for 2012
- Forecast for demand for new systems from 2013-2018
- Analysis of the major factors impacting the submarine cable market, including Internet demand, availability of financing and implications of the financial crisis
- A listing of 200 submarine, fiber optic, & power cable projects under contract during 2012 or planned for the future

**Subscribe and order at [www.subcableworld.com](http://www.subcableworld.com)**  
[www.subcableworld.com](http://www.subcableworld.com) • 772 219-3067  
Published and distributed by TSC



### Seadrill orders high-end jack-ups from Dalian Shipbuilding for \$230M

Seadrill has agreed with Dalian Shipbuilding Industry Offshore for the construction of two high-spec jack-ups. Both are expected to be delivered during the first half of 2015, at an overall estimated cost of \$230 million. That includes project management, capitalized interest, drilling and handling tools, spares, and operation preparations.

The rigs will be based on the F&G JU2000E design, with a water depth capacity of 400 ft and drilling depth capability of 30,000 ft. In addition, Seadrill has fixed-price option agreements to build a further two units of the same design at Dalian. These would be delivered later in 2015.

"The premium jack-up market continues to demonstrate strength as evidenced by increasing day rates and utilizations...." John Fredriksen, chairman and president of Seadrill, said, noting that currently 312 jack-ups or 65% of the total fleet of 483 jack-ups are older than 25 years. He said the two new firm orders will increase Seadrill's fleet of modern jack-ups to 25 rigs with an average age of 3 years.

### Archer wins modular rig contract to abandon Heimdal field wells

Global oil field service provider Archer said it has been awarded a contract by Statoil to construct an advanced modular rig to permanently plug and abandon 12 gas wells on the Heimdal field in the Norwegian North Sea.

The \$115 million contract, which includes the startup, operating, and decommissioning phases to undertake the plugging and abandonment operations on a modular rig, will be the first for the company and the industry as a whole, the company said.

The Heimdal rig is operated by Statoil, with Total, Centrica, and Petoro also participating in the project.

Archer will construct the rig jointly with Germany-based rig manufacturing firm Max Streicher in compliance with the existing NORSOOK regulations.

The company will design the modular rig based on its first modular rig, Archer Emerald, which is currently operating for Shell Todd (STOS) in New Zealand on a production drilling contract. The modular rig package will be light in weight and more compact to reduce the platform size and the size of the drilling crew as well as cut construction costs.

Modular rigs are also believed to perform most drilling operations that are

generally carried out with a platform, including completions, plugging, and abandonment. Archer said the rack and pinion-driven modular drilling and intervention rigs will be a new concept for the North Sea.

As part of the contract, the company is required to complete the construction within 34 months, with four option periods of 3 months each, while the rig is slated to begin operations in the second half of 2014.



Stateoil's North Sea Heimdal field



**HydroVolt**  
Underwater Electrical Connectors

HydroVolt is the most rugged and reliable low-cost underwater electrical connector in the world!



[www.ak-ind.com](http://www.ak-ind.com)

AK Industries  
3115 E. Las Hermanas St., Rancho Dominguez, CA 90221  
Phone: 310-762-1600 | Fax: 310-762-1616

## Yale's Unitrex<sup>TM</sup> XS Max Wear

Our newest parallel core rope is 3 times stronger, size for size than our Uniline. It stretches only to 1 1/2 percent at break, and eliminates about 80% of the elasticity you have with Polyester ropes at their working loads.

Unitrex's core is Spectra® fiber while its outer layers are the same as Uniline, durability is assured. It's spliceable at 100% of catalog strength, and really tough as nails.



## Unitrex XS-8<sup>TM</sup>

This cable consists of eight Unitrex XS ropes plied together to form an 8-strand plaited cable. Unitrex XS-8 is easily spliced with a straight forward tucking procedure. Strengths available to 1.2 million pounds.

## Yale Cordage, Inc.

77 Industrial Park Road  
Saco, Maine 04072  
Tel: (207) 282-3396  
Fax: (207) 282-4620  
[www.yalecordage.com](http://www.yalecordage.com)



### Norway awards 51 new offshore production licenses to 40 companies

Norway's Ministry of Petroleum and Energy has awarded 51 new offshore production licenses to 40 companies.

Forty-seven companies applied for acreage under the Awards in Pre-defined Areas (APA) 2012, which covered 75,917 sq. mi, an increase of 3,986 sq. mi over the previous APA offering.

Thirty-four of the new concessions are in the North Sea, 14 in the Norwegian Sea, and 3 in the Barents Sea. Fifteen of the permits are add-ons to existing production licenses, and another two are divided stratigraphically.

Twenty-three of the successful bidders will be offered operatorships. Petoro will hold shares in 17 of the licenses as manager of the State's Direct Financial Interest.

"Interest in available acreage in this year's APA was record-high, with the greatest interest in the North Sea and

significant competition for some areas," said Sissel Eriksen, NPD exploration director. "Some players have submitted very interesting concepts."

There is a requirement for acquisition of new seismic data in eight areas, with drill-or-drop conditions within 1 to 3 years on other licenses.

A few companies have issued details of their awards. Statoil has gained interests in 14 production licenses. These consist of eight in the northern Norwegian North Sea (five as operator) close to last year's King Lear discovery; four in the Norwegian Sea (one as operator) near the Heidrun, Trestakk, and Ormen Lange fields; and two in the Barents Sea (one operated) in the Goliat area and on the Finnmark Platform.

Lundin Norway gained four licenses in the North Sea, two in the Norwegian Sea, and one in the Barents Sea.

Companies awarded operatorships are: Bayerngas Norge (1), BG Norge (1), Bridge Energy (1), Dana Petroleum Norway (1), Det norske oljeselskap (3), DONG E&P Norge (1), E.ON Ruhrgas Norge (4), Edison International Norway Branch (1), ENI Norge (1), Faroe Petroleum Norge (3), GDF Suez E&P Norge (2), Lundin Norway (4), Maersk Oil Norway (2), OMV Norge (2), PGNiG Norway (1), Premier Oil Norge (1), Rocksource (1), RWE Dea Norge (2), Spring Energy Norway (1), Statoil Petroleum (8), Suncor Energy Norge (2), Talisman Energy Norge (2), Total E&P Norge (5), Valiant Petroleum Norge (1), VNG Norge (4), and Wintershall Norge (4).

### Harvest finds 65 ft of presalt oil pay in Dentale offshore Gabon

A sidetrack well at the Harvest Natural Resources-operated Dussafu license offshore Gabon has encountered 65 ft of oil pay in the presalt Dentale reservoir. The Dussafu Tortue Marin-1ST1 appraisal well was drilled to a total depth of 11,385 ft in 380 ft water depths about 1,800 ft from the DTM-1 discovery well.

Samples from the sidetrack well indicated "better reservoir character and an apparent similar fluid level to that encountered in the (DTM-1) well," Harvest said. A stuck downhole tool forced the company to terminate logging operations before it could collect the pressure data needed to confirm connectivity with the previously announced Dentale discovery.

But the addition of the Tortue oil discovery "extends the proven fairway for stacked presalt reservoirs and has demonstrated the exploration potential for the out-

board part of the Dussafu license," Harvest said. The block partners are evaluating development options for the block, which includes the 2011 Ruche oil discovery.

### Total to enter deepwater project off Cyprus with seismic surveys

Total said it signed two production sharing contracts (PSCs) for blocks 10 and 11, with the Republic of Cyprus. The PSCs were awarded as part of the second offshore exploration licensing round, launched by the Cypriot government in 2012. The licenses extend over 2,572 sq. km and 2,958 sq. km, respectively, southwest of Cyprus in water depths ranging from 1,000 to 2,500 m. The exploration program will begin with seismic surveys.

"Each block is targeting a different play," said Arnaud Breuillac, senior vice president, Middle East at Total Exploration & Production.

**Exploration****Rosneft, ExxonMobil broaden Arctic shelf joint venture**

U.S.-based ExxonMobil Corp. and Russia's OAO Rosneft agreed to broaden their joint venture by adding seven more licenses to develop oil and gas resources on Russia's Arctic shelf and mull a proposal to export liquefied natural gas from the Russian Far East.

The companies also signed a separate deal to give State-controlled Rosneft the option of buying a 25% interest in Exxon's Point Thomson Unit, which Exxon says is estimated to hold a quarter of the known natural gas resources buried beneath Alaska's North Slope. Exxon owns 62.5% of Point Thomson.

The deal further strengthens the budding relationship between two of the world's largest oil companies while competition to unlock the Arctic's vast trove of oil and gas wealth heats up.

**Providence Resources cites oil potential offshore Northern Ireland**

Providence Resources has reported strong oil potential in its licenses offshore Northern Ireland.

The company has 100% operated

interests in the P1885 and PL 5/10 concessions in the Rathlin basin.

Last year, Bell Geospace performed a full tensor gradiometry (FTG) and magnetic airborne survey over the acreage. Initial analysis has revealed the presence of five FTG anomalies that may be prospective for exploration.

The primary anomaly is the Polaris prospect in the Rathlin Sound just off the northern Irish coast, and coincident with a significant structural feature identified previously on 2D data.

It is also structurally on-trend with the Ballinlea-1 well drilled onshore in 2008, which recovered good-quality oil to the surface during testing.

Further processing of the new gravity data suggests that Polaris is a large structure that extends about 30 sq. km (11.6 mi). Providence says all elements of a working petroleum system in the basin, such as source, reservoir, and seal, have been proven in nearby onshore wells.

Polaris could hold in-place resources of 530,MMbbl, the company suggests, based on gravity and offset well data, and could be drilled from an onshore location starting in 2014.

**TGS starts 3D seismic acquisition survey 'Sunfish' offshore Liberia**

TGS has started acquisition of a 3D multi-client survey, Sunfish, which covers up to 3,012 sq. mi of acreage in the Harper basin offshore Liberia.

TGS is chartering the 12-streamer Polarcus Asima for this survey for approximately 6 months. Data processing will be performed by TGS and will be available to clients in 2013 fourth quarter, prior to the Liberia 2013 bid round, the company said.

The bid round likely will include 13 ultra-deepwater tracts. The National Oil Co. of Liberia reports that offshore there currently are 17 blocks, 12 of which are either under contract or in contract review.

"This survey provides excellent data coverage for the source prone, syn-rift, and early post-rift sequences in this highly prospective area offshore Liberia," said Stein Ove Isaksen, SVP Eastern Hemisphere for TGS. "TGS has been active in acquiring data over the West Africa Transform margin for the past decade, and this survey demonstrates TGS' ongoing commitment to grow the seismic data library in Africa."

**G-882****Everything you could ever want in a Marine Magnetometer... and more!****2 YEAR WARRANTY**

4,000 PSI Depth Rating

Nose or CG Tow

Connects via RS-232 or Telemetry (coax)

Depth Transducer

Add Additional Weights for Deep Tow

Echosounder Altimeter

No-catch Fin Assembly

Paired G-882 Transverse Gradiometer (TVG) Array

**Super sensitivity and high speed surveying,****0.004nT/√ Hz-RMS at up to 20 samples per second!**

- Find smaller targets at higher tow speeds, farther from the seafloor
- Survey anywhere, in any direction
- Complete Data Processing software included (MagPick)
- Powerful MagLog Lite logging software provides:
  - » Survey design tools to generate multi-line survey grid on MagLog GPS map
  - » **NEW:** Real-time navigation with cross-track error steering
  - » Start-Stop logging automatically when fish enters or leaves survey grid

[Visit our online video library on Marine Magnetometry](#)



**GEOMETRICS**  
Innovation • Experience • Results

## Subsea gas compression facilitates platform-free production



*Aasgard subsea compressor compared to an automobile*

Offshore drilling expeditions in harsh subsea regions and technologically challenging places are set to become easier with the development of new subsea gas compression technology that will facilitate production of oil in a platform-free environment.

Royal Dutch Shell has deployed a prototype compressor at the Ormen Lange natural gas field in the Norwegian Sea, which is likely to make platform-free offshore production a reality within a decade.

The technology will be particularly beneficial in places such as the Arctic and Alaskan regions, where installation of rigs is an ecological and technological challenge. Norway's Statoil has also committed to subsea compression at its Aasgard field by 2015.

### Chevron to proceed with 2nd phase of Angola project

Chevron Corp. plans to proceed with a \$5.6 billion Mafumeira Sul project offshore Angola. The project, located in 200 ft of water, will produce its first oil in 2015 and could reach a daily peak output of 110,000 bbl of crude oil and 10,000 bbl of liquefied petroleum gas, Chevron said.

Chevron, the second-largest U.S. oil and gas producer by market capitalization after ExxonMobil Corp., is also nearing the expected completion in the second quarter of a major natural gas liquefaction plant in Angola.

The Mafumeira Sul project is in the second stage of development and includes 50 wells, two wellhead platforms, a central processing and compression facility, and about 75 mi of underwater pipelines. The initial Mafumeira Norte project, which achieved oil in 2009, currently produces more than 40,000 b/d of oil.

### Aker to supply umbilicals to Aasta Hansteen field

Aker Solutions has won a contract from Statoil to deliver deepwater umbilicals to the Aasta Hansteen field development on the Norwegian Continental Shelf. Part of the contract work, which is worth \$50 million, includes the design, engineering, and manufacturing of dynamic and static umbilicals, a riser base, and ancillary equipment.

Aker Solutions will manufacture and deliver the steel tube umbilicals at its facility in Moss, Norway and make the umbili-

The demand for such technology is expected to increase in the future. The International Energy Agency said that 45% of the 2,700 Bbbl of recoverable oil left is from offshore sources. The agency predicted that deep-sea production will double to 8.7 MMb/d by 2035, due to massive developments taking place in the U.S. part of the Gulf of Mexico, Brazil, and West Africa. Energy firms are compelled to move to deeper waters as the fuel reserves in shallow waters become depleted.

Compressors on the seabed consume less electricity since they are close to the reservoir and the surrounding water already exerts immense pressure. Shell's Ormen Lange, located 120 km out to the sea, would be powered from the shore while Statoil's unit will receive electricity from a nearby platform.

Aker Solutions subsea chief, Alan Brunnen, was quoted by Reuters as saying: "This means you're squeezing out more, an extra 5% to 10%, possibly more or less, depending on the specifics."

If the technology succeeds, oil and gas exploration companies operating in the Arctic will benefit hugely as the harsh environment makes production risky and politically sensitive.

According to the U.S. Geological Survey, the Arctic holds 90 Bbbl of oil in reserves plus 47 Tcm of gas, reported Oil Price.com.

Statoil subsea chief Bjoern Kaare Viken told Reuters: "Subsea compression in the Arctic reduces the risk because you can operate under ice and you're not dependent on operating the facility in a very difficult environment."

FMC Technologies and Siemens Industrial Turbomachinery are also working to develop a electrically-driven, centrifugal gas compressor that can operate in water depths of about 9,842 ft.

FMC said the application, which can operate for several years without maintenance, would be available to the market from 2011-2013.

cal riser base at its facility in Egersund. The company will carry out the project management, design, and engineering work in Fornebu, Norway. The Aasta Hansteen, which is a deepwater project at a water depth of 1,300 m, includes three structures: Luva, Haklang, and Snefrid South.



*Aasta Hansteen*

The field's development will involve construction of a SPAR platform, which is claimed as being the first such installation on the Norwegian Continental Shelf. A floating installation, the SPAR platform, will consist of a vertical column moored to the seabed and include conventional topsides with processing facilities.

The subsea umbilicals will be deployed on the seabed to supply necessary controls and chemicals to subsea oil and gas wells, subsea manifolds, and any system that requires remote control. Statoil operates the Aasta Hansteen field with a 75% interest, while ExxonMobil and ConocoPhillips hold 15% and 10% interest, respectively. The field, which is expected to begin gas production in 2014, is estimated to contain about 40 to 60 bcm of gas and 5.6 MMbbl of condensate.

## Dana gets approval for Nefertiti field development

Scotland-based oil and gas company Dana Petroleum said it received an approval from the Egyptian Government to further develop the Nefertiti oilfield in the Gulf of Suez after it successfully completed the appraisal well. Dana, along with its Japanese partner INPEX, drilled the exploration well Nefertiti-2X at the end of 2012.

During the drilling, the well was tested with an electrical submersible pump and flowed at a maximum stabilized rate of 1,850 bbl/d. The field, which is scheduled to begin production in around 6 months, is expected to produce about 2,500 bbl/d, of which 1,625 bbl/d will be net to Dana Petroleum, the company said.

Following the completion of the appraisal well, both companies agreed with the Egyptian General Petroleum Co. in November that the Nefertiti field was a commercial field. The lease was approved by the Egyptian Minister of Petroleum and Mineral Resources Eng. Osama Kamal in January.

## EnQuest secures tax allowance to expand Thistle field

UK-based oil production company EnQuest received a brownfield tax allowance from the British government to extend its Thistle oilfield development in the North Sea.

The company is one of the first oil and gas operators to receive a brownfield tax allowance, which forms part of a series of the UK government's measures to boost investment in the North Sea.

The extension of the Thistle oilfield development program is expected to not only preserve nearly 500 existing North Sea jobs, but also to create about 1,000 new jobs across the UK oil and gas supply chain in Aberdeen, Newcastle, Manchester, and Swansea during the next 3 years.

"Before EnQuest acquired Thistle in 2010, production was declining and, coupled with aging infrastructure, it was approaching the point where production may have stopped," EnQuest Aberdeen General Manager David Heslop said.

"As a result of our investment so far, which has included facilities and safety systems upgrades, a major rig reactivation program, and drilling of five new wells, production has significantly increased."

## Statoil to develop project at Finnmark Skrugard field

Statoil and its partners have chosen a development concept for its Skrugard field at Veidnes in Finnmark, which includes a floating production unit with a pipeline to shore and a terminal for oil. As part of the development in the Barents Sea, oil will be transported through a 280-km pipeline from Skrugard to Veidnes, outside Honningsvåg.

The oil will be piped directly to a facility and stored in two mountain caverns, following which the oil will be sent in a pipeline to the quay for transportation by tankers. It is expected that around 50 to 100 crude tankers per year will be required at the terminal to transport the oil.

The Skrugard and Havis oil fields will have a common infrastructure, while the production from both fields will be connected to a semi-submersible floating installation through a subsea production system, which will be located at a depth of about 380 m. Production from the fields is estimated to be about 200,000 bbl/d of oil equivalent. In 2011-2012, Statoil and its partners discovered Havis and Skrugard, which are expected to come on stream in 2018.

The fields, which are estimated to contain 400 to 600 MMbbl of proven recoverable oil, are two independent structures within the same license and are part of the Skrugard field development.

## Shell to develop Malaysia's third deepwater oilfield

Shell Malaysia, along with its joint venture partners, has taken the final investment decision to develop the Malikai oil field located about 100 km offshore Sabah, Malaysia.

Shell Malaysia holds a 35% interest in the project, while other joint venture partners, ConocoPhillips and Petronas Carigali, hold 35% and 30% interests, respectively.

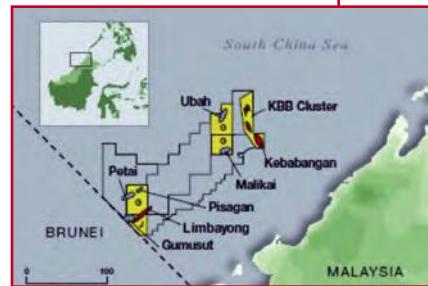
Located in water depths of about 500m, the oilfield is operated by Sabah Shell Petroleum Co. and is part of the Block G PSC awarded by Petronas in 1995. Believed to be Malaysia's third deepwater project, the Malikai oil field development will involve drilling 17 wells from a 23,500-t tension leg platform (TLP) production facility, which will be the first TLP to be fabricated and installed in the country.

The engineering, procurement, and construction contracts for the TLP have already been awarded, said the oil major.

Shell Malaysia chairman Iain Lo said Malikai is an important oil development in the company's upstream portfolio and has the ability to confirm the country's position as a regional deepwater hub and center of excellence.

"The success of Malikai will leverage on strengths derived from deepwater expertise already embedded in Malaysia as well as draw on global expertise from our leading deepwater position. The project also continues the development of local deepwater capabilities in Malaysia," Lo added.

Last November, Shell announced the first initial oil production from the Gumusut-Kakap (GK) field, Malaysia's second deepwater development. Located about 120 km offshore in



*Shell-operated Gumusut-Kakap deepwater oil and gas project*

water depths of up to 1,200 m, deep in blocks J and K, the GK field has been developed using 19 subsea wells.

Sabah Shell is the operator of Gumusut and Murphy Oil, the operator of the Kakap field. A final investment decision on the project was taken in

January 2008. Development of the two fields was combined under an unitization agreement signed by the partners in 2006. An average production of 135,000 bbl/d is expected from the project.

Deepwater projects, such as the Malikai field and Gumusut-Kakap, are said to be critical to Malaysia. Crude oil output from maturing fields is on the decline and is expected to last only for the next 20 years. Undiscovered resources in Malaysia are estimated to amount to 10 Bbbl of oil, of which 65% are deepwater discoveries.

Kikeh, Malaysia's first deepwater project, was brought on stream in 2007.

## Production

### CNOOC forecasts startup of 10 new oil, gas fields offshore China

CNOOC is targeting net production in the 338-348 MMboe range this year, which is slightly less than last year. The company also expects to bring 10 new oil and gas fields onstream offshore China, including the Liwan 3-1, the country's first large-sized deepwater gas field.

Another highlight should be the start-up of the Suizhong 36-1 Phase II adjustment project, which relates to fields already in production.

This year, CNOOC expects to drill about 140 exploration wells, acquire about 9,569 mi of 2D seismic data and 9,575 sq. mi of 3D seismic data, and to pursue further deepwater exploration. The company aims to maintain its reserve replacement ratio of more than 100%.

The company also expects its total capex to reach \$12 to \$14 billion, with exploration, development, and production accounting for about 19%, 70%, and 11%, respectively.

"While the operating cost for the energy sector keeps rising up, the company will continue to execute stringent cost

control and prudent financial policy," said Zhong Hua, CNOOC's chief financial officer. "Meanwhile, we will maintain a robust capital expenditure plan to support our production and reserve growth in the future."

### Noble Energy on track to start Israel Tamar gas output in April

U.S.-based Noble Energy is on track to start first production from the giant Tamar natural gas field offshore Israel in April, the company said, as part of its plans to increase output by 20% in 2013 over the previous year.

"In 2013, we anticipate another year of growth as we deliver 20% production growth over 2012 after adjusting for our 2012 property sales," Charles Davidson, Noble's chief executive officer, said in a statement. "We plan to bring Tamar and Alen (offshore Equatorial Guinea) to first production while continuing to grow our U.S. production from the DJ Basin and Marcellus."

Meanwhile, Noble's fourth-quarter sales volumes from continuing operations averaged 255,000 boe/d, up 18% from the fourth quarter of 2011. For

2013, the full year volume guidance range remains unchanged at 270,000-282,000 boe/d, the company said. First quarter 2013 volumes are expected to average 238,000-242,000 boe/d. The volume forecast for the first quarter includes over 4,000 boe/d underlings in West Africa and the impact of maintenance at Swordfish in the Gulf of Mexico. Noble's fourth quarter 2012 adjusted net income was \$296 million, compared with an adjusted net income of \$277 million in the same period of 2011.

### BHP-Apache discovery not large enough by itself for LNG terminal

A discovery made last year by BHP Billiton Ltd. and Apache Corp. off Western Australia could contain around 500 bcf of natural gas, joint venture partner Tap Oil Ltd. said. LNG terminals typically require at least 3 to 4 Tcf of natural gas to be economically viable. However, Tap said there are a number of other prospects that could be considered for further drilling to aggregate gas volumes. But Tap said there are currently no plans to drill further wells in the area during 2013.



## Marine Sonic Technology, Ltd. introduces

### Sea Scan® ARC Explorer

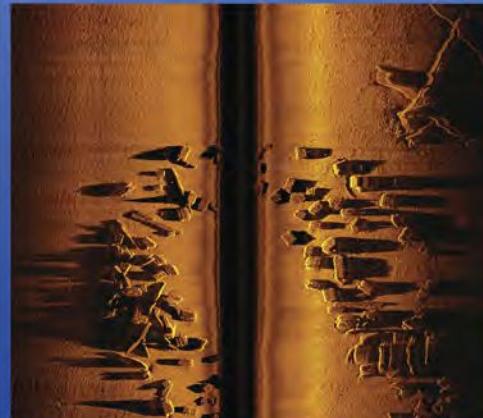


#### KEY FEATURES

- High Definition Images
- Easy setup and operation
- AC or DC powered
- Rugged aluminum towfish
- Field Replaceable, Plug & Play transducers across all available MSTL frequencies
- Built in, field adjustable variable angle bracket
- Special Mode for Port Security
- Wet Mate Connectors



Marine Sonic Technology, Ltd.  
White Marsh, Virginia 23183  
804-693-9602  
[www.marinesonic.com](http://www.marinesonic.com)



## Production

### Sapinhoá Norte Early Production System launched

Brazil's Petrobras said FPSO Cidade de São Vicente went on stream 12 February, kicking off production of the Sapinhoá Norte Early Production System (SPA) through exploratory well 3-BRSA-788-SPS (3-SPS-69), located in block BM-S-9 in the pre-salt of Santos Basin.

Production will be around 15,000 bbl/d of oil, due to gas utilization limitations and will be extended for a maximum period of 6 months. The platform is anchored at a water depth of 2,140 m, 310k m off the coast, and the produced oil of medium density (30° API) and high quality will be transported via relief tankers.

The Sapinhoá Field Development Plan lays out two permanent systems composed of FPSOs Cidade de São Paulo, in production since 5 January, and Cidade de Ilhabela, whose hull is in China and production plant modules are under construction in Brazil. This platform, which has a production capacity of 150,000 bbl/d of oil and 6 Mcm of gas, is expected to go on stream in the second half of 2014.

Sapinhoá Field is one of Brazil's biggest oil fields, with estimated total

recoverable volumes of 2.1 Bboe. Commercial production at the field began 4.5 years after it was discovered in July 2008. Block BM-S-9 is operated by Petrobras (45%) in partnership with BG E&P Brasil Ltda (30%) and Repsol Sinopec Brasil S.A. (25%).

### BP commences oil production from Valhall field's new platform

BP has commenced oil production from the recently redeveloped Valhall oilfield, found in the southern part of the Norwegian North Sea. The newly developed facilities, including a manned platform, are expected to build up to the production to around 65,000 boe/d in the second half of 2013.

BP group chief executive Bob Dudley said that the redevelopment of Valhall project is a crucial investment in the company's North Sea portfolio.

"It is one of BP's most complex field expansion developments and gives Valhall a further 40-year design life with the capacity to handle 120,000 bbl of oil and 143 Mcf of gas per day," Dudley added.

As part of the redevelopment, which is likely to ensure production from the

field until 2050, BP had mounted a new production, utilities, and accommodation platform on a fixed steel jacket and a power-from-shore system.

In addition to these, an external system of bridges and walkways were built to link up the new platform to the existing Valhall complex, and an integrated operating environment was set up to provide a connection between onshore and offshore personnel.

Post-redevelopment Valhall field became fully powered from the shore through a 294-km direct-current cable from Lista, making it the first field offshore Norway and within BP's portfolio to use such a system. The 100% power-from-shore system helps the oilfield to bring down the direct emissions into the air to near zero, claimed BP.

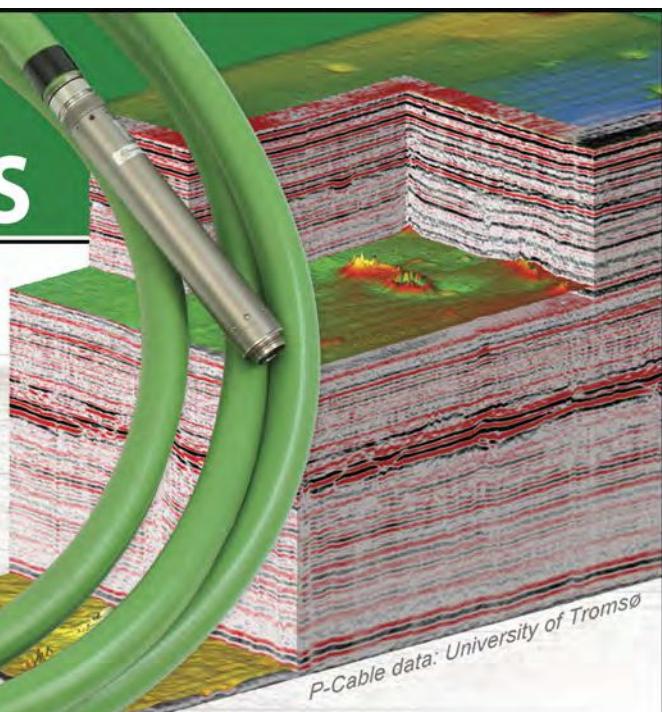
In addition to the newly built platform, the field comprises five more separate manned platforms and two unmanned flank platforms, each located about 6 km from the main facilities. The Valhall field complex, which was discovered in 1975, is operated by BP Norway, with 35.9% working interest. Hess Norge is the major stakeholder of the field with 64.1%.

# SAY GOODBYE TO BULGE WAVES

**Introducing the ultimate in marine seismic fidelity**



**GeoEek**  
SOLID STREAMER



**GEOMETRICS**  
Innovation • Experience • Results

P: (408) 954-0522 • F: (408) 954-0902 • E: sales@geometrics.com • 2190 Fortune Drive • San Jose, CA 95131 U.S.A. • [www.geometrics.com](http://www.geometrics.com)



### Reamco, Inc. significantly expands milling capacity

Reamco, Inc., an international drilling tool manufacturing, rental, and refurbishing provider, has purchased and installed a Haas VF-7 Four-Axis CNC Milling Machine and a Haas TL-3B Hollow Spindle CNC Lathe, said Ashley Lane, Reamco's chief executive officer.

The addition of the Haas Milling Machine will significantly expand Reamco's existing milling capacity and allow the company to add further products to its capabilities. It enables the company to manufacture motor and turbo drill parts with greater speed and precision, the company said.

"With the investment of both Haas machines, we hope for and foresee a faster delivery of customer products," said Lane. "Additionally, these technologically advanced pieces will enable us to manufacture parts with more detailed and tighter specifications, expanding our offerings."

For more information, contact Ashley M. Lane at 337-364-9244 or [alane@reamcoinc.com](mailto:alane@reamcoinc.com) or visit [www.reamcoinc.com](http://www.reamcoinc.com).

### MacArtney supports demand with four-pin connector

To further support the ascending demand for API connectors, the MacArtney Underwater Technology Group said it is now ready with a four-pin addition to the Mac API Power and Signal Connector range.

The four-pin connector features a compact, however, rugged design that is ideal for securing critical connectivity and optimal design for underwater equipment solutions. The new connector is especially applicable for riser monitoring, drilling control and blow out preventer systems.

From draft to delivery, the Mac API four-pin connector is designed to comply with American Petroleum Institute (API) standards 16D and 17E for use in critical and strictly regulated environments.

Within an API context, the PBOF (pressure balanced oil filled) cable is as important as the connector. Every element of the cable is tested to ensure its integrity so that it can function even if water ingresses the hose. A boot fitted behind the connector ensures that any water entering the hose cannot penetrate it so that the connector will continue to work for its intended lifespan, even if fully flooded. Double test ports on the API connector itself allow pressure testing of both sections.



The connector is tested to full ocean depth and has an operational depth rating of 4,000 m. In addition, the connector has an operational voltage of 600 V and can take 10 A per pin. The Mac API four-pin connector will work at temperatures ranging from minus 15 to plus 60 °C.

Besides complying with the strict API standards for use in challenging environments, the Mac API four-pin connector, like the larger 12 and 24-pin options of the same series, is certified to accommodate DNV standards of quality and performance.

For additional information visit the company website at [www.macartney.com](http://www.macartney.com).

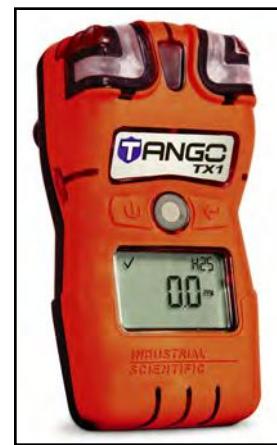
### Industrial Scientific unveils Tango™ TX1 gas monitor

Industrial Scientific, the global leader in gas detection as a service, has introduced the Tango™ TX1 single gas monitor. By wearing the Tango™, workers will be the safest single gas monitor users in the world, the company asserted. A 3-year runtime and patent-pending DualSense™ Technology increases worker safety, regardless of bump test frequency, while reducing overall maintenance costs. The Tango™ detects carbon monoxide (CO), hydrogen sulfide (H<sub>2</sub>S), sulfur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>). Its revolutionary patent-pending DualSense™ Technology includes two of the same type sensor for the detection of a single gas.

The two-sensor readings are processed through a proprietary algorithm and displayed as a single reading to the user. DualSense™ Technology was developed to address the major challenge of making sure workers are always using fully functioning, reliable instruments in the field. Until Tango™, that required a bump test of the instrument before each day's use. With Tango's DualSense™ Technology, workers are exponentially safer, regardless of bump test frequency.

It is powered by one replaceable 2/3 AA lithium battery that will power it continuously for up to 3 years even if the instrument is being used in the optional "always on" mode. After the battery can no longer support instrument life, it can be easily replaced for another 3 years of continuous operation.

For more information on the Tango, visit [www.indsci.com/tango](http://www.indsci.com/tango).



### How to unveil subsea thermal insulation technology

At the 2013 Subsea Tieback Forum & Exhibition 5-7 March in the Henry B. Gonzalez Convention Center in San Antonio, Texas, Dow Corning Corp. said it would launch its XTI-1003 RTV Silicone Rubber Insulation, a solid, non-syntactic advanced thermal insulation solution for high-pressure-high-temperature (HP/HT) equipment used in deepwater production infrastructure and tiebacks.

Based on a room-temperature-curing (RTV) liquid silicone rubber (LSR) elastomer, the precisely engineered Dow Corning XTI-1003 RTV Silicone Rubber Insulation formulation is easy to mix and apply, the company said, noting that it cures to a durable, flexible translucent rubber without potentially harmful by-products. In Booth 957, Dow Corning said it also would feature a variety of other products, including Dow Corning® brand severe-duty sealants for use in oil and gas applications.

# New Look New Name Same Focused Event

**Subsea Survey IRM**

is now

**SUBSEA  
SURVEY • IMMR**

Galveston, Texas • November 11 - 13

[www.subseasurvey.com](http://www.subseasurvey.com)

2013

## About our New Name

Over the past year or so, a new acronym has emerged in the inspection, repair & maintenance (IRM) contracting world. This new term IMMR (Inspection, Monitoring, Maintenance, and Repair) is used to better describe the subsea work that is being accomplished in the industry today. Although monitoring has always been a focus of the conference, we have now added it officially to the conference logo.

**SAVE THE DATE!**

**CALL FOR PAPERS**

### Contact:

Sponsorship and Exhibit Opportunities: Amy Dukes: 713-557-8057; [amy@subseasurvey.com](mailto:amy@subseasurvey.com)

Call for Papers: Ladd Borne; 772-219-3002; [ladd@subseasurvey.com](mailto:ladd@subseasurvey.com)

General Information: MJ McDuffee; 772-219-3027; [mj@subseasurvey.com](mailto:mj@subseasurvey.com)



### Corpro's 'Thin Sleeve System' makes debut in Gulf of Mexico

Corpro, the world's largest coring provider and member of Reservoir Group, is now deploying its innovative Thin Sleeve System Core Barrel technology into the Gulf of Mexico.

Initiating its presence only late spring, Corpro has already completed three ultra deepwater operations in the U.S. Gulf and says it is proud of the quality and integrity of the core samples that were delivered. Nearly half of all onshore and offshore core cutting activities within the global energy industry are carried out under Corpro; however, this is the first year the company's technology has been used in the U.S. Gulf.

"Our technology sets us apart from the competition, and we are confident that the successful completion of these jobs will lead to new contracts in the Gulf of Mexico," said Trevor Whalen, Corpro's U.S. Gulf operations manager.

Corpro's Thin Sleeve System (TSS) Core Barrel significantly improves the quality of coring samples and provides a platform to enhance wellsite processes and core analysis, the company said. Corpro's Core Barrel is a 20-ft ultra-stable system delivering better core quality and smoother coring operations than the conventional 30-ft systems previously utilized in the U.S. Gulf.

The system creates better core samples because of the presence of two independent inner tubes that protect the core during the cutting process and also allow the recovery to take place without transmitting any stress to the core, thus not inducing any damage. Another benefit is that the TSS inner barrel is made of steel with aluminum liners for a much stronger and stiffer coring system compared to alternative competitive coring technologies.

The TSS barrel is highly regarded for its rating and previous uses in high-pres-



sure, high-temperature H<sub>2</sub>S wellsites worldwide. While other barrels begin to degrade and stretch at high temperatures, the TSS has been engineered to avoid these problems completely.

TSS is also the platform required to utilize Half-Moon On-Ice liners. Now, rig site geologists working on the Gulf of Mexico can lift the top half of the aluminum and describe the core at the wellsite. Typically, the core must be cut into 3-ft sections, packaged and shipped to shore before anyone can get a view of the core. Half-Moon liners are a new concept brought to the Gulf of Mexico to ensure immediate access to the core and accelerate formation evaluation decisions.

"We are very excited about introducing our proven technologies to the Gulf of Mexico," Whalen said. "We are very pleased with the work on these projects. When the geologists saw the core, they were stunned by its quality."

For more information, visit [www.corpro-group.com](http://www.corpro-group.com).

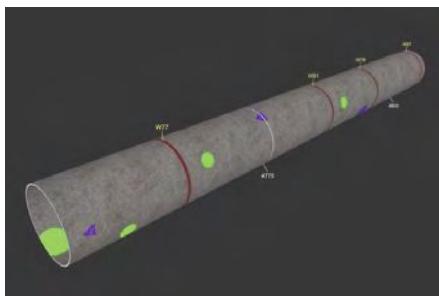
### T.D. Williamson introduces new inspection reporting software

T.D. Williamson (TDW), a pipeline services and equipment company, has developed and deployed a new proprietary inline inspection reporting software known as Interactive Report 2013.

Designed with inline inspection service customers in mind, Interactive Report 2013 is a data visualization tool that makes it easy for users to filter and view their pipeline inspection data, with the goal of helping them to more intuitively assess where problem areas exist.

"This software makes inspection data more accessible than ever before," said Ron Lundstrom, supervisor of software engineering for TDW. "It features a very user-friendly Windows®-based environment that makes it easy to choose from a variety of views, including interactive charts, graphs, tables, and even a three-dimensional pipe view."

A special "snapshot" feature enables users to save customized views of potential trouble spots and share them with others for review or comment. Once the most critical anomalies have been identified,



creating a dig sheet is an automated process. No extensive knowledge or training is required to use Interactive Report 2013, which will be included with delivery of all TDW inline inspection reports.

"One of the cornerstones of the TDW approach is customer commitment," said Eric Rogers, vice president of global pipeline integrity for TDW. "This new software is a perfect example of how committed we are to helping our customers understand and optimize their assets."

For more information, contact Eric Rogers, vice president, global pipeline integrity, T.D. Williamson, Salt Lake City, Utah; phone 801.747.1400; e-mail [eric.rogers@tdwilliamson.com](mailto:eric.rogers@tdwilliamson.com).

### Klüberbio LG 39-700 grease for open pinion drives on vessels

Klüber Lubrication is featuring a new, innovative grease—Klüberbio LG 39-700—for high-performance, open-gear lubrication, with low environmental impact. Ship operators expect lubricants for open-pinion drives on vessels to have high-performance characteristics, protecting the drive against damage, wear, and



corrosion, while ensuring a longer useful life. They also expect the lubricant to have little environmental impact. Klüber Lubrication developed the new adhesive lubricant to fulfill these requirements.

The new adhesive lubricant was specifically developed for the lubrication of open gears and pinions driving large anchor winches and tooth racks of jack-up systems. It is an ideal solution for machine elements with highly loaded sliding surfaces operating in ecologically sensitive areas. The lubricating grease has good low-temperature characteristics and is, therefore, suitable for open gears or rack-and-pinion drives at very low temperatures, down to -22°F. Klüberbio LG 39-700 can be applied using a central lubricating system.

Klüberbio LG 39-700's highly viscous base oil made of renewable raw materials is biodegradable, at least 60% after 28 days. It reduces the environmental impact of leakage or lubricant contact with seawater.

For more information, visit [www.klubersolutions.com](http://www.klubersolutions.com).

The Reliable source for  
Deepwater Subsea Fabrication  
Jumpers - PLETs - PLEMs - Suction Piles

*Why trust the success  
of your next deepwater  
project to anyone else?*



**NEW**  
**INDUSTRIES**  
[www.newindustries.com](http://www.newindustries.com)

6032 Railroad Ave.  
Morgan City, LA  
985-385-6789

## SMD delivers HD3 Plough to Reef Subsea

Soil Machine Dynamics Ltd (SMD) is pleased to announce the early delivery of an HD3 inter array cable plough to Reef Subsea Power & Umbilical Ltd. (RSPU). RSPU has named the vehicle HDIA (Heavy Duty Inter Array) Plough and is to be mobilized onto the Polar Prince subsea construction vessel.

The HD3 cable plough, which is scheduled to go straight onto the Gwynt y Môr Offshore Wind Farm project, is well suited to the simultaneous or post-lay burial of large bend radius products up to 200 mm diameter. It can be towed with up to 150 tonnes in consolidated soils, has on-board jetting to boost performance in sands, and is equipped with subsea loading and unloading capabilities. It has a unique feature allowing it to cut a trench at shallow trench depths (1 to 1.5 m) or at deep trench depths (2.4 m), with minimal risk to the product compared to a conventional plough.

The HD3 plough follows the delivery of the Q1000 jet trencher in October 2012. The Q1000 has now successfully completed sea trials and her maiden scope of work in the North Sea.

Paul Davison, SMD Trenching Manager, said: "We are particularly pleased with the successful build and delivery of this plough. To meet and

exceed a challenging schedule is a testament to the SMD and Reef Subsea project teams. We look forward to supporting the plough trials and subsequent operations. Inter array cable burial with the HD plough is an enhancement to previous operations on the Polar Prince with the SMD MD3 Plough. Ploughing inter array cables is a step change in process, and we look forward to supporting such innovation to help our clients improve assurance and reduce installation time."

For more information, visit [www.smd.co.uk](http://www.smd.co.uk).



## NCS Survey takes delivery of two more Gavia AUVs



NCS Survey has expanded its growing AUV fleet with the purchase of two Teledyne Gavia AUVs.

These vehicles are the latest in the Gavia Offshore Surveyor series and are equipped with high-resolution side-scan sonar, a multi-beam echo sounder, a sub-bottom profiler, an ultra-short baseline positioning system, long baseline (LBL), GPS, and an inertial navigation system. The AUVs are used to provide ultra-high-resolution data for pipeline and platform inspections; scour monitoring surveys; cable and pipe route surveys; and offshore wind farm surveys. For three years, NCS Survey has operated these vehicles in difficult to access and remote areas, including the southern tip of Argentina. Additionally, the company has a high level of repeat business from clients like Shell, BP, and ConocoPhillips.

This purchase underlines NCS Survey's position as the global leader in the use of portable AUVs in the offshore survey market as it now has the largest commercial fleet in the world.

The vehicles are rated to 1,000 m, but regularly operate in depths as shallow as 2 m. They can perform in currents of more than 2 kts, under jackup drilling rigs and very close to fixed platform structures. Their modularity offers ease of transportation as no module weighs more than 25 kg in its transit case.

"The addition of these Gavia AUVs to our fleet is a reflection of a growing demand from current and potential clients for AUV services in 2012," said NCS Survey president Andy Gray. "As a global leader in the use of this equipment, we are constantly growing and expanding in accordance to our clients' demands. This is an ideal representation of that."

For more information, visit [www.ncs-survey.com](http://www.ncs-survey.com).



# Extraordinary Quality High Affordability



- Highly Robust and Accurate Acoustic Doppler Technology
- Significantly Longer Range
- Highly User Friendly And Cost Competitive

## FlowQuest Acoustic Current Profilers

- Range: up to **900 m**
- Accuracy: up to  $0.25\% \pm 2.5 \text{ mm/s}$
- Depth: up to 6,000 m
- Data Fusion and Acoustic Modem Options



- The World's Smallest DVL
- Significantly Longer Range
- Ideal For Underwater Precision Navigation
- Smallest Minimum Altitude

## NavQuest Doppler Velocity Logs (DVL)

- Range: up to **300 m**
- Depth: up to 6,000 m
- Minimum Altitude: 0.3 m
- Accuracy: up to  $0.2\% \pm 1 \text{ mm/s}$



- The Best Selling USBL Systems In The World
- Broadband Acoustic Spread Spectrum Technology
- Highly Accurate, Robust and Cost Effective

## TrackLink USBL Tracking Systems

- Range: up to 11,000 m
- Accuracy: up to 0.15 degree
- Depth: up to 7,000 m
- Price: from \$15,000
- Targets: up to 16



- The Best Selling Acoustic Modems In The World
- Broadband Acoustic Spread Spectrum Technology
- Transport 95% of The World's Acoustic Communication Data

## High Speed Underwater Acoustic Modems

- Data Rate: up to 38,400 baud
- Range: up to 10,000 m
- Bit Error Rate:  $< 10^{-9}$
- Depth: up to 7,000 m



- Highly Robust, Accurate and Power Efficient
- Broadband Acoustic Spread Spectrum Technology
- Integrated High Speed Acoustic Modem Functions

## PinPoint LBL Acoustic Positioning Systems

- Accuracy: up to 0.05 m
- Range: up to 10,000 m

**LinkQuest Inc.** [www.link-quest.com](http://www.link-quest.com)

Tel: (858) 623-9900, 623-9916 Fax: (858) 623-9918  
6749 Top Gun Street, San Diego, CA 92121, USA  
Email: sales@link-quest.com

## **Underwater Intervention**

### **Stork Technical Services secures significant subsea contract win**

Stork Technical Services, the leading global provider of knowledge-based asset integrity management services for the oil and gas, chemical, and power sectors, announced the company has secured more than £15 million of new work with a major North Sea operator in the past month.

The contract award will see Stork's subsea team deliver a range of integrated subsea inspection, repair, and maintenance (IRM) workscopes, including thruster change outs over a 5-month period utilizing ROVs and air/nitrox diving from dive intervention craft and dive support vessels.

The services will be delivered from a combination of bespoke dive intervention craft and the company's dedicated dive support vessel, ADAMS VISION (AV). The crafts are equipped with a range of advanced technology. The AV has been upgraded to include a complete air/nitrox diving spread, allowing diving operations to be carried out from the DSV.

Stork's dive intervention craft have



been deployed on major subsea projects across the globe and are expected to generate revenues of more than £10 million alone throughout 2013.

For more information, visit [www.storktechnicalservices.com](http://www.storktechnicalservices.com).

### **Unique Hydrographic Systems contracted to supply Seaflex Air Lift Bags to Leighton Welspun**

Unique Hydrographic Systems has been contracted to supply Seaflex Air Lift bags to Leighton Welspun in Mumbai. The total value of the project is INR 37,35,066 (approx. \$70,000).

Based in Navi Mumbai, Unique Hydrographic Systems provide a complete range of specialized engineering solutions and services for the Marine, Diving, Defence, and Survey industries within the region.

Leighton Welspun Contractors Pvt Ltd (LWIN) is a part of Leighton Group,

which is one of the world's largest EPC and Contract Mining organisations.

Seaflex specializes in marine air lift buoyancy bags and water load test weights. They provide products for two major areas: air lift bags and inflatable buoyancy units for the recovery of underwater objects and to provide underwater pipeline buoyancy and cable floatation.

For more information, visit [www.uniquegroup.com](http://www.uniquegroup.com).

### **New Age Security Solutions newest FarSounder partner**

New Age Security Solutions (NASS) is the latest addition to the FarSounder dealership team. NASS is a security consulting, design, and training firm based in the Washington, DC Metropolitan Area.

Says Rafi Ron, NASS CEO: "We looked into FarSounder's solutions and were highly impressed; we decided to team up in an effort to help bring FarSounder's advanced security technology to new global markets and applications. NASS will be focused on both FarSounder's security and navigation

# **DVS-300**

## **Diver Video System**

**Includes:**

- Two Dimmable LED Lights
- Miniature Hi-Res Camera
- 100 m Diver Cable (Other Lengths Available)

**Ultra Compact**  
(14.3 x 11.9 x 12.4 in)

**Super Lightweight**  
(12 lbs.)

**Operates on Rechargeable Batteries or AC Power**

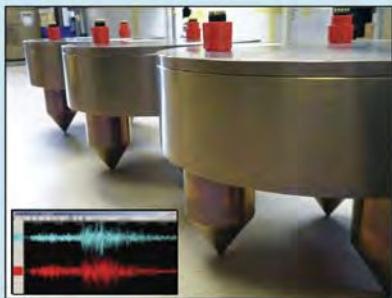
**Records on USB Flash Drive**

**DEEPSEA Power & Light®**

[www.deepsea.com](http://www.deepsea.com)  
800-ITS DSPL  
(858) 576-1261

[f](https://www.facebook.com/DeepseaPowerLight) [in](https://www.linkedin.com/company/deepsea-power-light/) [@](https://twitter.com/DeepseaPL)

# Seafloor Communications Specialists



CSnet International, Inc.  
3270 South Hwy A1A, Suite 201  
Melbourne Beach, FL 32951  
Phone: +1.321.327.7915  
[info@csnetinternational.com](mailto:info@csnetinternational.com)  
[www.csnetinternational.com](http://www.csnetinternational.com)



## Products & Services

- Environmental Assessment and Monitoring
- MetOcean Data Acquisition
- Ocean Observing Systems for Science & Industry
- Tsunami and Seismic Warning Systems
- Pipeline and Infrastructure Monitoring
- *In-Situ* Sensor Evaluation Test Bed

## Experts in Seafloor Communications Network

CSnet offers end-to-end solutions providing global users a pre-engineered, expandable, portable system that can be deployed and redeployed anywhere – in water depths up to 3,000 meters. Meeting the needs for a wide range of spatial, power or bandwidth requirements, the Offshore Communications Backbone (OCB) serves research, industrial and government applications, providing the infrastructure needed to deliver power in support of continuous 24/7 monitoring; delivering data and providing command and control on-shore via satellite or shore-ended cable.

## Offshore Communications Backbone

The OCB is a modular seafloor communications network that is directly connected to the Internet. Clients can provide and control their own sensors and data outputs, or CSnet can provide a suite of sensors from the surface to the seafloor with data directly forwarded to the client's onshore facilities. CSnet's OCB allows for individual component and end to end networked testing of power and communications functionality during the buildup and pre-deployment phases, ensuring a cost effective and successful installation. The OCB represents a proven network module that has been designed, constructed and tested, eliminating upstart time and cost. Each OCB module is expandable and so can be configured to accommodate large or small applications at a predictable cost.

## **Underwater Intervention**

and obstacle avoidance products as well as special projects for seaports and other critical infrastructures."

NASS' unique blend of "Total Security Solution" integrates state-of-the-art technologies with expert human understanding of threats and the operational environment to create a seamless, integrated working security solution that balances technology and person.

For more information, visit [www.farsounder.com](http://www.farsounder.com).

### **SMD & SeeByte announce successful integration**

Soil Machine Dynamics Limited (SMD), world-leading manufacturer of remote intervention equipment, and SeeByte, the global leader in creating smart software for unmanned maritime systems, have announced the successful integration of SeeTrack CoPilot to SMD's work-class ROV system.

The integration and trials, which took place in Fort William, Scotland in mid-January, saw SeeByte's SeeTrack CoPilot Software system for dynamic positioning and real-time monitoring of work-class ROVs successfully carry out

a number of survey missions using the software's easy-to-use, point-and-click interface. The software provides advanced features such as flight-modes, a map that moves in real-time to aid piloting, chart overlay, and the ability to track specific structures within the water column, which will be of great benefit to operations.

For more information, visit [www.smd.co.uk](http://www.smd.co.uk).

### **Triton Imaging and Kraken announce OEM agreement**

Triton Imaging, Inc. of Capitola, California and Kraken Sonar Systems Inc. of St. John's, Newfoundland announced that they have signed an OEM agreement under which Kraken will offer Triton Perspective™ software bundled with their AquaPix® Synthetic Aperture Sonar (SAS).

With this arrangement, AquaPix® users can have the advantage of using the Perspective™ software to process high-resolution SAS and associated interferometric bathymetric data to create highly detailed seabed imagery, mosaics, and bathymetric 3D digital ter-

rain models. The Perspective™ GIS-based software provides the multi-sensor processing functions that can enhance the fusion of the co-registered imagery and bathymetry produced by the AquaPix® system.

AquaPix® enables seabed images with unprecedented image resolution and detail. The exceptional image quality improves accuracy and increases confidence in decision-making. AquaPix® is capable of providing detailed seabed images with a constant resolution better than 3 cm out to a range of 300 m from each side of an underwater vehicle (600-m swath). It can also produce 3D bathymetric data with a resolution and depth accuracy in compliance with IHO S44 special order requirements.

The system provides cost-effective and ultra-high resolution imagery that's ideal for mine countermeasures, Q-route surveys, wreck searches, cable/pipeline survey, and a wide variety of other seabed imaging and surveillance missions.

For more information, visit [www.tritonimaginginc.com](http://www.tritonimaginginc.com).

# VRS-20 Radar Level Sensor

a new approach to tide and water level measurement

- Non-contact measurement of water level
- Direct interface to TideMaster tide gauge
- Use with own logger or PC via digital outputs
- Direct output via GPRS to internet



Tide Gauges



**VALEPORT**  
in our element

Tel: +44 (0) 1803 869292  
[sales@valeport.co.uk](mailto:sales@valeport.co.uk)  
[www.valeport.co.uk](http://www.valeport.co.uk)



# Eleven companies, a sea of solutions.

**BENTHOS • BLUEVIEW • DGO • GAVIA • GEOPHYSICAL INSTRUMENTS  
IMPULSE • ODI • ODOM HYDROGRAPHIC • RD INSTRUMENTS  
TSS • WEBB RESEARCH**



From the surface to the seafloor, the Teledyne Marine companies deliver the products, technology, and talent you demand to get the job done.

Find your solution at  
[www.teledynemarine.com](http://www.teledynemarine.com)

Visit our member companies at Ocean Business on booths S1, T2, and R9.

**Globecomm provides satellite services to 3,500 ships**  
 Globecomm Systems Inc. has reached a maritime industry milestone, providing connectivity services to 3,500 ships globally. Globecomm Maritime provides a wide array of connection platforms, from L-band to GSM and VSAT, as well as a suite of value-added software products, aligning its service provision to fast-changing customer needs. This tremendous growth in the maritime market has seen Globecomm connect more than half of its customers over Inmarsat platforms, with the remainder divided between Iridium, VSAT, and GSM technology. Milestones for Globecomm Maritime include installing 300 Wi-Fi networks to enable managed Internet access for ships' crews, combining hybrid VSAT and GSM services, enabling remote access to onboard IT networks, and providing firewall and anti-virus products that keep vessels safe and compliant.

#### KVH doubles capacity in Caribbean of mini-VSAT Broadband

Staying ahead of the bandwidth demands for its rapidly growing customer base, KVH Industries, Inc., has just doubled the capacity of its mini-VSAT Broadband network in the busy Caribbean region. The capacity increase was provided as part of the ongoing global network upgrade involving deployment of Variable Coding, Spreading, and Modulation (VCSTM) technology provided by ViaSat, Inc., KVH's partner in the mini-VSAT Broadband network. This was the second major upgrade to the mini-VSAT Broadband network in less than a month following the recently announced improvements that increased the capacity in Europe by more than 60%. Since launching the mini-VSAT Broadband network in 2007, KVH has become one of the world's leading providers of maritime VSAT service. KVH's service differs from competing maritime VSAT services in its use of spread spectrum technology, which enables the use of antennas that are 85% smaller than competing products while still providing fast, high-quality service. KVH is also the only maritime satellite service company that designs and manufactures the onboard terminals, owns and operates the satellite service network, and provides round-the-clock global after-sale support providing customers with a total end-to-end solution. Smaller antennas and fully integrated belowdecks equipment are less costly and faster and easier to install, offering significant savings to companies deploying broadband technology to a fleet of vessels. KVH's business model is another key part of the company's growth strategy. Rather than investing in its own satellites, the company leverages the readily available commercial FSS satellite capacity covering the world's oceans provided by industry leaders like Intelsat, Eutelsat, SES, and SkyPerfect JSAT. Currently, the mini-VSAT Broadband network uses 17 leased transponders to cover the globe with a unique hybrid network including both C-band and Ku-band coverage. KVH's unique 1-m, dual-mode TracPhone V11 antenna, the world's only global 1-m maritime VSAT solution, seamlessly switches among C- and Ku-band frequencies as easily as the 60-cm TracPhone V7-IP antennas and 37-cm TracPhone V3 antennas switch among Ku-band satellites. As KVH's customer base grows, the company will lease additional capacity covering exactly the areas of the world where it is needed. All of the company's TracPhone systems in the field can be dynamically updated to use new capacity as it comes online, ensuring continued delivery of high-quality service.

## KVH introduces business class service for mini-VSAT Broadband network



KVH Industries, Inc. is launching new unrestricted rate plans featuring business class service for its mini-VSAT Broadband(sm) network. Designed to meet the booming demand for maritime connectivity, KVH's new Business Class Service provides unrestricted, prioritized, multi-megabit service with unfettered access to all Internet applications and protocols, including streaming media formats, popular Voice over IP (VoIP) services like Skype™, and rich media websites. This premium quality service, traditionally only available with very expensive dedicated satellite capacity and used exclusively by high-end cruise ship or megayacht customers, is competitively priced with other shared maritime VSAT services, but delivers significantly faster service and a superior user experience.

KVH's new unrestricted rate plans with business class service address the same challenges that the tiered plans of the world's major cellular service providers address. Rather than block popular high-bandwidth services or limit access through deliberately reduced speeds, KVH's new transparent, usage-based rate plans provide a defined amount of data in a monthly package and give the customer the opportunity to buy more service at a reasonable price if the package threshold is exceeded during the month. Heavy users are free to consume as much bandwidth as they desire because they are paying for the additional service. Further, with these new plans, KVH dynamically monitors usage and can quickly add satellite capacity as required to stay ahead of customer demands. With bundles from 5 GB to 40 GB and additional gigabytes for as little as \$200 (\$0.20 per megabyte), these new plans are faster than comparably priced fixed-rate plans and offer speeds as high as 4 Mbps.

To support its new business class service, KVH has incorporated the features of its CommBox™ Ship/Shore Network Manager right into the integrated belowdecks unit of its new TracPhone® V7-IP and TracPhone® V11 products, providing customers with the tools they need to manage this powerful service efficiently and control their airtime costs. This fully integrated solution provides the ability to set up distinct, firewalled networks for operations and crew use.

On many vessels equipped with maritime VSAT service, crew use accounts for 85% to 90% of the total bandwidth consumed, so helping vessel owners manage the crew's Internet access is a key aspect of managing the onboard network. KVH also offers Internet café and VoIP calling card services to help the crew self-manage their use. At the owner's discretion, industry-leading transmission optimization and onboard caching, least-cost routing, and e-mail management are also available as part of the CommBox™ solution.

To ensure that fast, high-quality service is delivered to all KVH customers, the company has nearly completed a global network upgrade with the implementation of advanced Variable Coding, Spreading, and Modulation (VCSTM) technology provided by ViaSat, Inc., KVH's partner in the mini-VSAT Broadband network. VCSTM was deployed in the European region in November, providing a 60% increase in the capacity of the mini-VSAT Broadband service, and in the Caribbean region in December, where the capacity was increased more than 100%. The entire network is scheduled to be updat-

ed by the end of February 2013.

KVH expects the new mini-VSAT Broadband unrestricted rate plans to be popular with customers who don't want to be constrained by the restrictions and inherently lower data speeds of fixed-rate plans. Fixed-rate plans are often designed to prevent a small percentage of customers from consuming a disproportionate amount of the available bandwidth. These plans typically block access to popular websites with rich media content, prevent transmission of video and other multimedia protocols, block VoIP services like Skype™, and slow data rates for heavy users as pre-defined thresholds are reached. With mini-VSAT Broadband's unrestricted rate plans, customers are not prevented from enjoying all of the modern web content that is transforming the Internet into a multimedia experience accessed by a plethora of new devices.

KVH offers two other types of air-time plans for its mini-VSAT Broadband service in addition to its new unrestricted rate plans. For customers with low data volume or irregular month to month data use, KVH offers metered airtime bundles ranging from 50 MB to

many gigabytes in size and delivered at speeds as fast as 2 Mbps with rates starting as low as \$49 per month for 50 MBs of service. For customers desiring a fixed monthly bill, KVH continues to offer traditional speed-based, fixed-rate plans, which are subject to service restrictions for streaming applications or excessive use. The new unrestricted rate plans round out the industry's broadest, most competitive, and most innovative airtime service plan portfolio.

For more information, visit [www.kvh.com](http://www.kvh.com).

### **SpeedCast completes Elektrikom satellite services buyout**

SpeedCast Ltd, a leading Hong Kong-based global network and satellite communications service provider, has completed, with the support of its majority shareholder, TA Associates, a buyout of Elektrikom Satellite Services, a leading maritime satellite communications service provider based in the Netherlands. The combination of Elektrikom and SpeedCast's maritime business unit will form one of the top maritime satellite communications service providers in the world.

## **HYDROCHART 3500 – THE CLEAR CHOICE FOR SHALLOW WATER OPERATIONS**



### **Professional Bathymetry Sonar for Littoral Operations with Exceptional Performance.**

The HydroChart 3500 provides unrivaled range and resolution performance in a compact, lightweight system. It features IHO-quality swath bathymetry with coverage up to 12 times the water depth or altitude, as well as high-resolution side scan imagery. For over 40 years, L-3 Klein has led the industry in developing innovative solutions for littoral water applications and deep water surveys.

Learn how L-3 Klein is making the oceans transparent by calling (603) 893-6131 or visit [L-3com.com/Klein](http://L-3com.com/Klein).

Klein Associates, Inc.

[L-3com.com](http://L-3com.com)

Elektrikom provides satellite and wireless-based communications solutions to the maritime industry. The company focuses on the high-end segments of the maritime market, including the oil & gas and offshore supply segments. Founded in 1985, Elektrikom is headquartered in Rotterdam, Netherlands, where it enjoys a strong position in this key maritime shipping hub and also serves customers and partners throughout Europe.

Elektrikom has established itself as one of the leading maritime satellite service providers in Europe, with a marquee list of customers ranging from major shipping companies to offshore supply companies. Elektrikom is well known for its expertise and ability to deliver custom-engineered communication solutions for its customers, including various types of satellite communications, such as Ku-band & C-band VSAT services and L-band services as well as wireless technologies and a range of IT services.

Joining the SpeedCast Group, Elektrikom will be able to offer its maritime customers a wider portfolio of

products and services, including land-based services, and to better serve its global customers' needs in Asia. Elektrikom will also benefit from SpeedCast's broad range of engineering capabilities worldwide, with certified field engineers able to support maritime services and antennas onboard vessels and platforms. These extensive support resources are strategically located in Hong Kong, Singapore, Indonesia, Malaysia, China, Dubai, and Australia in addition to Elektrikom's own presence in the Netherlands.

SpeedCast will leverage Elektrikom's strength in Europe with its strategic Rotterdam base to further penetrate the important European market as well as deliver continuity of experience for Elektrikom's existing customers. Elektrikom's worldwide satellite communications infrastructure will complement SpeedCast's existing global network, adding an overlay network that will provide redundancy and backup as well as introducing new options for SpeedCast's global customer base.

This acquisition follows shortly after SpeedCast's acquisition of Australian

Satellite Communications (ASC), a leading satellite communications service provider in Australia. ASC is very active in serving customers in the natural resource market, in particular the oil & gas industry, which complements Elektrikom's position serving the oil & gas and offshore industries in Europe.

For more information, visit [www.speedcast.com](http://www.speedcast.com).



### FleetBroadband multi-voice integrated with crewtalk solution

Station711, the mobile satellite services division of RRsat Global Communications Network Ltd, announced that its crewtalk solution, a complete onboard voice gateway, is now integrated with the FleetBroadband Multi-voice service. This integration enables access of up to nine simultaneous voice calls, thus increasing both operational and personal communication accessibility and efficiency.

The crewtalk solution is designed to support commercial, operational, and

# ANNOUNCING

## New for the Coastal & Offshore Environmental Market

Available in print and digital formats, *ECO/Environment Coastal & Offshore* will provide 68 pages of comprehensive coverage and analysis of issues affecting the coastal and offshore environment fields.

Free to industry members, each issue presents critical business intelligence for professionals in all disciplines of this multi-faceted industry including offshore oil & gas, government agencies, utilities, renewable ocean energy, academia, international banking, engineering, and construction.

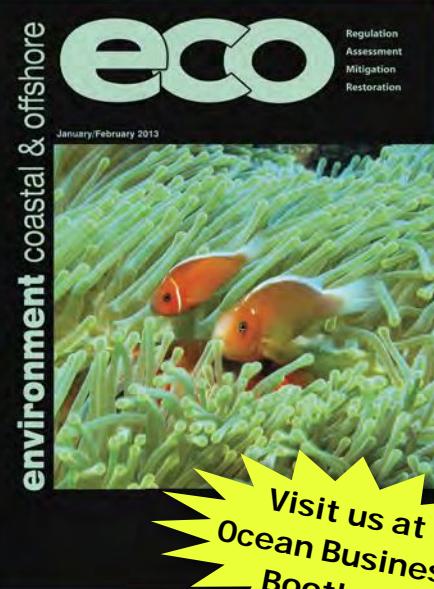
### Articles, News, Analysis, Projects, Trends, Technology

#### An Information Resource for Professionals Involved in:

- Offshore Oil & Gas
- Government Agencies
- Defense
- Utilities
- Renewable Ocean Energy
- Engineering Firms
- Construction/Dredging
- Law Firms
- Academia
- International Banking Institutions

Published 6 times a year, each issue of *ECO* magazine will keep its readers informed and focused on current policy, projects, trends, and technology developments in the global environment marketplace.

*For information  
and subscriptions  
visit: [www.eco-tsc.com](http://www.eco-tsc.com)*



Ad Sales Contact: Amy Dukes • 713-557-8057 • [adukes@tscpublishing.com](mailto:adukes@tscpublishing.com)

Editorial Contact: Greg Leatherman • 772-219-3069 • [editor@eco-tsc.com](mailto:editor@eco-tsc.com)

Corporate Contact: MJ McDuffee • 772-219-3027 • [mj@tscpublishing.com](mailto:mj@tscpublishing.com)

pre-paid voice services as well as an ability to provide the flexibility to allocate different profiles per user and onboard extensions. With the updated Multi-voice ability, the crewtalk will support up to nine simultaneous calls and will allow customers to give their crew and officers a commercial, operational, and personal link to the world while at sea.

The combined solution enhances the vessel's efficiency with an onboard PBX, integrated with a crew prepaid solution, providing controlled and managed telephony usage and costs as well as the Multi-voice ability. The solution seamlessly integrates the existing onboard PBX to the FleetBroadband terminal and ensures that all crew phone calls are routed through the prepaid system from dedicated voice lines or from the PBX extensions.

The integrated solution provides up to nine simultaneous voice lines with FleetBroadband 250 or 500 terminals and up to four simultaneous voice lines with FleetBroadband 150. Thrane & Thrane Sailor terminal users can create a fully integrated crewtalk and Multi-voice solution with just a firmware update and no other additional elements required. For other FleetBroadband terminals, additional hardware can be used alongside the terminal to access the additional telephone lines with the Multi-voice services.

For more information, visit [www.station711.com](http://www.station711.com).

#### **Imtech Marine becomes global supplier of Infinity**

Imtech Marine and Navarino have announced a partnership. Imtech Marine has become global supplier of Infinity, an advanced maritime bandwidth management and optimization solution that can be used onboard ships equipped with IP-based satellite terminals (such as Fleet BroadBand or VSAT). Imtech Marine chose Infinity for its ability to support Imtech Marine's Global VSAT network and various connectivity solutions. Imtech Marine offices that will be offering Infinity include Netherlands, Germany, Belgium, China, Singapore, and the U.S.

Imtech Marine operates Global Technical Assistance Centers 24/7/365 in Singapore, Houston, and Rotterdam to support customers, performing remote monitoring and maintenance support according to the "follow the sun" principle. With Infinity, satellite communication equipment onboard can be main-

tained through a back-up connection that enables the Global Technical Assistance Centers to help customers even more quickly through direct access.

Infinity allows users to share voice and data traffic required for business use combined with traffic generated by the crew in an efficient and measurable way. By doing so, users can subscribe to higher bandwidth packages and, therefore, enjoy lower rates while having the

ability to allocate costs and charge users (business, crew, or third party) accordingly. In addition, Infinity provides a variety of value-added services such as Internet café-type access for voice and data, VoIP calling, firewalling, compression, content management, vessel positioning, e-mail for crew or business purposes, and many other services.

For more information, visit [www.imtech.eu/marine](http://www.imtech.eu/marine).

**Subsea Networks**  
**connecting your business**

Globally in the Field

Network development from business plan to commissioning

at Depth

**Ocean Specialists Inc.**  
[www.oceanspecialists.com](http://www.oceanspecialists.com)  
Florida - Boston - Houston - Singapore

**Seaborn Networks' marine route surveys are underway**

Seaborn Networks announced that Alcatel-Lucent Submarine Networks has mobilized vessels for marine route surveys in the United States and Brazil relating to Seaborn's U.S.-Brazil submarine cable project. These surveys are a critical step in the construction of Seabras-1, a new submarine fiber optic cable being built by Alcatel-Lucent Submarine Networks for Seaborn Networks, the developer and operator. Seabras-1 is a 32-Tbps system that will be the first direct submarine cable connecting New York to São Paulo. The system also includes a branch landing in Fortaleza. Recently released data by the Brazilian Electrical and Electronics Industry Association (ABINEE) underscores Brazil's continuing telecom transformation. Operators invested US\$8.2 billion in Brazil's telecom infrastructure between January and September 2012, which almost equals the total invested for all of 2011 (and 2011 was also a record-setting year). This unprecedented growth is forecast to increase by an additional 7% in 2013.

**St. Helena continues to promote submarine cable**

During his attendance of the Overseas Territories Joint Ministerial Council in London from 3 to 5 December, St. Helenian Councillor Derek Thomas has stressed the importance of continued budgetary aids and advocated for a spur from the South Atlantic Express cable for St. Helena. In his report, Councillor Thomas commented on his discussions with the UK Minister for the Overseas Territories, Mark Simmonds. The Overseas Territories Joint Ministerial Council, chaired by Minister Simmonds and attended by Premiers, Chief Ministers, and other elected representatives from Britain's Overseas Territories agreed upon priorities and plans for the UK and the Territories to work together on wide range of issues, including strengthening economies and the environment.

**ZTT supplies cable for Saudi Aramco project**

Jiangsu Zhongtian Technology Co. Ltd. (ZTT) reports that it is supplying the submarine cable for a major project offshore Saudi Arabia for Saudi Aramco. The cables to be supplied by ZTT will connect the Abu Safah, Marjan, and Safaniya fields. A 15-kV composite cable covering 26.9-km will be installed in six segments in the Safaniya, Abu Safa, and Marjan fields, and a 35-kV composite cable covering 28.4-km will be installed in one segment in the Marjan field. The offshore campaign is scheduled to commence during the second quarter of 2013. Since being established in the Nantong Jiangsu Province in 1992, ZTT has provided the power transmission and telecommunications industry with high-quality products and service. In October 2002, ZTT became a public company and now has 23 subsidiaries and more than 5,000 employees. The company has made a number of breakthroughs in recent years. ZTT has expanded its market presence by winning submarine cable contracts in Europe and the United States. In 2012, ZTT developed a 220KV XLPE insulated submarine composite power/fiber cable that was certified for use by China's offshore wind industry.

**TEAMS repairs finished ahead of schedule**

The East African Marine System (TEAMS) has resumed normal services after successful completion of the first phase of the planned preventive maintenance.

The maintenance, which had been planned for the first two weeks of January 2013, was completed ahead of schedule. The actual downtime of the system was expected to be from January 3 to 15.

The work was finished ahead of schedule due to steadily favorable weather conditions offshore Mombasa, Kenya, where the work was centered. The remaining maintenance, which is expected to end in April this year, will not affect services.

The preventive maintenance works have been designed to reduce chances of cable damage by external aggressors, following the couple of cable cuts experienced by TEAMS cable at Mombasa early last year.

It is estimated that the preventive maintenance works on the TEAMS cable, including costs for temporary traffic restoration via other cables during the TEAMS cable outage, will be about U.S \$5.6 million.

For more information, visit [www.teams.co.ke](http://www.teams.co.ke).

**Southern Cross capacity upgrade brings lower prices**

Southern Cross prices have again fallen, and the company continues to expand its international capacity as it continues to upgrade the network. The cable system, which links Australia, New Zealand, Fiji, and the United States, reduced its capacity prices by another 20%, the tenth major price reduction since 2000. Over the period, the Southern Cross' price decline has averaged more than 22% per year.

The Southern Cross Network provides uninterrupted high-speed connectivity to U.S.-based Internet content. Constructed as a protected twin cable network of 28,500 km of submarine fiber optic cable, the Southern Cross cable network has become a major regional asset for reliable high-speed broadband.

The latest price decline marks the second stage of the eighth major capacity expansion program since 2001, and it is due for completion in February. This stage is based on Ciena's 40-Gbps transmission equipment and takes total lit capacity on the Southern Cross Network to 2 Tbps.

The third stage of the current expansion program is being implemented concurrently, and it is based on Ciena's 100-Gbps transmission equipment. 100G technology is already installed on some network segments and will take lit capacity to 2.6 Tbps by June 2013.

The increasing simplicity of equipment upgrades provides Southern Cross with the ability to frequently and rapidly expand capacity. The cable system currently has the potential to go to at

## Subsea Telecom

least 7 Tbps, about 30 times higher than our original design capability.

For more information, visit [www.southerncrosscables.com](http://www.southerncrosscables.com).

### UK cable owners, fishing group reach agreement

The UK's National Federation of Fishermen's Organizations (NFFO) and Subsea Cables UK, the umbrella body for the companies that lay subsea communications and power cables, have jointly agreed a memorandum of understanding.

Within the context of an ever-increasing network of cables laid on the seabed, both industries have a profound interest in finding ways to co-exist with minimal effect on each other.

For the cable operators, the integrity of their investment in cables that can be vulnerable to some kinds of fishing gear is paramount, while the fishing industry needs to maintain access to its customary fishing grounds. Both industries have a shared concern to safeguard the safety of fishing vessels and to minimize the danger to vessels and crews of inadvertently snagged cables.

A huge number of submarine fiber-optic cables have laid across the Atlantic, North Sea, Irish Sea, and Channel over the past two decades, while a new generation of cables importing electricity from offshore wind farms is now giving rise to a different set of challenges.

It is agreed between the parties that, where conditions allow, cable burial is the most effective method to protect inadvertent damage to subsea cables by mobile fishing gears and to minimize the risk to fishing vessels. Subsea Cables UK and the NFFO have undertaken to work together in the coming year on a protocol that will define the optimum depth for cable burial, taking account of various factors.

The two groups also have agreed that the key to successful co-existence is to establish strong communications links between the cable laying and operating companies and the fishing industry at national and local levels. Ways of ensuring good communication links during the planning, laying, and operating phases have been discussed and will be part of ongoing dialogue between the NFFO and Subsea Cables UK.

For more information, visit [www.nffo.org.uk](http://www.nffo.org.uk).

### TRAI specifies access charges for cable stations

The Telecom Regulatory Authority of India (TRAI) has released its regulations for access charges at submarine fiber-optic cable landing stations (CLSS).

Access Facilitation Charges (AFC) are

## Subsea Cables

the charges that are payable by international long distance operators and Internet service providers to the owner of the cable landing station to access the acquired international bandwidth in a submarine cable.

TRAI issued regulations on cable station access in 2007. In the same year, TRAI published the AFC when access is provided at cable landing station or at alternate location when space is not available at a CLS. With a view to align AFC with current cost and utilization, TRAI issued a consultation paper in March 2012. On the basis of cost data submitted by service providers, TRAI estimated AFC and issued a consultation paper on 19 October 2012 for further comments/counter comments of stakeholders.

On the basis of comments/counter comments received from stakeholders and further analysis, TRAI issued the regulations, which came into effect on 1 January 2013. These charges are substantially lower than the prevailing charges and are likely to result in:

- Reduction in the price of International Private Leased Circuits (IPLC) for BPOs/Call Centers, small and medium enterprises (SMEs), and other information technology enabled service providers;

- Availability of international bandwidth at competitive price to international long distance operators and ISPs for rapid growth of broadband services;

- International carriage of voice/data at competitive rates; and

- Boosting of competition in the international bandwidth segment.

For more information, visit [www.trai.gov.in](http://www.trai.gov.in).

### viNGN files for license for U.S. Virgin Islands cable

viNGN, Inc. has filed an application with the U.S. Federal Communications Commission (FCC) for a license to construct, land, and operate a non-common carrier fiber-optic submarine cable directly linking the islands of St. Thomas and St. Croix.

The St. Thomas-St. Croix System will be a high-capacity, digital fiber-optic system composed of 12 separated cables, with each cable having 12 strands of fiber, with a design capacity of 100 Gbps per fiber strand.

The system will provide an initial design capacity of 10 Gbps on the first fiber strand in each cable. The cable system is based on non-repeated technology using long-range, 10 GB optical transceivers on each end of the cable.

The St. Thomas-St. Croix System will have landing stations in Christiansted and Frederiksted, St. Croix and Brewers Bay,

RTSYS  
BA-SDA14  
WiFi remote  
Sound & GPS  
Buoy

"Get noise info  
and .wav. files  
in real-time  
at distance  
over 3km"

- GPS positioning & synchronization
- 4 hydrophone inputs
- Up to 2TB storage
- Reusable batteries
- Easy to deploy & recover

RTSYS

ocean business '13  
meet us #V24

Great Bay, Flamingo Bay, Banana Bay, and Vila Olga, St. Thomas.

The proposed landing station locations are either owned by the U.S. Virgin Islands Government or are the subject of negotiations for easements that will allow viNGN access to the landing locations. viNGN will be fully responsible for the operation of the landing terminal equipment at each station.

Each landing point associated with the cable system will consist exclusively of beach manholes and will not involve construction or use of buildings.

viNGN is a wholly owned subsidiary of the Virgin Islands Public Finance Authority (VIPFA), which is a public corporation and autonomous government instrumentality created in 1988 by the U.S. Virgin Islands Legislature for the purpose of aiding the U.S. Virgin Islands Government in the performance of its fiscal duties and carrying out its governmental responsibility of raising capital for public projects.

For more information, visit [www.vingn.com](http://www.vingn.com) or [www.fcc.gov](http://www.fcc.gov).

### LITC, Huawei Marine announce launch of Silphium

Libyan International Telecom Company

(LITC) and Huawei Marine Networks Co., Ltd. announced the commercial launch of Silphium, the first wholly owned submarine fiber-optic cable system to meet the increasing demand of international communications for the Libyan market.

The successful completion of the Silphium system, which leverages industry-leading optical technology, is one of the longest unrepeated subsea cable systems in the world. The system length exceeds 425 km across the Mediterranean Sea with a total design capacity of 1.2 Tbps at 10 Gbps per wavelength with provision to upgrade to 40 Gbps and 100 Gbps in the future.

Connecting Darnah in Libya with Chania in Greece, Silphium is the third Libyan international submarine cable system. Now operationally ready, the system enables Libya to connect into many European Internet hubs with OTEGLOBE providing the landing point in Chania and access to their vast European network. As the Libyan market opens up, communications infrastructure will play a significant role in driving economic growth. This system forms a foundation to help enable this growth and future expansion to be realized.

The project has, without doubt, been a major achievement, given many significant operational hurdles that were conquered with the collaboration of LITC, OTEGLOBE, and Global Marine. The operational experience gathered through this journey is unique in many ways and clearly demonstrates commitment and delivery capability.

For more information, visit [www.huawaimarine.com](http://www.huawaimarine.com).

### ITU proposes special measures for small island states

The International Telecommunications Union (ITU) has proposed special measures for small island developing states, as well as landlocked nations, to access to international fiber optic networks.

The World Conference on International Telecommunications held in Dubai last month, reaffirmed the importance of telecommunications and new information and communication technologies to the development of small island and landlocked countries and that current difficulties of these countries in gaining access to submarine fiber optic cables continue to adversely affect their development.

**"Your search for ferrous metals begins with Fishers Proton Mags"**

-Jack Fisher,  
President

**Diver Mag 1**  
Diver Held Mag  
**\$8,995**

**Proton 4 mag**  
Metal Detector for Iron and Steel  
**Only \$12,995**

**JW FISHERS**

**Call for a free catalog or visit our web site: [jwfishers.com](http://jwfishers.com)**

**MC-1**  
Mini Camera  
**\$2,045**

**CT-1**  
Cable Tracker with Signal Injector  
**\$14,495**

**Pulse 8X**  
Hand Held Metal Detector  
**\$2,150**

**Side Scans**  
**\$19,995**

**ROVs**  
**\$19,995**

**Scan-650**  
Scanning sonar  
**\$6,995**

1953 County St., E. Taunton, MA 02718 USA • (800)822-4744 (508)822-7330 • FAX: (508)880-8949 • email: [jwfishers@aol.com](mailto:jwfishers@aol.com) • [www.jwfishers.com](http://www.jwfishers.com)

**Subsea Telecom**

The resolution published by the ITU at the close of the conference instructed the director of the Telecommunication Development Bureau to 1) study the special situation of telecommunication services in island countries, taking into account the importance of access to international fiber-optic networks at reasonable cost; 2) report to the ITU Council on measures taken with respect to the assistance provided to small island states; and 3) assist these states to develop their required plans containing practical guidelines and criteria to govern and promote sustainable regional, subregional, multilateral, and bilateral projects, affording them greater access to international fiber-optic networks.

The ITU also invited member states to cooperate with small island states in promoting regional projects and programs for telecommunication infrastructure integration that afford these states greater access to international fiber-optic networks. The ITU and encourages these states to continue to accord high priority to telecommunication/ICT activities by putting in place technical cooperation activities in order to promote integral socioeconomic development.

For more information, visit [www.itu.int](http://www.itu.int).

**Huawei Marine debuts repeater and branching unit**

Huawei Marine Networks Co. Ltd. has announced the commercial availability of their second generation repeater and branching unit for subsea turnkey global telecommunication networks. The Optical Repeater provides solutions for regional and long-haul systems that need high performance and reliability with 2, 4, and 6 fiber pair solution coupled with unique pump redundancy architecture design.

Through a comprehensive product design, life testing, and validation process, the second generation (RPT 1660) product set has been built upon the proven success of its first generation subsea products (deployed in several live commercial systems). This technology utilizes a slim-line compact repeater housing that greatly reduces operational cost associated with repeater integration and loading and offers improved plough burial performance. In short, end users gain access to some unique benefits and, therefore, can leverage whole life cycle cost savings associated with turnkey solutions with this innovative product set.

The Branching Unit (BU 1650), designed for applications with optical submarine cable systems, provides users flexibility to service multi-landing points or future proofs design when landing points

are yet to be defined. These robust units offer power switching and optical switching capability (up to 8 fiber pairs), managed through a single network management system that offers customers a single touch point to control and monitor the subsea and terrestrial networks.

The combination of the optical repeater and branching unit engineered with proven universal joint (UJ) technology provides customers cost-effective solutions and leverages technological advancements in

the field of subsea communication. Coupled with a titanium housing, the optical repeater and branching unit offers a mechanical robust design results with light weight and improved strength.

Huawei Marine is a joint venture between Huawei and Global Marine Systems. The RPT1660 and BU 1650 were jointly designed by the two companies.

For more information, visit [www.huaweinmarine.com](http://www.huaweinmarine.com).

**seanic ocean systems**

**Setting the Standard in Subsea Solutions**

**Simple, Rugged and Reliable**

Available Worldwide

**Ashtead TECHNOLOGY OFFSHORE DIVISION**

[www.ashtead-technology.com](http://www.ashtead-technology.com)

**Visit us at Subsea Tieback Booth # 400**

**seanic**

[www.seanicusa.com](http://www.seanicusa.com)

### Reef Subsea completes maiden contract for Q1000

Last year, Reef Subsea Power & Umbilical (Reef Subsea) installed a series of high-voltage array cables on the Lincs wind farm using the MD3 cable plough. This new scope of work required RSPU to carry out an on-site trial and then the burial of a few pre-laid cable ends at the site, located 8 km off the Lincolnshire coastline. Reef Subsea used its new Q1000 Trenching ROV on the project, which was mobilized onboard the Reef Despina.

The Q1000 has the ability to maneuver close to the turbine foundation using its sophisticated control and measurement system, enabling burial of the array cable in close proximity of the j-tube bellmouth. Reef Subsea also provided all onshore and offshore project management and engineering during the 14-day workscope.

The Q1000 is a modern, free-flying ROV jet trencher that can operate in water depths up to 2,000 m and in a variety of soil conditions. The trencher has 1000hp installed power and is ideally suited to the burial of rigid and flexible pipelines, umbilicals, and cables for

### Power Cables

multiple market sectors.

Reef Subsea is an international group providing cost-effective integrated subsea services—IRM and construction, installation, burial, dredging, and excavation—to the oil and gas and renewables industries. Its specialized subsidiaries provide operators and contractors with highly experienced personnel, key subsea technologies and construction support vessels. Reef Subsea serves its clients in the deep-water or demanding environments of the North Sea, Americas, Middle East, and South-East Asia areas. Reef Subsea is a 50/50 owned company of GC Rieber Shipping and HitecVision.

For more information, visit [www.reefsubsea.com](http://www.reefsubsea.com).

### Norway, Germany agree on large-scale project

The Norwegian power grid operator Statnett, KfW IPEX-Bank on behalf of KfW and TenneT TSO GmbH, transmission system operator for the German North Sea region, have concluded a cooperation agreement to develop and construct a subsea cable between Germany and Norway. The high-volt-

age direct current interconnector will enable energy to flow between Germany and Norway and help improve the distribution of, in particular, renewable energy sources between the two nations. It, thereby, contributes to the success of the German energy turnaround. The integration of the Norwegian and German electricity markets, which, thus far, are not connected directly, will ensure greater grid stability in the two countries, increase market efficiency, and stabilize prices between seasons.

The interconnector project comprises an investment volume of approximately EUR 1.5 to 2 billion. The three-party agreement provides for a 50:50 partnership between Norway and Germany. Norway's State-owned Statnett will own 50% of the project. On the German side, KfW and TenneT will jointly own 50% of the project via a newly established project company. The target is to commence operation of the cable in late 2018. The agreement is based on the agreement reached in June between Norway and Germany. The agreement comprises provisions on the further development and implementa-

Supplying quality grocery  
and janitorial products to the  
Gulf of Mexico since 1964.



CUSTOMER LOYALTY & SERVICE  
IS STILL OUR TRADEMARK  
AFTER NEARLY A  
HALF-CENTURY IN BUSINESS!



LAND & MARINE  
FOOD DISTRIBUTORS INC

800.256.9187 • [WWW.GJFOOD.COM](http://WWW.GJFOOD.COM) • [SALES@GJFOOD.COM](mailto:SALES@GJFOOD.COM)

tion of the project; these will result in a final investment decision in 2014.

Alongside the grid expansion in Germany, one of the greatest challenges in the transition to a carbon-free energy supply is the creation of storage capacities for intermittent energy.

With this cable, wind power and solar power can be exported from Germany to Norway when there is a surplus of this, while Norway can export hydropower to Germany when the sun does not shine and the wind does not blow. This, again, will support the ambitions for more renewable energy and increased energy supply in the region, and, ultimately, EU's climate and energy goals, both on a short-and-long term basis.

For more information, visit [www.statnett.no](http://www.statnett.no).

#### Nexans' umbilicals for Statoil's Norwegian offshore fields

Nexans has been awarded a €45 million contract by Statoil to supply static and dynamic umbilicals for three fast-track projects on the Norwegian Continental Shelf: the Oseberg Delta field (North Sea), the Snøhvit gas field



Q2000 Trench ROV and Reef Despina on Lincs Offshore Wind Farm

(Barents Sea), and the Smørifik Sør (Norwegian Sea).

Nexans' specialized facility in Halden, Norway will manufacture a total of around 42 km of static and dynamic umbilicals to Statoil's new standardized umbilical design that has been developed to provide a consistent and cost-efficient solution for fast-track projects, such as tie-ins to existing infrastructure as well as other kinds of subsea oil and gas projects.

The umbilicals will provide hydraulic, data, and fiber-optic services for subsea equipment at a water depth of 100 m for the Oseberg field, 345 m for Snøhvit, and 300 m for Smørifik. Manufacturing is expected to start in the middle of 2013, with delivery anticipated during 2014-2015.

For more information, visit [www.nexans.com](http://www.nexans.com).

#### NIB finances Finnish power cable

The Nordic Investment Bank (NIB) and Kraftnät Åland Ab have signed a 30-year-maturity loan totaling EUR 60 million for financing a 160-km subsea transmission cable between the Åland Islands and mainland Finland.

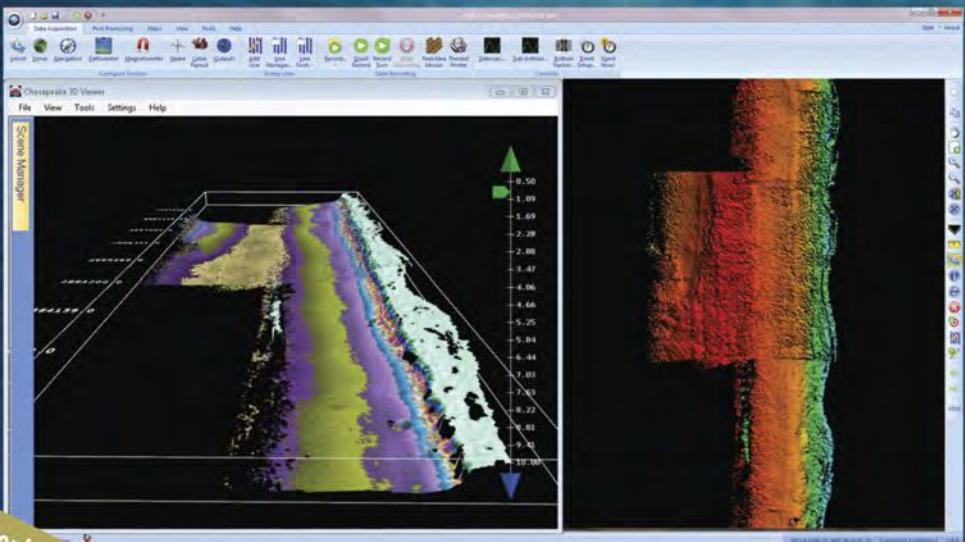
Kraftnät Åland is to build a 100-MW subsea cable in order to further ensure the energy supply in the Åland Islands. Currently, 70% of the electricity used on the islands is transferred via a cable from Sweden. The new cable will also result in the possibility to close two fossil-fuelled reserve power units in Åland.

The new transmission cable will also be used as a route between the Finnish and Swedish energy markets and help stabilize the Nordic electricity market. A further aim is to support the expansion of wind power projects in Åland in line with the plan to raise the share of wind-generated energy from the current 25% up to 70% in the future. The cable can also be used for wind-power generated electricity export from Åland to Sweden and Finland.

For more information, visit [www.nib.int](http://www.nib.int).

# SonarWiz Bathy

*World Leading Software for Data Acquisition and Processing*



**New for 2013**  
**Swath Bathymetry Data Processing**

- Seamless data integration (native data formats read directly)
- Intuitive interface

Chesapeake Technology Inc.

Don't miss the next SonarWiz training April 12, 2013, Southampton, UK

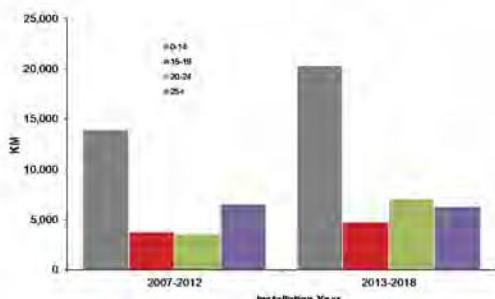
For details, visit our website or contact us at 650-967-2045

[www.chesapeaketech.com](http://www.chesapeaketech.com)

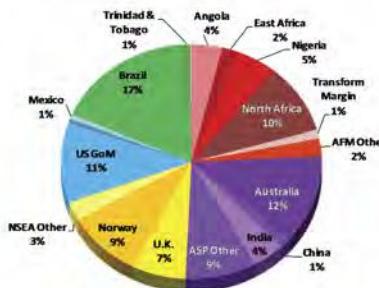
# Offshore At-A-Glance

## Quest Offshore Activity Report

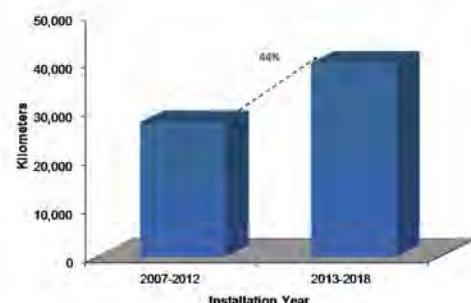
**Worldwide Pipeline Demand Growth**  
2007 – 2012 vs. 2013 – 2018



**Worldwide Pipeline Demand**  
2013 – 2018 by Province (40,035 km)

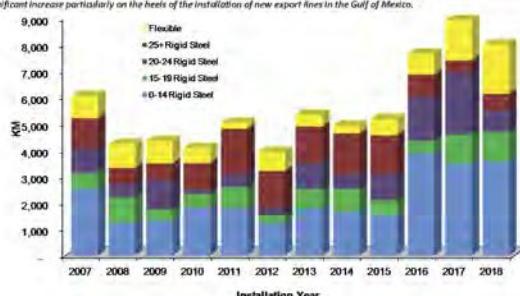


**Worldwide Pipeline Demand Growth**  
2007 – 2012 vs. 2013 – 2018

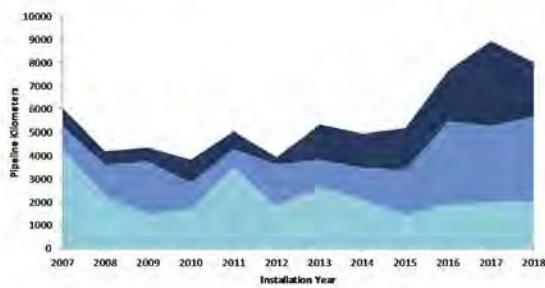


**Worldwide Pipeline Demand**  
2007 – 2018

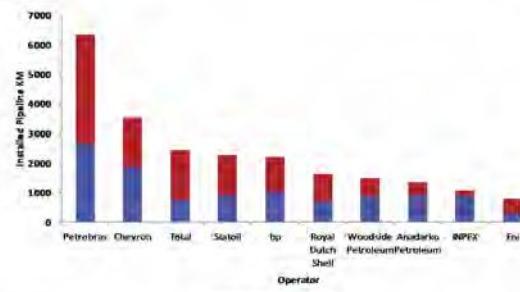
World pipeline demand will continue its growth trend into the foreseeable future buoyed by the development of large projects such as those in the Brazilian Pre-Salt and investments in export infrastructure in select regions such as Australia. 2013 installations see a significant increase particularly on the heels of the installation of new export lines in the Gulf of Mexico.



**Global Project Water Depth Installation Analysis**  
2007 – 2018e



**2013e-2018e Top Operators by Pipeline Installation (KM)**  
Infield v. Exports



FOR MORE DETAILED INFORMATION

(281) 491-5900 - USA • 44 (0) 1737 371704 - London • e mail: corp@questoffshore.com  
www.QuestOffshore.com • www.SubseaZone.com • www.FloatingProductionZone.com

# Gulf of Mexico Data

## Current Deepwater Activity

Operator	Area	Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
Petrobras America, Inc.	WR	425	G16987	VANTAGE TITANIUM EXPLORER	Chinook	8,843
Anadarko Petroleum Corp.	SE	39	G27779	MAERSK DEVELOPER	Phobos	8,553
Anadarko Petroleum Corp.	DC	535	G23520	ENSCO 8506	Raptor	8,161
Shell Offshore, Inc.	AC	857	G17561	H&P 205	Great White	7,816
Shell Offshore Inc.	MC	393	G26254	T.O. DEEPWATER NAUTILUS	White Ash	7,375
Chevron USA Inc.	WR	758	G17015	T.O. DISCOVERER CLEAR LEADER	Jack	6,965
Chevron USA Inc.	WR	758	G17015	T.O. DISCOVERER INSPIRATION	Jack	6,959
ExxonMobil Corp.	KC	918	G32654	T.O. DEEPWATER CHAMPION	Hadrian	6,894
Anadarko Petroleum Corp.	KC	875	G21444	ENSCO 8500	Lucius	6,840
BP Exploration & Production Inc.	GC	743	G15607	T.O. DEVELOPMENT DRILLER II	Atlantis	6,834
Union Oil Co. of California	WR	98	G21841	PACIFIC SANTA ANA	Coronado	6,127
BP Exploration & Production, Inc.	MC	429	G07944	ENSCO DS-3	Ariel	6,106
Noble Energy, Inc.	MC	948	G24133	ENSCO 8501	Gunflint	6,083
BP Exploration & Production, Inc.	MC	778	G14658	THUNDER HORSE PDQ	Thunder Horse South	6,040
BP Exploration & Production, Inc.	KC	292	G25792	SEADRILL WEST SIRIUS	Kaskida	6,031
Shell Offshore Inc.	WR	95	G31943	NOBLE GLOBETROTTER	Yucatan North	5,847
Anadarko Petroleum Corp.	WR	51	G31938	ENSCO 8505	Shenandoah	5,837
BP Exploration & Production Inc.	MC	777	G09867	SEADRILL WEST CAPRICORN	Thunder Horse South	5,730
BP Exploration & Production Inc.	MC	777	G09867	T.O. DISCOVERER ENTERPRISE	Thunder Horse South	5,613
Cobalt International Energy, LP	GC	896	G31765	ENSCO 8503	Ardennes	5,510
BP Exploration & Production, Inc.	GC	743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	5,413
Chevron USA Inc.	WR	29	G16942	T.O. DISCOVERER INDIA	Big Foot	5,187
Anadarko Petroleum Corp.	GC	680	G21811	NABORS MODS RIG 150	Ticonderoga	4,968
LLOG Exploration Offshore LLC	MC	253	G24062	ENSCO 8502	MC 208-253	4,927
ConocoPhillips Co.	GB	783	G11573	NABORS MODS 201	Magnolia	4,674
Hess Corp.	MC	726	G24101	STENA FORTH	Tubular Bells	4,610
Anadarko Petroleum Corp.	GC	683	G16783	T.O. DISCOVERER SPIRIT	Caesar	4,485
BHP Billiton Petroleum (GOM) Inc.	GC	653	G20084	T.O. DEVELOPMENT DRILLER I	Shenzi development	4,356
BHP Billiton Petroleum (GOM) Inc.	GC	654	G20085	GSF C.R. LUIGS	Shenzi development	4,300
Chevron USA, Inc.	GC	640	G20082	T.O. DISCOVERER DEEP SEAS	Tahiti 2	4,292
Anadarko Petroleum Corp.	GC	608	G18402	BLAKE 1007	Genghis Khan	4,287
Shell Offshore Inc	MC	940	G31534	NOBLE DANNY ADKINS	Vito	4,004
Shell Offshore Inc	MC	809	G09883	H&P 204	Princess	3,797
Anadarko Petroleum Corp.	EB	688	G09191	COIL TUBING UNIT (L.J. #2)	Bomvang (east)	3,786
Anadarko Petroleum Corp.	EB	688	G09191	CAL DIVE Q-4000	Boomvang (east)	3,786
Shell Offshore Inc.	GB	602	G11553	NOBLE DRILLER	Macaroni	3,694
Murphy E&P Co.	GC	338	G21790	NABORS MODS 200	Front runner	3,325
Shell Offshore, Inc.	VK	956	G08475	NABORS 202	Ram-Powell	3,214
Shell Offshore Inc.	MC	807	G07957	NOBLE BULLY I	Mars (Ursa/Princess)	3,030
Shell Offshore, Inc.	GC	158	G07998	H&P 202	Brutus	2,985
Shell Offshore, Inc.	MC	807	G07958	H&P 201	Mars (Ursa/Princess)	2,945
W&T Energy Vl, LLCC	MC	243	G19931	WIRELINE UNIT (N.O. #2)	Matterhorn	2,816
Eni US Operating Co. Inc.	MC	460	G18245	T.O. DEEPWATER PATHFINDER	Appaloosa	2,654
LLOG Exploration Offshore, LLC	MC	503	G32334	NOBLE AMOS RUNNER	WhoDat	2,646
Hess Corp.	GB	386	G10350	ATWOOD CONDOR	Llano	2,627
Chevron USA Inc.	GC	205	G05911	NABORS 85 (MAYRONNE 162)	Genesis	2,590
BP Exploration & Production Inc.	MC	709	G06973	DIAMOND OCEAN SARATOGA	Panatella	2,488
Statoil USA E&P Inc.	MC	540	G26265	T.O. DISCOVERER AMERICAS	Krakatoa	2,036
Anadarko Petroleum Corp.	VK	826	G06888	NABORS P-10	Neptune	1,932
Hess Corp.	GB	260	G07462	NABORS S.D. XVI	Baldpate	1,646
Dynamic Offshore Resources, LLC	GC	65	G05889	H&P 206	Bullwinkle	1,353
Chevron USA Inc.	GB	189	G06358	WIRELINE UNIT (L.C.#2)	Tick	718

Deepwater prospects with drilling and workover activity: 52

Current Deepwater Activity as of Monday, 11 February 2013

### Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,756	34,800	2,745
201 to 400	117	1,113	20
401 to 800	286	855	10
801 to 1,000	387	571	9
1,000 & above	3,417	1,811	25

### Rig Activity Report 22 February 2013

Location	Week of 2/22	+/-	Week Ago	+/-	Year Ago
Land	1689	-2	1691	-234	1923
Inland Waters	19	3	16	4	15
Offshore	53	-2	55	10	43
U.S. Total	1761	-1	1762	-220	1981
Gulf of Mexico	51	-2	53	8	43
Canada	662	11	651	-39	701
N. America	2423	10	2413	-259	2682

Activity by Water Depth Information current as of Tuesday, 19 February 2013

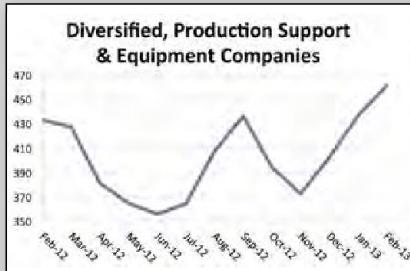
Maximum number of rigs operating in the deepwater Gulf of Mexico. The rig unit includes platform rigs operating on deepwater production facilities in addition to the MODU's. The numbers do not distinguish between rigs drilling and those in service for completion and workover operations.

Information provided courtesy of the U.S. Bureau of Ocean Energy Management

# Monthly Stock Figures & Composite Index

Industry Company Name	Symbol	Close Mid-February	Close Mid-January	Change	Change %	High	Low 52 week
<b>Diversified, Production Support and Equipment Companies</b>							
Baker Hughes, Inc.	BHI	46.58	45.21	1.37	3.0%	52.93	37.08
Cameron Intl. Corp.	CAM	64.58	59.42	5.16	8.7%	66.14	38.38
Drill-Quip, Inc.	DRQ	84.10	79.32	4.78	6.0%	85.34	57.27
Halliburton Company	HAL	42.70	37.72	4.98	13.2%	43.96	26.28
Tenaris SA	TS	40.75	42.38	-1.63	-3.8%	44.48	29.79
Newpark Resources, Inc.	NR	9.15	8.33	0.82	9.8%	9.25	5.19
Schlumberger Ltd.	SLB	80.03	78.23	1.80	2.3%	82.00	59.12
Superior Energy Services, Inc.	SPN	26.64	24.50	2.14	8.7%	30.85	17.54
Weatherford International, Inc.	WFT	12.89	12.59	0.30	2.4%	17.55	8.84
Deep Down, Inc.	DPDW	1.65	1.53	0.12	7.8%	1.80	0.80
FMC Technologies	FTI	51.80	46.50	5.30	11.4%	52.84	36.89
<b>Total Diversified, Production, Support and Equipment.....</b>	<b>460.87</b>	<b>435.73</b>	<b>25.14</b>	<b>5.8%</b>	<b>487.14</b>	<b>317.18</b>	
<b>Geophysical / Reservoir Management</b>							
Dawson Geophysical Company	DWSN	32.37	24.97	7.40	29.6%	39.21	20.20
Mitcham Industries, Inc.	MIND	15.80	14.93	0.87	5.8%	26.76	11.51
Compagnie Gnrale de Gophysique-Veritas	CGV	28.12	29.46	-1.34	4.5%	34.84	20.68
<b>Total Geophysical / Reservoir Management.....</b>	<b>76.29</b>	<b>69.36</b>	<b>6.93</b>	<b>10.0%</b>	<b>100.81</b>	<b>52.39</b>	
<b>Offshore Drilling Companies</b>							
Atwood Oceanics, Inc.	ATW	54.19	51.96	2.23	4.3%	55.49	34.93
Diamond Offshore Drilling, Inc.	DO	74.75	74.19	0.56	0.8%	76.85	55.83
ENSCO International, Inc.	ESV	64.35	62.41	1.94	3.1%	65.82	41.63
Nabors Industries, Inc.	NBR	17.68	16.30	1.38	8.5%	22.73	12.40
Noble Drilling Corp.	NE	39.11	39.84	-0.73	-1.8%	41.71	28.73
Parker Drilling Company	PKD	6.11	5.55	0.56	10.1%	7.19	3.61
Rowan Companies, Inc.	RDC	35.84	34.52	1.32	3.8%	39.40	28.62
Transocean Offshore, Inc.	RIG	56.26	55.92	0.34	0.6%	59.50	39.32
<b>Total Offshore Drilling.....</b>	<b>348.29</b>	<b>340.69</b>	<b>7.60</b>	<b>2.2%</b>	<b>368.69</b>	<b>245.07</b>	
<b>Offshore Contractors, Services, and Support Companies</b>							
Helix Energy Solutions Group, Inc.	HLX	24.15	22.75	1.40	6.2%	25.49	14.90
Gulf Island Fabrication	GIFI	24.39	23.80	0.59	2.5%	35.48	19.89
McDermott International, Inc.	MDR	12.88	12.36	0.52	4.2%	15.35	9.04
Oceaneering International	OII	63.54	61.01	2.53	4.1%	65.37	43.22
Subsea 7 SA	SUBCY.PK	23.59	24.73	-1.14	-4.6%	27.21	18.16
Technip ADS	TKPPY.PK	26.85	27.68	-0.83	-3.0%	30.21	21.88
Tetra Technologies, Inc.	TTI	9.57	8.52	1.05	12.3%	10.59	5.35
Cal Dive International, Inc.	DVR	2.09	1.69	0.40	23.7%	1.00	4.00
<b>Total Offshore Contractors, Service, and Support.....</b>	<b>187.06</b>	<b>182.54</b>	<b>4.52</b>	<b>2.5%</b>	<b>210.70</b>	<b>136.44</b>	
<b>Offshore Transportation and Boat Companies</b>							
Seacor Holdings, Inc.	CKH	71.90	86.69	-14.79	-17.1%	100.00	71.90
Gulfmark Offshore, Inc.	GLF	40.31	34.69	5.62	16.2%	56.41	27.17
Bristow Group	BRS	58.71	56.37	2.34	4.2%	59.42	37.92
PHI, Inc.	PHII	31.99	32.68	-0.69	-2.1%	33.75	20.85
Tidewater, Inc.	TDW	49.70	47.82	1.88	3.9%	63.27	42.33
Trico Marine Services, Inc.	TRMAQ.PK	0.04	0.04	0.00	0.0%	0.11	0.01
Hornbeck Offshore	HOS	44.03	37.11	6.92	18.6%	46.09	31.68
<b>Total Offshore Transportation and Boat .....</b>	<b>296.68</b>	<b>295.40</b>	<b>1.28</b>	<b>0.4%</b>	<b>359.05</b>	<b>231.86</b>	

# Monthly Stock Figures & Composite Index

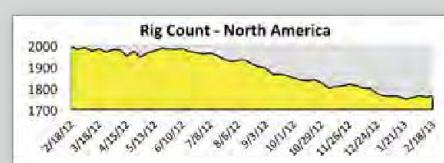
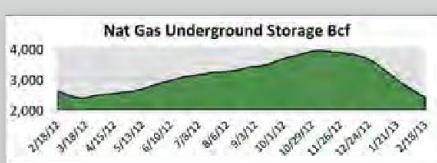
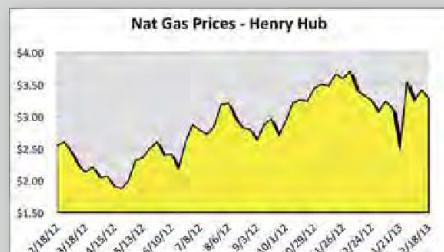
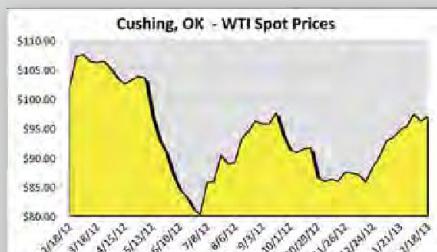
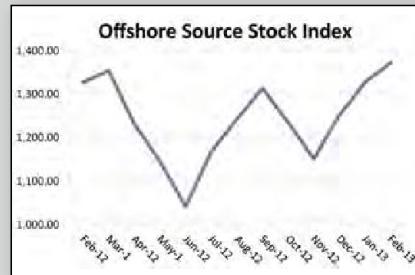
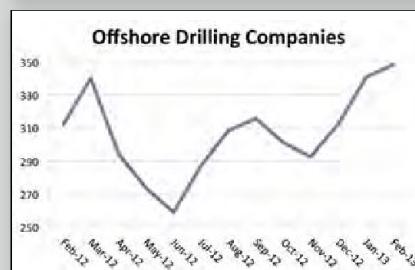
Industry	Close(Mid) February	Close(Mid) January	Change	Change %	High 52 week	Low
Diversified, Production Support & Equipment Companies						
	460.87	435.73	25.14	5.8%	487.14	317.18
Total Geophysical / Reservoir Management	76.29	69.36	6.93	10.0%	100.81	52.39
Total Offshore Drilling	348.29	340.69	7.60	2.2%	368.69	245.07
Total Offshore Contractors, Service and Support	187.06	182.54	4.52	2.5%	210.70	136.44
Total Offshore Transportation and Boat	296.68	295.40	1.28	0.4%	359.05	231.86
Total Offshore Source Index	1,369.19	1,323.72	45.47	3.4%	1,526.39	982.94

## DISCLAIMER

The information on this page is provided for information and comparison purposes only and should not be used to make financial and business decisions and is accurate to the best of our knowledge for the period indicated.

## Oil & Gas Industry Trends

*Monitoring the Pulse of the U.S. Offshore Oil & Gas Industry*



- Positive trend, at least 3 weeks
- Changing trend, less than 3 weeks
- Negative trend, at least 3 weeks

## First Subsea gets ABS 2009 Approval for forged 500-mm diameter subsea connectors

Subsea mooring connector (SMC) equipment supplier, First Subsea, has been awarded the American Bureau of Shipping's ABS 2009 Approval for specialist subsea mooring connectors. It is the first manufacturer of offshore mooring connectors to achieve this type of approval for the design and manufacture of large-scale forgings over 500 mm in diameter.

The ABS 2009 Certification of Offshore Mooring Chain specifies the requirements for materials, design, manufacture, and testing of offshore mooring chain and accessories, including special subsea mooring connectors intended to be used for temporary and permanent mooring systems.

The approval applies to First Subsea's range of Ballgrab ball and taper mooring connectors manufactured from steel-grade 4330V forgings up to 510 mm



outside diameter. The subsea mooring connectors can be used with R3, R3S, R4, R4S, and R5 grade chain and shackle.

The ABS 2009 Approval builds on First Subsea's investment in research into large-scale steel forgings. In collaboration with the University of Sheffield's Institute for Microstructural and Mechanical Process Engineering (IMMPE-

TUS), the company leads the world in research into the manufacture and testing of 4330V large-scale steel forgings.

The company's research was instrumental in the development of the steel grade 4330V, and in assisting ABS in specifying the optimum sample testing location for assessing the forging's mechanical properties and Charpy impact values.

For more information, visit [www.firstsubsea.com](http://www.firstsubsea.com).

## Seanic builds second Flex Joint Cleaning Tool

Seanic announced, due to increased customer inquiries, they are building a second Flex Joint Cleaning Tool. The first Flex Joint Cleaning Tool was designed and built specifically for a major oil company in 2007. Since that time, Seanic has been responsible for storing, maintaining, and operating that tool in the field on their

behalf. The Flex Joint Cleaning Tool was originally designed to effectively remove excessive marine growth where the ball and socket meet, allowing for an optimal inspection of the elastomer material. Once cleaned, the high-definition still photography and video collected will allow for 3D modeling if any anomalies are found. The new tool can accommodate pipeline diameters ranging from 6 to 24 in. and, given the unique deployment system, the tool can be used with any of the standard work-class ROVs.

Tom Ayars, president of Seanic, said, "Over the last few years, operators have shown strong interest in being able to perform detailed inspections of their Flex Joints once they heard about the first tool. Since the first tool was owned by a specific operator, we were not able to share the actual hardware. Adding this second tool to our extensive rental fleet this spring will allow other operators the chance to take advantage of this unique concept in their annual IMR programs."

Seanic Ocean Systems is based in Houston, Texas and was formed to address the growing demand for simple, rugged, and reliable subsea tooling for remote intervention. Seanic provides a worldwide standard product line of ROV tooling, such as torque tools, FLOTs, standard and zero-leak hot stabs, manifolds, buckets, and ROV interface panels just to name a few.

For more information, visit [www.seanicusa.com](http://www.seanicusa.com).



## RESON introduces a new member to the SeaBat family

RESON's newest product, the SeaBat 7160, raises the bar in its class among the world-renowned brand of SeaBat multibeam echosounders. Marine exploration, seafloor habitat mapping, and hydrographic charting are moving into deeper waters. To meet the need for multibeam surveys in medium to deepwater (up to 3,000 m), RESON introduces the new SeaBat 7160 multibeam echosounder.

To ensure even greater performance, the newest member of the SeaBat family is being released with X-Range, which provides greater performance and improved system immunity to external noise.

"We are very pleased to put the SeaBat 7160 on the market. The new system is a significant upgrade of the SeaBat 8160—especially with the inclusion of X-Range," says executive vice president of Product Management at RESON, Tim Lysholt Jensen. The unique feature about the SeaBat 7160 is the X-Range, which is a software and hardware feature that provides extended performance. The basis of X-Range is a frequency modulated transmission combined with advanced signal processing techniques to extract the maximum performance from the system. Furthermore, the SeaBat 7160 is unique in the market for its position, being the only portable medium to deepwater solution available.

The system can operate in water depths of between 3 to 3,000 m; it offers up to 512 high-density equi-distant beams with a selection of coverage modes, including features such as variable and steerable swath, together with real-time pitch and roll stabilization, maximizing useable swath and performance. The SeaBat 7160 also provides the collection of high-density water column data, all wrapped up in a state-of-the-art processing unit.

For more information, visit [www.reson.com](http://www.reson.com).



## Teledyne BlueView adds light-weight and 10° down-angle options to mini M series sonar

Teledyne BlueView, the world leader in compact acoustic imaging and measurement technology, added two new options to its mini M Series 2D multibeam imaging sonar, lightweight and built-in 10° down-angle. The new lightweight model reduces the M Series weight by 30% to 3.4 lbs in air with near neutral buoyancy in water. The new M Series lightweight and 10° down-angle options are specifically engineered to meet the unique demands of micro-ROV and diver handheld platforms. The built-in 10° degree down-angle enhances usability by improving imaging of bottom or surface targets without having to tip the sonar or platform downward, and the lightweight improves handling.



"Our sales and engineering teams work together, delivering solutions that meet our customers' unique challenges, and the wide selection of options available with the new M Series can be combined to meet a specific need," said Scott Bachelor, Teledyne BlueView vice president of engineering.

Teledyne BlueView is a leader in advanced 2D and 3D multibeam imaging sonar technology with the fastest, smallest, and lightest systems available and more than 500 installed systems worldwide. Currently deployed on AUVs, ROVs, manned submersibles, surface vessels, diver handheld systems, and portable marine tripods, Teledyne BlueView's advanced sonar systems support mission critical underwater operations for leading operators, manufacturers, and service providers. Teledyne BlueView customers enjoy a low cost of ownership with reliable operation, exceptional service, in-person training, extensive online information, and worldwide after-sale support.

For more information, visit [www.blueview.com](http://www.blueview.com).

# Iver2

## Autonomous Underwater Vehicle



**Iver2 AUV—Ideally suited to execute a variety of missions in near coastal environments**

- Easy to operate
- Single person launch and recovery
- Commercial open system architecture
- Intuitive mission planner
- Science payloads available
- Low cost AUV 54K USD

  
**OceanServer**  
IVER2 Autonomous Underwater Vehicle

[www.ocean-server.com](http://www.ocean-server.com)  
+1 508 678 0550



## INNOVATIVE ROV TOOLS

QUICK RETRIEVAL SHACKLE FOR LIFTING  
AND HANDLING SUBSEA EQUIPMENT



SIZES 8.5 TONS TO 400 TONS

PATENTED: 8230799B2

WORLDWIDE PATENTS PENDING

### CONTACT DETAILS:

Rovsco Inc.  
Houston, Texas USA  
[sales@rovenco.com](mailto:sales@rovenco.com)

Rovsco Asia  
Singapore  
[sales@rovcoasia.com](mailto:sales@rovcoasia.com)

Website: [www.rovenco.com](http://www.rovenco.com)

## Your Underwater Technology Specialists

Video Systems      Diver Delivery Systems      Hydrographic Systems

**SHARK**  
**SHARK MARINE**  
**TECHNOLOGIES INC.**

Since 1984

Search and Recovery Systems      Diver Held Sonar / Navigation Systems      Remotely Operated Vehicles

**[www.sharkmarine.com](http://www.sharkmarine.com)**  
**[sales@sharkmarine.com](mailto:sales@sharkmarine.com)**  
**Phone: (905) 687-6672**

## Product News

### DeepSea Power & Light® Announces the DVS-300 diver video system

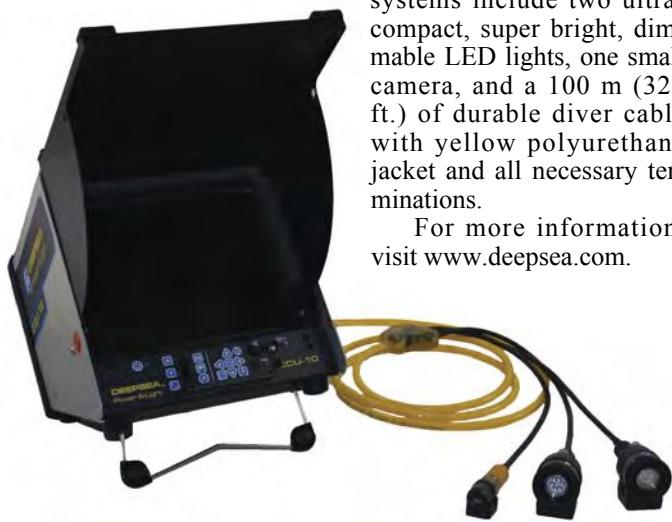
DeepSea Power & Light® proudly announces the release of the DVS-300, a one-of-a-kind compact, ultra-lightweight video system that records to a USB flash drive.

At the heart of the DVS-300 is the CCU-10 Camera control unit which offers a 12.1 in. display in one of the most compact and portable system control units available, weighing only 12 lbs. The CCU-10 gives divers a simple and convenient way to record audio, video, and still images, while running on either AC or two hot-swappable 18v rechargeable Lithium Ion batteries. It includes both an internal microphone and an external audio input.

The user-friendly video system is capable of simultaneously capturing full frame rate video as well as more compact low frame rate video and still images from either NTSC or PAL cameras. The CCU-10 can automatically assemble videos and images into an HTML report on a USB storage media for easy follow up and distribution.

All DVS-300 diver video systems include two ultra-compact, super bright, dimmable LED lights, one small camera, and a 100 m (328 ft.) of durable diver cable with yellow polyurethane jacket and all necessary terminations.

For more information, visit [www.deepsea.com](http://www.deepsea.com).



### Shark Marine SV-DCC camera controller with digital video recorder

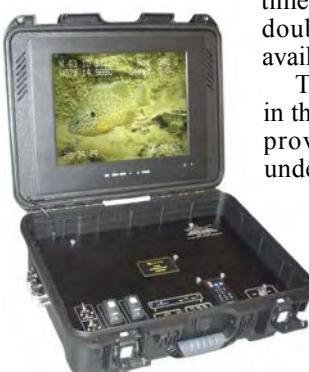
Shark Marine Technologies Inc. of St. Catharines, Ontario, Canada, announces a new topside video controller with a built-in digital recorder and 15 in. daylight viewable monitor.

The SV-DCC controller, records real-time video to SD memory cards and is backwards compatible with Shark Marine's entire line of standard video, underwater cameras, and lights. Selectable recording modes allow for 16 to 49 hrs of recording time on the included 16G SD card and double that amount on an optionally available 32G.

The 15 in., 1500 nit display mounted in the lid of the controller's rugged case provides a crisp, clear image of the underwater operations for the topside operator.

Other readily available options include GPS overlay, Keyboard/text overlay, and built-in video enhancement features such as LYNN or Helios.

For more information, visit [www.sharkmarine.com](http://www.sharkmarine.com).

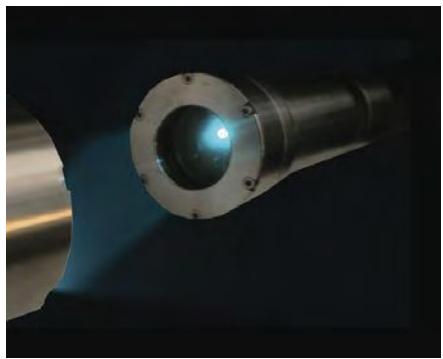


## Aquatec Hydrotest Instrumentation for IKM in Norway

Aquatec are pleased to announce that it has been awarded a 1.6 million NOK contract to supply hydrotest instrumentation and spares for the rental arm of Norwegian subsea company, IKM. Following several years of successful deployments, IKM has upgraded to Aquatec's latest HYDROlog, AQUAmodem, and subsea switch technology to equip its subsea hydrotest data logger spreads.

When new pipelines and subsea infrastructure are installed, they must be tested to ensure that they hold pressure for a period of time. Aquatec's HYDROlog instruments are designed to monitor and record ambient temperature and test pressures up to 1,000 bar or 15 kpsi down to 4,000 m water depth. The temperature and pressure record can be downloaded when the data logger is recovered to the surface as proof of a successful hydrotest procedure.

For deepwater operations, logger recovery becomes a time-consuming and, therefore, costly operation, so the ability to verify the pressure test subsea, without recovering the instrumentation, is a significant benefit.



Aquatec's equipment supply includes ROV-readable displays that show the current pressure reading. The displays can be activated by an ROV light or switched on using Aquatec's subsea AQUAswitch. In addition, its recently developed AQUAmodem Op1 optical modems are also included in the equipment bundle. The AQUAmodem Op1 provides a connectorless, short-range data link between the subsea instrument and the user at the surface via an ROV umbilical. A full-pressure test record can, therefore, be downloaded and verified before depressurizing the system under test.

For more information, visit [www.aquatecgroup.com](http://www.aquatecgroup.com).

## Analox launches new HYP

Analox Sensor Technology has launched a new oxygen monitor, ideal for operation at partial pressure.



The HYP O<sub>2</sub> provides fast and accurate monitoring of oxygen (O<sub>2</sub>) content, and can operate at pressure from 0.8 to 60 bar. This versatile new monitor is ideal for use in diving bells, hyperbaric chambers, hyperbaric lifeboats, and submarines.

Despite being only 200g in weight, the HYP O<sub>2</sub> is robust and its compact design means it fits easily into confined spaces. The large display ensures it is easy to read.

Mark Lewis, managing director of Analox Sensor Technology, commented: "We continue to develop our product range to meet the needs of the commercial diving industry. The new HYP O<sub>2</sub> provides accurate measurement of oxygen content at partial pressure, and is light and robust so can be moved easily to where it is required. This small piece of equipment can provide essential information to ensure continued safe operation."

For more information, visit about the new HYP O<sub>2</sub>, visit the website [www.analox.net](http://www.analox.net).

## New ocean radar system – WERA COMPACT 12+

The new ocean radar system WERA COMPACT 12+ by HELZEL Messtechnik from Germany is the more compact successor of the well-known WERA system. This remote sensing system provides several new features, including wireless connection between the transmit and receive unit, to provide more flexibility for site geometry to make the site selection easier. It can be

# EMPOWER your small ROV



## Solid High-Performance Subsea Tooling from **HYDRO-LEK**

- Manipulators
- Power Packs
- Valve Packs
- Tool Skids
- Water Jetters
- Cylinders
- Cutters
- Fittings
- Hoses
- Telemetry Systems
- Pan & Tilts
- Pilot Check Valves
- Camera Booms



Hydro-Lek Ltd  
Falcon House  
Ivanhoe Road  
Hogwood Industrial Estate  
Finchampstead  
RG40 4QQ  
Tel: + 44 (0) 118 9736903  
Email: [enquiries@hydro-lek.com](mailto:enquiries@hydro-lek.com)

[www.hydro-lek.com](http://www.hydro-lek.com)



**OCTANS 3000M IXSEA GYRO  
FOR RENT**



## **CONTACT DETAILS:**

Rovsco Inc. Houston, TX sales@rovsc

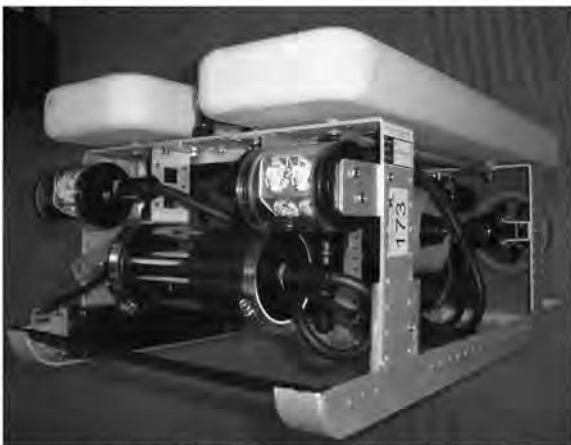
Rovsco Asia Singapore sales@rovsc

**Website:** [www.rovsco.com](http://www.rovsco.com)

 OUTLAND  
TECHNOLOGY

# **UNDERWATER IMAGING SYSTEMS**

## **CAMERAS   ROV   LIGHTS   SYSTEMS**



ROV, MODEL "OUTLAND 1000"  
PORTABLE, RUGGED, LOW COST

*Thrusters: Brushless, Magnetically Coupled. Color & B&W Cameras*

38190 COMMERCIAL CT., SLIDELL, LA USA 70458  
Ph (985)847-1104 WEBSITE: [www.outlandtech.com](http://www.outlandtech.com)  
Fx (985)847-1106 Email: [sales@outlandtech.com](mailto:sales@outlandtech.com)

## Product News

operated in different modes. Whether compact or array-type antenna layout, the WERA system always provides the best solution for your application with outstanding data availability and the best spatial and highest temporal resolution. With this shore-based system, ocean currents, waves and wind can be measured for more than 200 km offshore from the comfort of your office.

For more information, visit [www.helzel.com](http://www.helzel.com).

## **Imtech Marine introduces the new Furuno RHRs 2014 river radar**

Furuno and Imtech Marine have jointly developed an innovative product for inland waterway shipping. The RHRs 2014 river radar is a revolutionary color radar. Unique in the inland shipping market is the mouse control, which makes this radar very user-friendly. It also offers maximum safety, thanks to a black box with two SD cards for 24 hrs of storage of radar images. The RHRs 2014 replaces the RHRs 2005, which is now being used on more than 4,000 inland waterway ships. The RHRs 2014 is approved by the Wasser-und Schiffahrtsverwaltung des Bundes for inland waterway shipping in Europe.

Eric van den Adel, managing director Imtech Marine said, "It is important to innovate constantly and to help our customers achieve a more efficient and safer journey. That requires technological products of the highest quality. The cooperation with our strategic partner Furuno strengthens our ambitions. Furuno is highly regarded in the market for high-quality and reliable navigation and communication equipment."



The RHR<sup>S</sup> 2014 fully meets the demands from the market. Thanks to the compact LED-TFT screen, the radar is easy to install and it has touchpad control. Other advantages are the docking modus for mooring with two GPS-sensors, display of maximum 300 AIS targets (Automatic Identification System), and a color screen that displays a clear picture during both day and night. Inter-switching is also possible for four antenna/processor configurations via Ethernet connection. In short, the RHR<sup>S</sup> 2014 is equipped with the latest technology. The RHR<sup>S</sup> 2005, with its proven quality, will stay in the market until the end of 2013.

For more information, visit [www.imtech.com](http://www.imtech.com).

## HydroBar to calibrate survey echo sounders

Unabar's HydroBar is a new hydrographic tool to rapidly and most accurately calibrate survey echo sounders during field surveys. A real-time sound velocimeter is combined with a sonar target ("bar") and Windows-based software that can run on your PC in the background of Hypack, HydroPro, or other hydrographic software.

# OCEANS 2013

## MTS/IEEE San Diego

### IMPORTANT DATES

Schedule for the San Diego  
Oceans 2013 Conference:

**Abstracts Open**

February 18, 2013

**Abstract Deadline**

May 3, 2013

**Notification to Authors**

June 7, 2013

**Final Paper Deadline**

July 15, 2013

**Conference**

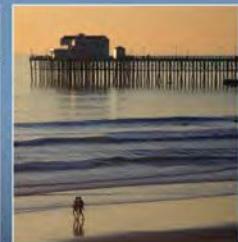
September 23-26, 2013

**Academic Host**

Scripps Institution of  
Oceanography/UCSD

**Additional Co-Participating  
Societies include**

AGU, ASA, TOS, AMRS, AFS,  
SEG, ADC, SME and others.



## Oceans'13 MTS/IEEE San Diego

Town & Country Hotel and Convention Center  
Mission Valley, San Diego, CA, USA

### AN OCEAN IN COMMON

Celebrating MTS 50<sup>TH</sup> Anniversary!

The Oceans'13 theme, *An Ocean in Common*, welcomes the many co-participating professional and scientific societies who will join us, some for the first time since 2003, others for the first time ever.

San Diego is home to Scripps Institution of Oceanography/UCSD, SPAWAR, NOAA's Southwest Fisheries Science Center as well as other research institutions, defense establishments, and one of the largest concentrations of marine technology companies in the world.

Join with the leaders of government, science, and enterprise to discuss ideas and goals of global importance and scope in the Plenary, daily sessions, town halls, and Keynote addresses. Vendors from around the world will showcase the latest technical developments commercially available.

Call for Papers and Posters to include favored local themes:

- Deepest Ocean Operations
- San Diego Maritime History
- Wrecks to Reefs
- 50 Years of Marine Technology
- Government / Industry / Academia Synergy
- Ocean Gliders: Technology & Applications
- Pollution Control and Remediation
- Marine Security and Defense

**Want more information?**

Oceans13mtsieeeSanDiego.org

### BOOK YOUR EXHIBIT SPACE EARLY!

Space is filling up, but many good locations are still available. Visit the interactive Oceans 2013 Exhibit Hall Floor Plan at

[www.oceans13mtsieeeSanDiego.org/exhibitor/floor plan](http://www.oceans13mtsieeeSanDiego.org/exhibitor/floor plan) and pick your spot.

Or contact Sue Kingston, IEEE Exhibits Manager, for more information on promoting your business.

e-mail: [s.kingston@ieee.org](mailto:s.kingston@ieee.org) • office: 1 (310) 937-1006 • cell 1 (310) 699-2609



## Solutions on Target!

### SS109 APT High Performance Pan & Tilt Device for Imaging Sonars



With a position accuracy of 0.087 degrees and extremely smooth robotic movement, the SS109 APT is purposely designed to meet the demanding requirements for high-resolution imaging sonars and long range video systems

- High accuracy optical feedback positioning
- User defined low or high speed rotation
- User defined “go to” positions
- Near-zero backlash gearing

Ocean Business '13  
April 9 - 11  
booth A1

[www.sidus-solutions.com](http://www.sidus-solutions.com) | [info@sidus-solutions.com](mailto:info@sidus-solutions.com) | +1 866-978-1276

## Product News

In CAST (Profile) mode, an integral depth sensor enables the HydroBar to display and record sound velocity and temperature vs. depth. All data will be stored in a .VEL file for direct input into Hypack.

In BAR CHECK mode, the software menu guides the user through simple steps to perform a bar check. Data are stored in your PC, which automatically handles all calculations. The sound velocity at each bar depth, independent of the sound velocimeter, is calculated to provide an added level of confidence in the sound velocimeter readings. The computed average sound velocity over the water column is also provided along with computed transducer depth (draft) and system error/index.

Operation in either mode is totally controlled via your PC's keypad. Other than plugging the HydroBar's cable termination into your laptop or tablet PC's USB port, no external wiring or power is required. No separate data wiring is required to your PC, as HydroBar's data streams directly into the PC via the single power/signal cable supplied.

For more information, visit [www.hydrobar.info](http://www.hydrobar.info).

### WiFi remote multi-sensor acoustic buoy

RTSYS team, specialized in underwater acoustics report they've developed an innovative WiFi remote multi-sensor buoy, the BA-SDA14. "This buoy has been designed to lead the way to a new range of applications in offshore noise measurements", RTSYS manager says.

The BA-SDA14 possesses 4 broadband synchronized hydrophones inputs, GPS and allows adding other sensors such as gyrometer accelerometer, CTD, all synchronized with acoustic data.

Web user interface is embedded on the buoy electronic platform. Thus, thanks to the WiFi antenna, the user can access data and start/stop recordings in real-time at an approximate distance of 1 or 2 mi from the BA-SDA14 buoy, this, using any computer or touch pad.

Finally its rechargeable battery pack and its small shape make the BA-SDA14 a versatile reusable buoy.

"We will be glad to present officially our BA-SDA14 system during Ocean Business show in Southampton.", RTSYS spokesman says.

For more information, visit [www.rtsys.eu](http://www.rtsys.eu).

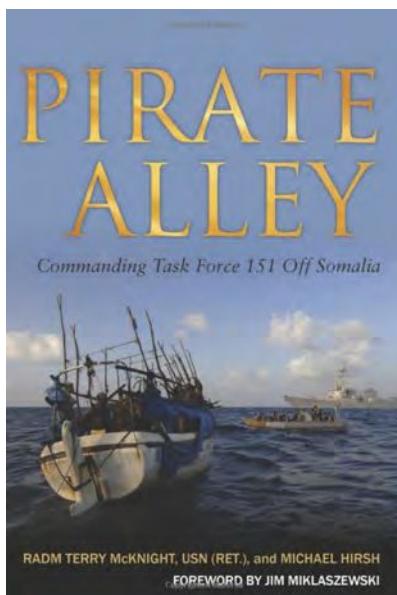
UI2014 FEBRUARY 11-13  
NEW ORLEANS

[www.udiver.com](http://www.udiver.com)

# Media Showcase

## Pirate Alley Commanding Task Force 151 Off Somalia

By RADM Terry McKnight USN (Ret.) & Michael Hirsh



With piracy on the rise and fast becoming a serious global security issue, Admiral Terry McKnight took command of a new multi-national task force in 2009 to combat piracy in the Gulf of Aden. As task force commander, he directed operations that disrupted several hijackings and resulted in the capture of 16 Somali pirates. After running head-on into a U.S. policy of catch-and-release, he realized that there was more to fighting piracy than just catching those armed with AK-47s and RPGs.

McKnight retired from the Navy and began researching the problem. This book, co-written with journalist Michael Hirsh, is a very readable yet authoritative introduction to the subject. The authors explore every aspect of Somali piracy, from how the pirates operate to how their actions have impacted the world economy. They examine various attempts to solve the problem, including placing armed guards aboard merchant ships, and highlight the best ways to outfit ships for travel through high-risk areas. But they warn that a consequence of successfully protecting such targets as container ships and crude oil carriers may be that pirates turn to crime on land, such as the kidnapping of foreigners.

In addressing the worldwide economic impact of piracy, they note that piracy costs as much as \$13 billion a year, and in 2011 took 1,000 seafarers into captivity. One shipping company argues, however, that over-reaching shipping regulations have a greater negative effect on the economy. The book concludes that in the interest of justice and to protect the free flow of commerce throughout the world, the U.S. government needs to take additional measures to stop the flow of U.S. dollars for ransoms payments that serves as the only reason for piracy in the region. With a foreword by Jim Miklaszewski.

Naval Institute Press; ISBN-10: 1612511341  
Hardcover, 272 pages, October 15, 2012



### SENSORS FOR:

Oceans  
Lakes  
Ponds  
Tanks

### MEASURE:

Waves  
Tides  
Levels

### DATA VIA:

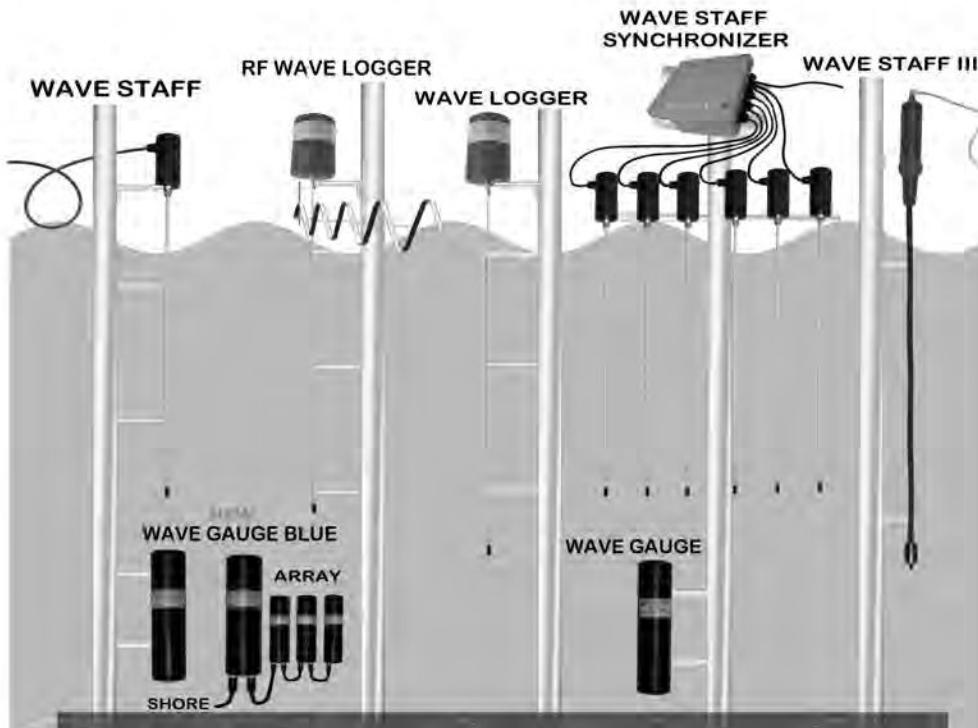
Cable  
Logger  
Wireless

### WE SUPPLY:

Tech Support  
Software  
Accessories  
Custom Work

## Ocean Sensor Systems

For Details Visit Us on the web or call 954-796-6583 USA  
[WWW.OCEANSENSORSYSTEMS.COM](http://WWW.OCEANSENSORSYSTEMS.COM)



March 19-21, 2013

**Decommissioning and Abandonment**  
Houston, TX  
[www.decomworld.com](http://www.decomworld.com)

March 19-21, 2013

**Nace Corrosion 2013**  
Orlando, FL  
[www.nacecorrosion.org](http://www.nacecorrosion.org)

March 20-22, 2013

**Offshore Mediterranean Conference**  
Ravenna, Italy  
[www.omc.it/2013](http://www.omc.it/2013)

March 25-28, 2013

**U.S. Hydro 2013**  
New Orleans, LA  
[www.ushydro2013.com](http://www.ushydro2013.com)

April 9-13, 2013

**Ocean Business 2013**  
South Hampton, UK  
[www.oceanbusiness.com](http://www.oceanbusiness.com)

April 10-11, 2013

**Global Marine Renewable Energy Conf.**  
Washington, D.C.  
[www.globalmarinerenewable.com](http://www.globalmarinerenewable.com)

April 22-25, 2013

**SubOptic 2013**  
Paris, France  
[www.suboptic.org](http://www.suboptic.org)

May 6-9, 2013

**Offshore Technology Conference**  
Houston, TX  
[www.otcnet.org](http://www.otcnet.org)

May 22-23, 2013

**All Energy**  
Aberdeen, UK  
[www.all-energy.co.uk](http://www.all-energy.co.uk)

June 4-6, 2013

**MAST Europe**  
Gdansk, Poland  
[www.mastconfex.com](http://www.mastconfex.com)

June 10-12, 2013

**Energy Ocean International**  
Providence/Warwick, RI  
[www.energyocean.com](http://www.energyocean.com)

June 10-13, 2013

**Oceans '13 Bergen**  
Bergen, Norway  
[www.oceans13mtsieees bergen.org](http://www.oceans13mtsieees bergen.org)

June 25-27, 2013

**Seawork International 2013**  
South Hampton, UK  
[www.seawork.com](http://www.seawork.com)

## Offshore Technology Conference

Founded in 1969, the Offshore Technology Conference is the world's foremost event for the development of offshore resources in the fields of drilling, exploration, production, and environmental protection. OTC is held annually at Reliant Center in Houston. Each year, OTC attracts more than 80,000 attendees from 110+ countries and 2,500 exhibiting companies.

OTC is sponsored by 13 industry organizations and societies, who work cooperatively to develop the technical program. OTC also has endorsing and supporting organizations.

OTC will be held 6-9 May 2013 in Houston, Texas.

For more information, visit [www.otcnet.org](http://www.otcnet.org).

## Global Marine Renewable Energy Conference VI

The Sixth Global Marine Renewable Energy Conference (GMREC) will be held at the Almas Temple in Washington, DC on April 10 & 11, 2013. This year's conference is pleased to host the inaugural Marine Energy Technical Symposium (METS), which is comprised of 40 technical presentations by U.S. and international authors from academia, industry, and national laboratories. Last year's conference attracted participants from over 20 countries and brought together the policy, regulatory, and technology leaders that are forging this new industry.

GMREC panelists include representatives from Ocean Energy Systems (OES) International Implementing Agreement, the U.S. Department of Energy, U.S. National Labs, Chief Executives of the top global marine and hydrokinetic (MHK) renewable energy companies, major technology developers, and prominent MHK consulting firms from around the world.

The MHK industry has made the GMRE Conferences a place to make deals happen, discover common ground interests, and learn from the successes of the first deployments on a global basis. Sharing information, expanding networks, and building strategic alliances all happen at GMREC. Student volunteers have found jobs and companies have identified new vendors and partners.

At GMREC VI you can expect updates on deployed projects, the development of new strategic alliances that bring together the resources and technological know-how to make projects happen,

along with lessons learned from deployments and other marine-based industries including offshore wind, marine architecture, offshore safety and construction, advanced materials, metals fabrication, and international standards development.

For more information, visit [www.globalmarinerenewable.com](http://www.globalmarinerenewable.com).

## Ocean Business

The 4th Ocean Business event is being held at the National Oceanography Centre in Southampton, UK from 9-11 April 2013. Firmly established as one of the most important international events in the ocean technology calendar, Ocean Business is free to attend and is expected to attract more than 4,000+ visitors from over 50 countries.

At the very heart of Ocean Business is a 3-day exhibition of over 300 companies, bringing together the world's leading manufacturers and service providers in the industry. More than just a static exhibition, Ocean Business 2013 provides visitors with an opportunity to test-drive equipment and systems, with over 180 hrs of live, free-to-attend training and demonstration sessions on vessels, at the dockside, in the test tank, and in seminar rooms.

For more information, visit [www.oceanbusiness.com](http://www.oceanbusiness.com).

## Oceans '13 MTS/IEEE

More than a dozen professional and academic societies are coming together at OCEANS '13 MTS/IEEE San Diego, An Ocean in Common. The conference is scheduled for 23-26 September with many side activities taking place before, during and after the event, making it the largest and most comprehensive ocean science and engineering gathering in U.S. history.

The sponsoring societies are the IEEE Oceanic Engineering Society (IEEE-OES) and the Marine Technology Society (MTS). Scripps Institution of Oceanography at UC San Diego has been announced as the OCEANS '13 MTS/IEEE San Diego academic host. Participating societies include AGU Ocean Sciences (AGUOS), Acoustical Society of America (ASA), The Oceanography Society (TOS), Society of Exploration Geophysicists (SEG), American Fisheries Society (AFS), the Society of Manufacturing Engineers (SME), the Association of Dive Contractors (ADC), and others.

For more information, visit [www.oceans13mtsieeesandiego.org](http://www.oceans13mtsieeesandiego.org).

## 2013 EDITORIAL CALENDAR

### January/February 2013

**Editorial:** Decommissioning & Abandonment, Subsea Fiber Optic Networks

**Distribution:** Decommissioning & Abandonment Summit, NACE, Offshore Mediterranean, U.S. Hydro

**Product Focus:** Navigation, Mapping & Signal Processing

### March

**Editorial:** Oceanology & Meteorology, Maritime Security

**Distribution:** Ocean Business, SubOptic 2013

**Product Focus:** Ocean Instrumentation, Diver Detection Systems

### April

**Editorial:** Offshore Technology, Ocean Mapping & Survey

**Distribution:** GMREC, IDGA Maritime Homeland Security, OTC

**Product Focus:** Connectors, Cables & Umbilicals

### May

**Editorial:** UW Imaging & Processing, Marine Salvage

**Distribution:** EnergyOcean, Oceans '13 Bergen, Sea Work Intl, UDT

**Product Focus:** Cameras, Lights & Imaging Sonars

### June

**Editorial:** Workclass ROVs, Deepwater Pipeline & Repair & Maintenance

**Distribution:** TBA

**Product Focus:** Subsea Tools & Manipulators

### July

**Editorial:** AUVs & Gliders, Marine Construction

**Distribution:** AUVSI

**Product Focus:** Tracking & Positioning Systems, Seismic Monitoring

### August

**Editorial:** Defense & Naval Systems, Corporate Showcase

**Distribution:** TBA

**Product Focus:** Multibeam & Side Scan Sonars

### September

**Editorial:** Ocean Observing Systems, Ocean Renewables

**Distribution:** Oceans MTS IEEE, SPE ATCE, MREC, MTS Dynamic Positioning,

**Product Focus:** Buoys & Monitoring Instrumentation

### October

**Editorial:** Offshore Vessels, Offshore Communications

**Distribution:** International Workboat, LAGCOE, Oil Comm, OTC Brazil, North Sea Decommissioning, AWEA/Offshore Windpower

**Product Focus:** Acoustic Modems, Releases & Transponders, Marine Communications

### November

**Editorial:** Subsea Inspection, Monitoring, Maintenance, Repair; Subsea Telecom

**Distribution:** SUBSEA Survey IMMR, Clean Gulf

**Product Focus:** Handling Equipment, Winches & Control Systems, Battery Technology

### December

**Editorial:** Light Workclass ROVs, Commercial Diving

**Distribution:** Subsea UK, Underwater Intervention

**Product Focus:** Diving Equipment & Buoyancy Materials

Serving the Ocean and Offshore industry, Ocean News & Technology has a long, rich history as the primary information resource executives around the world rely on.

For nearly 30 years ON&T has provided news, forecasts, and authoritative feature articles designed to keep industry leaders informed and focused on the future of the industry.

### Industry's Choice creates Advertiser's Advantage

ON&T's unique comprehensive format and cutting-edge distribution methods demonstrate the publication's standing as the #1 choice for industry news, making it the best ROI choice for advertisers!



**Print** – Still the preferred format in the industry, ON&T print copies are distributed worldwide.

**Digital** – No matter where they are in the world, subscribers also have the benefit of the digital edition, complete with linked websites in ads, articles and releases.

**APP** – ON&T free APP is utilized thousands of times each month, creating an instant path from your ad to your website 24/7.

**Ocean Industry Directory** – Each issue features a directory providing your product, services and contact information to buyers around the world. Listings are available in print and digital editions and can be updated throughout the year.

**Archives** – Available through digital and APP, readers can research historical data, articles, and references with the aid of Keyword Search.

**VIDEO-IN-PRINT** – Embed video in your ad! Viewed by digital and APP readers, your VIP can be informational, inspirational, and/or entertaining.



### Advertising:

#### North America:

Lisa Chilik

574-261-4215

Lchilik@tscpublishing.com

#### Texas/Louisiana:

Amy Dukes

713-557-8057

adukes@tscpublishing.com

#### UK/International:

Zinat Hassan

+44 (0) 845 6522 483

zhassan@tscpublishing.com

#### Editorial:

Ladd Borne

772-219-3002

lborne@tscpublishing.com



# People & Company News

Gulfstream Services, Inc., an oilfield rental company providing high-pressure equipment for the international oil and gas industry, named **Lonnie Hornsby** as business development manager. Based in Houston, Texas, Hornsby will provide additional coverage aiming to promote the company's portfolio while surveying areas in which Gulfstream Services can grow domestically and internationally. Hornsby has extensive knowledge of downhole tool equipment and is skilled in providing solutions to problem areas that operators face today. He has gathered management experience in previous positions, including account manager for Archer the Well Co.; technical sales manager, liner hanger division for Dril-Quip; and business development manager, deepwater, at Baker Hughes.

BP appointed **Lamar McKay** as chief executive, upstream. He took over the position on 1 January 2013. In his new role, McKay will lead BP's combined upstream business, comprising the exploration, developments, and production divisions together with the upstream strategy and integration team. These upstream functional divisions were formed in late 2010 in a major reorganization of BP's upstream

segment designed to improve risk management and implementation of global standards. McKay, who will be based in London, will report to Bob Dudley and is already a member of BP's executive management team. He is currently chairman and president of BP America, a role he has held since early 2009, serving as BP's chief representative in the United States and also overseeing BP's Gulf Coast restoration work. McKay has a petroleum engineering background and has served in a variety of operational and commercial roles globally during his 32 years with the company.

Crowley Maritime Corp. said that **Steve Demeroutis** will assume the role of vice president, marine operations, for the company's petroleum and chemical transportation group. **Rudy Leming** will assume Demeroutis' former position of vice president, labor relations. In their new positions, both will remain domiciled in Jacksonville, Florida. Demeroutis will report to Crowley's Rob Grune, senior vice president and general manag-



McKay

er, petroleum services, while Leming now reports to Bill Pennella, vice chairman and executive vice president. In his new position, Demeroutis will be responsible for the safe and reliable operation of Crowley's marine petroleum assets, including U.S. Coastwise, Jones Act product tankers, and the company's 17 articulated tug barges. Leming will be responsible for the development and implementation of Crowley's overall labor strategy.

ERF Wireless Inc., a provider of enterprise-class wireless and broadband products and services, said that **Manny Carter** recently joined the company's board of directors. Carter, having achieved a distinguished career in the oil and gas industry, has served as a member of numerous corporate and joint-venture boards throughout his career. He has held CEO positions with several of Mobil's overseas affiliates as well as vice president of marketing and manufacturing for Mobil Middle Eastern operations in Saudi Arabia and executive vice president of international operations for Pennzoil Products, among many others. ERF specializes in providing wireless and broadband product and service solutions to enterprise, commercial, and residential clients.



## MCE DEEPWATER DEVELOPMENT

18 - 20 March, 2013 · The World Forum  
The Hague · The Netherlands

[www.MCEDD.com](http://www.MCEDD.com)

Hosted by:



Organized by



Quest Offshore

Registration  
Now Open!

[www.MCEDD.com](http://www.MCEDD.com)



Bluefin Robotics, a leading provider of Unmanned Underwater Vehicles (UUVs), is pleased to announce that **Jonathan Tobias** has joined the company as business director of defense and international markets. The former Navy Captain's primary focus at Bluefin is to expand the company's presence into domestic and international naval markets and to enhance their undersea warfare capabilities by offering the most state-of-the-art UUV technology.

Global Diving & Salvage, Inc. announces the hiring of **Jose Vindeola**, joining the Gulf Coast Region in the business development / technical support position. Mr. Vindeola will be essential in providing Global's current client base with high-quality solutions and also stewarding expansion, both nationally and abroad.



Tobias



Vindeola

Tritech is pleased to announce the appointment of **Mike Broadbent** as sales manager. Prior to his promotion, he was Tritech's defence business development manager, where he promoted the capabilities of their industry-recognized sonar equipment for military, MCM, and search and rescue applications. He is based in Tritech's Ulverston facility (Cumbria, North-West England) and will be responsible for managing the company's domestic and international sales growth.

Seatrronics Ltd., an Acteon company, has appointed **Jeff Holtom** as regional manager in the Middle East. Based in Abu Dhabi, Holtom's responsibilities at Seatrronics Ltd. will include sales and marketing, overall quality, health, safety and environment (QHSE) responsibility, and general and management of the Seatrronics office in the United Arab Emirates (UAE).

**Forum Energy Technologies, Inc.** recently announced the rebrand of its



Holtom

DPS Offshore product line to be known as Forum Subsea Rentals. With an extensive inventory of the most advanced subsea rental products, Forum Subsea Rentals is recognized as one of the global leaders within the industry. Supported by a dedicated team of experienced technicians and offshore engineers, Forum Subsea Rentals services both existing and new clients from key locations in Aberdeen, Great Yarmouth, Houston, Dubai and Singapore.

**L-3 Klein** is pleased to inform you that **ARMELSAN Savunma Tek San, Ve Dis Tic. A.S.** with offices in Istanbul, Turkey, are now a valued member of the L-3 Klein International Sales and Distribution team. ARMELSAN recently executed a Distributor Agreement with L-3 Klein accepting responsibility for sales and marketing in Turkey, Afghanistan, Azerbaijan, Kazakhstan, and Uzbekistan. ARMELSAN and their professional team will meet all of L-3 Klein's customer requirements in Turkey and the surrounding areas for additional support services, such as training, spare parts acquisitions, and maintenance management.



MTS/IEEE - Bergen, Norway - June 10th-13th

The prestigious OCEANS Conferences, jointly sponsored by the Marine Technology Society (MTS) and the Oceanic Engineering Society of the Institute of Electrical and Electronic Engineers (OES/IEEE), is a major international forum for scientists, engineers and predominant ocean users to promote, disseminate and exchange their knowledge, ideas, applications and scientific-technical advances within Oceanic Engineering and Marine Technologies.

OCEANS'13 MTS/IEEE in Bergen, Norway June 10-13<sup>th</sup> 2013, will feature tutorials on topics of specific interest, a comprehensive technical program of lectures and presentations, a student program, and a large exhibit hall with products from numerous companies, all emphasizing in particular "The Northern Dimension and Challenges" – an issue of outmost global significance in our current state of environmental and climate changes.

#### Special Topics for OCEANS'13 MTS/IEEE:

- Marine Policy and Ocean Management
- Oil & Gas
- Integrated Environment Surveillance
- Arctic Shipping
- Maritime Communications and Information Technologies
- Marine Renewable Energy



marine technology society

Opportunity runs deep™

Log on to [www.oceans13mtsieeebergen.org](http://www.oceans13mtsieeebergen.org) to learn more!

# ocean industry

# directory



## Add your Quick Response (QR) Code

Scan this QR Code on your smartphone/tablet to learn more about Ocean News & Technology  
(Free QR readers are available at your app store)

### Directory Sales:

**North America:**  
Lisa Chilik: +1 574-261-4215  
Lchilik@tscpublishing.com

**Texas/Louisiana:**  
Amy Dukes: +1 713-557-8057  
adukes@tscpublishing.com

**UK/International:**  
Zinat Hassan: +44 (0) 845 6522 483  
zhassan@tscpublishing.com



Visit us at  
Ocean Business  
Booth Q4

### CURRENT LISTINGS IN EVERY ISSUE

Ocean Industry Directory is featured in every issue of Ocean News, and the industry knows this is the one source they can count on to provide them with up to date listing information for the products and companies they're looking for.

Don't miss the opportunity to provide your next prospect with the information he needs at a critical time in the buying process. Place your listing in the Ocean News & Technology Ocean Industry Directory today!

### NOW FEATURING QR CODE

QR codes represent the *future* of marketing communication by merging print communication with online communication. The QR Code is a square barcode that can be read by smart phones and tablets equipped with the appropriate free software (search "QR Reader" at your app store).

ON&T can add your unique QR code to your new or existing listing. Contact a representative for details.

# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory

## ACOUSTIC SYSTEMS



### Applied Acoustic Engineering Ltd

Marine House, Garton Hall Road, Great Yarmouth.  
NR31 0NB, United Kingdom  
Tel: +44(0)1493 440355. Fax: +44(0)1493 440720  
E-mail: gavinwilloughby@appliedacoustics.com  
Website: www.appliedacoustics.com  
Contact: Gavin Willoughby

Manufacturer of fully integrated USBL acoustic tracking systems, both portable and vessel based, high quality multi-system compatible beacons for acoustic positioning and release, and seismic sub-bottom profiling systems for coastal, offshore or geohazard surveys. All products are supported by a network of overseas representatives providing a first class service on a global scale.



### EvoLogics GmbH

Ackerstrasse 76  
13355 Berlin, Germany  
Tel: +49 (0) 30 4679 862-0  
Fax: +49 (0) 30 4679 862-00  
E-mail: sales@evologics.de  
Website: www.evologics.de

World's most advanced spread-spectrum underwater communication systems (S2C) with multi-channel data management, networking capability, built-in tracking and positioning functions with USBL. Data loggers, acoustic wake-up module and releasers optionally included. Deployments in offshore platforms (FPSO, ABS), environmental monitoring, defense systems, ROV and AUV operations and more.



### iXBlue

Tel: +33 (0)1 30 08 88 88, Fax: +33 (0)1 30 08 88 01  
Website: www.ixblue.com

- **GAPS** pre-calibrated USBL system
- **POSIDONIA** USBL acoustic positioning system
- **OCEANO** acoustic release range
- **ComMet** acoustic and inertial metrology system
- **ECHOES** sub-bottom profilers

iXBlue provides a range of fine, high-technology equipment, systems and turn-key solutions in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying.

Acoustic Products – Advanced Components  
Inertial Products – Integrated Solutions – Marine Works  
Motion Systems – Sea Operations – Sonar Systems



Email: info@oceansonics.com  
Website: www.oceansonics.com

Ocean Sonics designs and manufactures the **icListen Smart Hydrophone**. Process data while it's being collected! Use as a digital hydrophone, acoustic data logger or both. These low power hydrophones can run from an internal or external battery. Smart enough to gather waveform, spectral or event data in standard formats. The hydrophones are calibrated with a wide dynamic range (24 bit, 120dB) and very low noise floor.

- **icListen HF** 10Hz to 2kHz
- **icListen LF** 0.01 to 1600 Hz
- **icTalk Calibrated Smart Projector**: 0.2 to 2.2 kHz
- **LUCY PC software** for instrument control and data presentation
- **Buoys, battery packs and cable solutions**



### RTsys

25 rue Michel Marion  
56850 Caudan, France  
Tel: +33 297-898-580  
E-mail: info@rtsys.eu  
Website: www.rtsys.eu

- **Acoustic Monitoring:** EASDA14, Embedded Multichannel Passive Acoustic Recorders
- WiFi remote Buoy: BASDA14, Multi-sensor & Rechargeable Acoustic Buoy accessible in Real-time
- **Sediment Characterization:** INSEA, Acoustic Velocimeter for Sediment Characterization

We provide advanced embedded acoustic products in the environmental research, surveying and monitoring areas. With Synchronized Multichannel Acquisition and accepting a broad range of Acoustic Transducers and Hydrophones from 3Hz to more than 1MHz, our solutions allow the user a new range of applications.



## CABLES



### Falmat Cable

1873 Diamond Street, San Marcos, CA 92078  
Toll Free: (800) 848 4257  
Tel: (760) 471 5400, Fax: (760) 471 4970  
E-mail: sales@falmat.com  
Website: www.falmat.com  
Contact: Shawn Amirehsani

Falmat designs and manufacturers cables for commercial and military projects ensuring performance and reliability specifically in harsh environments. Innovative cable solutions for dynamic and static applications. Ruggedized Deep-Water **XtremeNet** composite Ethernet cables, proven **XtremeGreen** video cables, miniature **XtremeLight** fiber optic cables are high performance products representing our versatile manufacturing capabilities serving the marine industry. We recently launched a new line of off-the-shelf subsea instrumentation cables. We offer installing braided armored fairing, single and multilayered steel armored cables in short lengths. Falmat is a Certified ISO9001/AS9100 company. Visit our web site [www.falmat.com](http://www.falmat.com) or contact our sales team for a prompt quotation.

## CABLE & PIPELINE TRACKING



### TELEDYNE TSS Everywhereyoulook™

Teledyne TSS Ltd.  
1 Blackmoor Lane, Croxley Business Park,  
Watford, Hertfordshire WD18 8GA  
Tel: +44(0)1923 216020, Fax: +44(0)1923 216061  
E-mail: tsssales@teledyne.com  
Website: [www.teledyne-tss.com](http://www.teledyne-tss.com)  
Contact: Carolyn Jones  
USA Office: 10801 Hammerly Blvd, Suite 128,  
Houston, TX 77043, Contact: Keith Pope  
Tel: (713) 461 3030, Fax: (713) 461 3099

Underwater detection systems for determining the location, relative position and burial status of offshore pipelines, umbilicals and subsea telecommunications & power cables.

## CABLE PROTECTION



UNDERWATER CABLE SOLUTIONS

PMI Industries, Inc.  
5300 St. Clair Avenue, Cleveland, OH 44103 USA  
Tel: (216) 881 4914, Fax: (216) 881 4920  
E-mail: sales@pmiind.com  
Website: [www.pmiind.com](http://www.pmiind.com)

Specializing in the design, manufacture & testing of highly reliable **Cable Systems & Hardware** for harsh marine environments since 1969; PMI Industries, Inc. is committed to providing Engineered & Custom Designed Cable Systems for all types of applications in the marine industry including **Cable Installation, Terminations & Protection Products, Defense & Surveillance, Monitoring**

& Fisheries, ROVs & Ocean Equipment, Salvage, Search & Recovery Operations and Seismic & Survey Exploration. Work directly with our **Engineering & Design** team from initial product concept to production. Our state-of-the-art **Cable Testing** facility simulates at-sea conditions and offers complete testing services from product design verification through acceptance testing. **PMI Underwater Cable Solutions: performance. reliability. peace of mind.**

## CERAMICS



### Ceramco, Inc.

P.O. Box 300  
1467 East Main Street  
Center Conway, NH 03813 USA  
Tel: (603) 447-2090  
Fax (603) 447-3906

E-mail: [info@ceramcoceramics.com](mailto:info@ceramcoceramics.com)  
Website: [www.ceramicceramics.com](http://www.ceramicceramics.com)

Ceramco has been manufacturing custom technical ceramic components in the USA for 30 years. Highly configured parts are produced out of strong, dense (impervious), and high wear resistant ceramic materials. Corrosion-proof ceramic fasteners are stock items. We have experience with long term production of ceramic parts for marine applications.

## CONNECTORS



### AK Industries

3115 East Las Hermanas Street  
Rancho Dominguez, CA 90221  
Tel: (310) 762 1600  
Fax: (310) 762 1616  
E-mail: [sales@ak-ind.com](mailto:sales@ak-ind.com)  
Website: [www.ak-ind.com](http://www.ak-ind.com)  
Contact: Allan Kidd

AK Industries is an agile high tech manufacturer of rugged low cost underwater electrical connectors. The **HydroVolt** line of connectors is the most rugged and reliable low cost connector available. AK Industries is also ideally suited to provide unique solutions engineered to customer requirements.



### BIRNS, Inc.

1720 Fiske Place, Oxnard CA 93033-1863 USA  
Int'l: +1-805-487-5393  
USA: +1-888-BIRNS-88 (888-247-6788)  
Fax: +1-805-487-0427  
E-mail: [service@birns.com](mailto:service@birns.com)  
Website: [www.birns.com](http://www.birns.com)  
Contact: Eric Birns

BIRNS, Inc. is an ISO 9001:2008 certified global leader in the design and manufacturing of high performance connector and lighting solutions for the subsea industry. With more than half a century of expertise, BIRNS provides unmatched lead times and industry-leading exclusive features. Its world class molding facility is NAVSEA S9320-AM-PRO-020 certified, and the company specializes in sophisticated connector products and custom cable assemblies—with electrical, optical, electro-optical, electro-coax, and EOM (electro-opto-mechanical) connector lines. BIRNS leads the industry with high volume hydrostatic and helium pressure testing—its vast range of electrical penetrators is ABS Product Design Assessment (PDA) certified, with inclusive pricing and lead times for ABS/DNV witnessing. BIRNS is equally renowned for its lines of innovative LED and tungsten-halogen marine, chamber and commercial diving lights, and revolutionary MPI-NDT equipment.



# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory

## CONNECTORS

Continued ■

# BIRNS Aquamate

### BIRNS Aquamate LLC

122 Waltham St.  
Pawtucket, RI 02860 USA  
Tel: 1 401-723-4242, Fax: 1 401-753-6342  
E-mail: sales@birnsaquamate.com  
Website: www.birnsaquamate.com  
Contact: Eli Bar-Hai

*Birns Aquamate design and manufacture underwater electrical connectors, cable assemblies, and cable terminations. The company produces a wide range of standard industry connectors such as the 5500 Series, SC, MC, LP, FAWL/FAWM, Rubber Molded, etc. BIRNS Aquamate is the only underwater connector producer that guarantees compatibility with other manufacturers. Birns also specializes in fast turn-around for custom design of special connector solutions. Stocking dealers in the UK (Scorpion Oceanics) South Africa (Marine Solutions) Holland (Seascape) as well as dealers in Canada, Italy, Russia, China, and Brazil.*



### SEA CON®

1700 Gillespie Way  
El Cajon, California 92020, USA  
Tel: (619) 562-7071, Fax: (619) 562-9706  
E-mail: seacon@seaconworldwide.com  
Website: www.seaconworldwide.com

*The SEA CON® Group are world leaders in underwater connector technology and provide an extensive and diverse range of electrical, optical and hybrid connector assemblies, submersible switches and cable system solutions for many applications within the Oceanographic, Defense, Oil and Gas and Environmental markets. With locations in California, Texas and Rhode Island in the USA, Mexico, Brazil, the United Kingdom and Norway and a worldwide network of agencies and representatives, SEA CON® is able to supply very quick solutions to any requirements across the globe.*



International  
MacArtney A/S (Headquarters)  
Esbjerg, Denmark  
Tel: +45 7613 2000  
info@macartney.com  
www.macartney.com

*For over 30 years, SubConn® wet mateable connectors have been the first choice of the underwater industry. The range features standard circular, micro, low profile, metal shell, power and ethernet connectors, penetrators and custom connectors for special applications. Worldwide SubConn® sales and support is provided exclusively by the MacArtney Group.*



North America  
MacArtney Inc.  
Houston, TX, USA  
Tel: +1 713 266 7575  
mac-usa@macartney.com  
www.macartney.com



# TELEDYNE ODI

A Teledyne Technologies Company

### Teledyne ODI - A Teledyne Technologies Company

1026 North Williamson Boulevard,  
Daytona Beach, Florida 32114  
Tel: (386) 236 0780, Fax: (386) 236 0906, Toll Free: (888) 506 2326  
E-mail: ODI\_marketing@teledyne.com  
Website: www.odi.com

*A leader in subsea electrical & fiber optic interconnect systems. Wet-mateable connectors include signal & high-power electrical, optical, and hybrid products. All based on patented PBOF technology. These rugged components are designed for use at any ocean depth, in the harshest environments. ODI also provides top quality custom engineered solutions for any subsea networking challenge.*



# TELEDYNE OIL & GAS

### Teledyne Oil & Gas

1026 North Williamson Boulevard,  
Daytona Beach, Florida 32114  
Tel: (386) 236 0780, Fax: (386) 236 0906, Toll Free: (888) 506 2326  
E-mail: oilandgas@teledyne.com  
Website: www.teledyneoilandgas.com

*Delivering engineered solutions for subsea & topside monitoring, sensing and interconnection applications. Technology-focused capabilities include corrosion & erosion monitoring networks, data acquisition/evaluation/reporting systems and turnkey systems integration, power & data interconnection systems and subsea engineering. Teledyne Oil & Gas is Teledyne ODI, Teledyne Impulse, Teledyne Cormor & Teledyne DG O'Brien.*

## DIVING & MEDICAL TRAINING COURSES



### Interdive Services Ltd & InterMedic Services UK

3 Stoke Damerel Business Centre  
5 Church Street, Stoke Plymouth  
Devon PL3 4DT, Great Britain  
Tel: +44 1752 55 80 80, Fax: +44 1752 56 90 90  
E-mail: vanessa@interdive.co.uk or diving@interdive.co.uk  
Website: www.interdive.co.uk  
Contact: Ms. Vanessa Yardley

*High quality marine related training courses approved by HSE, IMCA, IDSA, NPD, MC4 and RYA. Training from basic to advanced levels (including hospital based) by friendly & experienced instructors. Training providers to UK Ministry of defense. Training on your site, at our facilities, inhouse or overseas. Also, experienced diver assessments and Offshore Medic course.*

## FIBER OPTIC ROTARY JOINTS



### Moog Components Group

77 Frazee Avenue  
Dartmouth, Nova Scotia  
Canada B3B 1Z4  
Toll free: (800) 361-2263 (USA), Toll free: (888) 302-2263 (Canada)  
Tel: (902) 468-2263, Fax: (902) 468-2249  
E-mail: mcg@moog.com  
Website: www.moog.com/marine  
Contact: John Purdy

*Moog Components Group now offers Focal™ and Prism™ marine products for demanding projects. Fiber Optic Rotary Joints (multi-channel, pressure compensated). Electrical slip rings (explosion proof, purged, oil filled, connectors, junction boxes). A wide range of multiplexers. Fluid rotary unions. Integrated units (electrical, fluid and fiber in one convenient package). Advanced CAD systems for rapid development of products. A leader in technology, performance and reliability.*

# OCEAN INDUSTRY DIRECTORY

## ON&T's Product & Service Directory

### FOOD/JANITORIAL SUPPLIES & SERVICE



**G&J Land & Marine Food Distributors, Inc.**  
506 Front Street  
Morgan City, LA 70380  
Tel: (800) 256-9187  
Fax: (985) 385-3614  
Toll free: 800 256 9187  
E-mail: sales@gjfood.com  
Website: www.gjfood.com  
Contact: Erik Lind

A full service food distributor dedicated to providing an extensive grocery and janitorial product line to the commercial shipping and offshore oil & gas industries. G&J is centrally located near the Gulf of Mexico in Morgan City, Louisiana within close proximity to several major shipping ports. Since 1964, our number one goal has been customer satisfaction and we go out of our way to achieve it!

### GEOPHYSICAL SERVICES



#### AMERICAN VIBRACORE SERVICES

**American Vibracore Services**  
1215 Wallace Dr.  
Delray Beach, FL 33444  
Tel: 561-372-0500  
info@americanvibracore.com  
Website: www.americanvibracore.com

AVS is a leader in the offshore/onshore geotechnical drilling, vibracoring & marine support industry since 2002. AVS has established a reputation of safe work, superior service trustworthy business practices, and strict attention to detail.

- Vibracoring
- Vessel Charter
- MCPT Testing
- ROV Platform
- SPT Sampling
- Geophysical Surveys
- Wire-line Coring
- Video Surveys



Check out our new video!

### GYRO COMPASSES



**IXBlue**  
Tel: +33 (0)1 30 08 88 88, Fax: +33 (0)1 30 08 88 01  
Website: www.ixblue.com

**OCTANS, IMO-certified survey grade gyrocompass**  
• true North-seeking FOG unit  
• complete motion sensor  
• calibration and maintenance-free

ixBlue provides a range of fine, high-technology equipment, systems and turn-key solutions in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying.

Acoustic Products – Advanced Components  
Inertial Products – Integrated Solutions – Marine Works  
Motion Systems – Sea Operations – Sonar Systems



**Teledyne TSS Ltd.**  
1 Blackmoor Lane, Croxley Business Park  
Watford, Hertfordshire WD18 8GA  
Tel: +44(0)1923 216020, Fax: +44(0)1923 216061  
E-mail: tsssales@teledyne-tss.com  
Website: www.teledyne-tss.com  
Contact: Carolyn Jones  
**USA Office:** 10801 Hamnerly Blvd, Suite 128  
Houston, TX 77043, Contact: Keith Pope  
Tel: (713) 461 3030, Fax: (713) 461 3099

Supplier of the Meridian range of IMO, Wheelmark and High Speed Craft approved surface and subsea gyro compasses. Options include heave, roll and pitch and battery backup versions as well as a range of repeaters and ancillary products. TSS also continues to support the world-renowned range of SG Brown gyro compasses and marine equipment.

### INSURANCE



**John W. Fisk Company**  
4833 Conti Street, Suite 200  
New Orleans, LA 70119  
Toll Free: 1-888-486-5411  
E-mail: insure@jwfisk.com  
Website: www.jwfisk.com

*Fisk Marine Insurance provides all types of insurance to any limit required for commercial diving, marine contractors, offshore oilfield and platforms, plug and abandonment (P&A) contractors, land based energy, ocean marine cargo and oceanographic research worldwide. Our coverages include Workers Compensation (USL&H & Jones Act), General Liability, Professional Liability, Hull P&I, Equipment, Bonds and International Packages for clients working outside of the USA. Contact us for more information: 1-888-486-5411 or insure@jwfisk.com. Visit our website: www.jwfisk.com*

### LIQUID STORAGE



#### Aero Tec Laboratories, Inc. (ATL)

45 Spear Road Industrial Park,  
Ramsey, New Jersey U.S.A. 07446  
Tel: (201) 825 1400, Fax: (201) 825 1962  
E-mail: atl@atlinc.com  
Website: www.atlinc.com  
Contact: David Dack

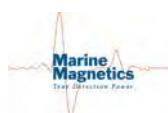
For over 40 years, ATL has specialized in the design and manufacture of custom bladder-type fluid containment systems, including bladder tanks, inflatables, pillows and bellows, for the surface and subsea industry. ATL's flexible fluid containers boast unparalleled chemical tolerance, abrasion resistance, and remarkable durability and can be used with methanol, diesel fuel, gases, ethylene glycol, hydraulic fluids and chemical cleaning cocktails. Expedited deliveries are also available.

### MAGNETOMETERS



**Geometrics, Inc.**  
2190 Fortune Drive, San Jose, CA 95131  
Tel: (408) 954 0522, Fax: (408) 954 0902  
E-mail: sales@geometrics.com  
Website: www.geometrics.com  
Contact: Ross Johnson

Geometrics, a member of OYO Corporation, manufactures, sells, and services portable geophysical instruments for land, marine, and air investigations of the subsurface. Geometrics' product line includes proton precession and cesium magnetometers, high-resolution seismographs, and electrical conductivity imaging and resistivity systems. Geometrics' instruments are used around the world for natural resource exploration, geotechnical and environmental assessments, ordnance detection, locating archeological and treasure sites, teaching and research.



**Marine Magnetics Corp.**

135 Spy Court  
Markham, Ontario,  
Canada L3R 5H6

Tel: +1 905 479 9727 x232

E-mail: info@marinemagnetics.com  
Website: www.marinemagnetics.com  
Contact: Rebecca Milian

Designs and manufactures magnetometers using advanced Overhauser technology for high sensitivity and unmatched accuracy characteristics. Products include:

- **SeaSPY** is a versatile and tough marine magnetometer that is suitable in any environment, from small zodiac-type boats to full-ocean survey vessels. It is adaptable with a large variety of options to suit many applications.
- **Explorer** is a miniature, lightweight magnetometer designed primarily for in-shore surveys in harbours, lakes, or rivers. It is ideal for small-boat applications where size and weight are most important.
- **SeaQuest** is a multi-sensor gradiometer. It is the most advanced magnetic search tool available - improving speed and accuracy in UXO and mine detection. Available auxiliary sensors include, tilt sensor, pressure sensor, altimeter, built-in GPS.

### MARINE ENVIRONMENTAL CONSULTING SERVICES



**CSA Ocean Sciences, Inc.**  
8502 SW Kansas Ave  
Stuart, FL 34997  
Tel: 772 219-3000, Fax: 772-219-3010  
E-mail: rmulcahy@conshelf.com  
Website: www.csaintl.com  
Contact: Robert Mulcahy

CSA Ocean Sciences, Inc. (CSA) is a marine environmental consulting firm specializing in multidisciplinary projects concerning potential environmental impacts of activities throughout the world. With extensive experience in environmental sciences and technical field operations, CSA is staffed and equipped to offer a complete range of services for projects in offshore, nearshore, estuarine, wetland, freshwater, and terrestrial environments.



### MOTION SENSING EQUIPMENT



**iXBlue**  
Tel: +33 (0)1 30 08 88 88, Fax: +33 (0)1 30 08 88 01  
Website: www.ixblue.com

- **PHINS, Full Inertial Navigation System**
- **PHINS 6000, subsea INS**
- **HYDRINS, hydrographic INS**
- **MARINS, naval INS**
- **ROVINS, survey full-featured INS**

iXBlue provides a range of fine, high-technology equipment, systems and turn-key solutions in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying.

Acoustic Products – Advanced Components  
Inertial Products – Integrated Solutions – Marine Works  
Motion Systems – Sea Operations – Sonar Systems



**Kongsberg Seatek AS**  
Kongsberg Seatek AS  
Pirseteret  
N-7462 Trondheim  
Norway  
Tel: +47 73 54 55 00  
Fax: +47 73 51 50 20

### KONGSBERG

E-mail: km.seatek@kongsberg.com  
Website: www.km.kongsberg.com/seatek  
Contact: Finn Otto Sanne  
finn.otto.sanne@kongsberg.com

Kongsberg Seatek is a leading international marine electronics manufacturer specializing in the development and production of precision positioning and motion sensing systems. Our commitment is to provide quality products and solutions for safe navigation and operations at sea in the commercial offshore, maritime, hydrographics and defence industries.



**TELEDYNE TSS**  
Everywhereyoulook™

**Teledyne TSS Ltd.**  
**UK Office:** 1 Blackmoor Lane, Croxley Business Park  
Watford, Hertfordshire WD18 8GA  
Tel: +44(0)1923 216020 Fax: +44(0)1923 216061  
E-mail: tsssales@teledyne-tss.com  
Website: http://www.teledyne-tss.com  
Contact: Carolyn Jones  
**USA Office:** 10801 Hamnerly Blvd, Suite 128  
Houston, TX 77043, Contact: Keith Pope  
Tel: (713) 461 3030, Fax: (713) 461 3099

Comprehensive family of motion sensors available; ranging from a heave sensor through to heave, pitch and roll, and at the top end of the range highly accurate position and heading systems.

# OCEAN INDUSTRY DIRECTORY

## ON&T's Product & Service Directory

### OCEANOGRAPHIC INSTRUMENTS



**ASL Environmental Sciences, Inc.**  
#1-6703 Rajpur Place, Victoria  
BC, Canada V8M 1Z5  
Phone: +1-250-656-0177  
Fax: +1-250-656-2162  
Email: asl@aslenv.com  
Web: www.aslenv.com

ASL provides physical oceanographic consulting services and instruments. Services: flow measurement, ice studies, wave measurement and analysis, numerical modeling, and remote sensing. Products: Ice Profiler- measures ice-keel depths; Acoustic Zooplankton Fish Profiler- monitors the presence and location of zooplankton, fish or sediments; and the WERA NorthernRadar- measures surface currents and waves from shore up to 200km. ASL has a large lease pool of oceanographic instruments.



**NKE Instrumentation**  
rue Gutenberg, 56700 Hennebont, FRANCE  
Tel: +33 2 97 36 41 31  
Fax: +33 2 97 36 46 74  
E-mail: info.instrumentation@nke.fr  
Website: www.nke-instrumentation.com

Contact : Yves DEGRES – Instrumentation Manager, Valérie LE PEN – Sales Dept.

- Autonomous data loggers for the measurement of physicochemical parameters of fresh and marine waters: pressure, temperature, conductivity, dissolved oxygen, turbidity, fluorescence, pH.
- Automated stations and instrumented buoys for coastal waters monitoring and MRE assessments.
- Monitoring equipment for atmospheric and marine corrosions, and cathodic protection.
- Specific equipments and developments: monitoring of sedimentary transports, diving systems behaviour, fishing efforts and environmental parameters, embedded measurement network.
- Provor and Arvor profiling subsurface floats (ARGO project), CTD, dissolved oxygen and optical sensors: Argos and Iridium transmission.
- Drifting surface buoys with temperature and GPS receiver for Surface velocity project.
- Carioca drifting buoy: sea water dissolved pCO<sub>2</sub>, chlorophyll, wind speed and salinity.



**RBR**  
95 Hines Road, Ottawa  
Ontario Canada K2K 2M5  
Tel: 613.599.8900, Fax: 613.599.8929  
E-mail: info@rbr-global.com  
Website: www.rbr-global.com

RBR designs and manufactures rugged submersible data loggers, recorders, sondes, controllers, and sensors for water quality measurement. Our standard data logging instruments range from one to 24 channels, configured as a CTD, or multi-parameter (sensor) recorders. Specialty loggers are available with specific sensors for harsh environments or unique applications like measuring tides and waves.



**SBE**  
13431 NE 20th St., Bellevue, WA 98005  
Tel: 425-643-9866, Fax: 425-643-9954  
E-mail: seabird@seabird.com  
Website: http://www.seabird.com  
Contact: Calvin Lwin, Applications Engineering

Sea-Bird is the leader in accurate, stable ocean instruments for measuring conductivity, temperature, pressure (salinity); oxygen; and related variables. Our CTD profilers, water samplers, moored CT recorders, wave/tide recorders, and DO sensors are used by research institutes, ocean observing programs, government agencies, and navies globally. Investments in engineering, metrology, calibration, software, and analysis make our products the best choice.



**Star-Oddi**  
Skeidaras 12, 210 Gardabaer, Iceland  
Tel: +354 533 6060, Fax: +354 533 6069  
E-mail: baldur@star-oddi.com  
Website: http://www.star-oddi.com  
Contact: Balduur Sigurgeirsson

A manufacturer of miniature data loggers with sensors as temperature, depth/pressure, salinity, tilt/acceleration, compass direction/magnetometer, light levels, acoustic receiving/transmitting. The loggers are used for various researches, including oceanography, fishing gear studies, equipment behavioral monitoring and fish tagging. Data is presented in the application software with a time-stamp for each measurement.

### OFFSHORE EQUIPMENT



**OEG Offshore, LLC**  
Millennium Tower, Suite #1300  
10375 Richmond Ave, Houston, Texas 77042  
Tel: M(+1) 713 899 7502  
Tel: O(+1) 713 783 1771  
E-mail: larry.bobbitt@oegoffshore.com  
Website: www.oegoffshore.com  
Skype: larrybobbitt

OEG Offshore LLC is the industry's first choice in supplying DNV 2.7-1 equipment on a worldwide basis, either for rental or purchase. The equipment supplied is all types and sizes of DNV 2.7-1 containers, baskets, skips, gas bottle racks, refrigerated units, workshops and hazardous area modules. Our specialty is ATEX, which includes pressurization, air conditioning, fire & gas systems. If we don't have the type and size you need, call us for a custom build. OEG's corporate office is located in Aberdeen, Scotland with operational offices in Houston, Perth and Singapore.



**Unique System LLC (USA)**  
A Unique Maritime Group Company

**Unique System, L.L.C.**  
(Survey & Hydrographic)  
5355 W. Sam Houston Pkwy. N., Suite 320  
Houston, Texas 77041  
Tel: (713) 937 6193, Fax: (713) 937 8695  
E-mail: infous@uniquegroup.com  
Website: www.uniquegroup.com

**Unique System, L.L.C.**  
(Diving Equipment)  
1302 Import Drive  
New Iberia, LA 70560  
Tel: (337) 365 5650, Fax: (337) 365 5610  
E-mail: infous@uniquegroup.com  
Website: www.uniquegroup.com

*Unique System, L.L.C. (USA), Unique Maritime Group's operating entity in the United States, provides Survey and Hydrographic rentals and sales support for products such as Kongsberg C Node Maxi/Mini and Sonardyne G6 Series products. Also in inventory are IXSEA, CDL, Edgetech, Tritech, Blueview, Hypack, Valeport and Teledyne products at our Houston, TX office. These products along with the rest of the inventory allow our client's acoustic, positioning, ROV, navigation and hydrographic needs to be served. The New Iberia, LA office provides diving rentals and sales for DNV and ABS classed Saturation Diving Systems, Hyperbaric Rescue Facilities, LARS and surface diving equipment.*

### World Class Solutions from a Worldwide Business



usasales@uniquegroup.com

www.uniquegroup.com



### PROJECT CONSULTING/ADVISORY SERVICES



**Ocean Specialists Inc.**  
8502 SW Kansas Ave  
Stuart, FL 34997  
Tel: (772) 219-3033  
Fax: (772) 219-3010  
Email: jbyous@oceanspecialists.com  
Website: www.oceanspecialists.com  
Contact: Jim Byous



*Ocean Specialists, Inc (OSI) provides a broad range of capabilities and services to the Offshore Oil & Gas, Submarine Telecom, Government and Scientific markets, including: Market analysis, project consulting, submarine fiber cable systems, subsea technology development, & corporate services.*

### ROV COMPONENTS



**ROVSCO, Inc.**  
5263 Barker Cypress Road, Suite 600  
Houston, Texas 77084  
Tel: (281) 858-6333, Fax: (281) 858-6363  
E-mail: sales@rovscoco.com  
Website: www.rovscoco.com  
Contact: Jessica McKenney

*Rovsco provides support and solutions to the offshore subsea and marine industries; work-class ROV and Commercial Diving operations. We manufacture a number of tools/equipment and subsea video items. We have an excellent reputation worldwide based on our product knowledge, dependability, commitment to customer service and speed of response.*

### SONAR SYSTEMS

**Imagenex Technology Corp.**  
209-1875 Broadway St., Port Coquitlam  
BC, Canada, V3C 4Z1  
Tel: (604) 944-8248, Fax: (604) 944-8249  
E-mail: imagenex@shaw.ca  
Website: www.imagenex.com  
Contact: Steve Curnew

*Imagenex is an innovative company specializing in advanced acoustic underwater sensors. The company's products include multibeam, mechanical scanning, and sidescan sonars. The Delta T is a compact, cost-effective multibeam sonar, small enough to fit on most underwater vehicles for obstacle avoidance, navigation and profiling applications. The profiling versions feature an output for real-time 3D plotting and are compatible with third party post-processing software. The Model 881A is a small multi-frequency sonar for imaging or profiling applications. There is an Azimuth Drive available for the 837B Delta T and the 881A for profiling applications from stationary platforms. The Model 881L features improved performance via Ethernet communications. Two sidescan sonars, the SportScan and the YellowFin, feature a revolutionary price/performance ratio. For more information please visit www.imagenex.com.*

# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory



**iXBlue**  
Tel: +33 (0)1 30 08 88 88, Fax: +33 (0)1 30 08 88 01  
Website: www.ixblue.com

#### SHADOWS SAMS

- High-performance mapping sonar
- Synthetic Aperture Sonar processing
- Provides real time ortho-rectified and geo-referenced images
- No gap at nadir

*iXBlue provides a range of fine, high-technology equipment, systems and turn-key solutions in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying.*

Acoustic Products – Advanced Components  
Inertial Products – Integrated Solutions – Marine Works  
Motion Systems – Sea Operations – Sonar Systems



**Marine Sonic Technology, Ltd.**  
P.O. Box 730  
White Marsh, VA 23183-0730  
Toll Free: (800) 447-4804  
E-mail: jdmille@marinesonic.com  
Website: www.marinesonic.us

*Marine Sonic Technology, Ltd. builds high quality, high resolution side scan sonar systems. Located in Gloucester, Virginia, Marine Sonic has been in business for more than 20 years. Our towed systems are rugged, easy to deploy and easy to operate. We also offer highly efficient embedded side scan systems for use in AUV's which occupy minimal space in the vessel and operate with minimal power consumption.*



**Teledyne BlueView, Inc.**  
2515 N. Northlake Way, Suite 214  
Seattle, WA 98103, USA  
Tel: (206) 545-7260, Fax: (206) 545-7261  
E-mail: swa\_info@teledyne.com  
Website: www.blueview.com

*Teledyne BlueView delivers state-of-the-art, compact acoustic imaging, measurement, and automation solutions for defense, energy, civil engineering, transportation, and port security applications worldwide. Teledyne BlueView's advanced acoustic systems support underwater operations from a wide variety of platforms, including ROVs, AUVs, surface vessels, fixed mounts, manned submersibles, portable tripods, and diver handheld systems.*

#### SOUND VELOCITY PROBES/CTDS

**SAIV A/S**  
Nygårdsviken 1, 5164 Laksevag, Norway  
Tel: +47 56 11 30 66, Fax: +47 56 11 30 69  
E-mail: info@saivas.no  
Website: www.saivas.no  
Contact: Gunnar Sagstad

- STD/CTD, Sound Velocity probes/recorder with optional multi-parameter facilities; Turbidity, Fluorescence, Oxygen etc.
- Precision pressure/depth (0.01% accuracy) and temperature sensors/recorders. Applications: hydrographic profilers, installation on ROVs and towed systems, etc. Robust and compact designs are combined with accuracy and "plugged play" compatibility. Output format for sonar equipment, e.g. EM1002, EM3000, SSP, HiPAP and Reson 8125.



#### SUB-BOTTOM PROFILES



**iXBlue**  
Tel: +33 (0)1 30 08 88 88, Fax: +33 (0)1 30 08 88 01  
Website: www.ixblue.com

#### ECHOES

- wide band
- flat spectrum
- from 500 Hz to 15 kHz
- fish, hull-mounted, pole-mounted, AUV-mounted
- shallow to 6000 m deep

*iXBlue provides a range of fine, high-technology equipment, systems and turn-key solutions in the areas of navigation and surveillance, underwater positioning and communication, seabed imaging and surveying.*

Acoustic Products – Advanced Components  
Inertial Products – Integrated Solutions – Marine Works  
Motion Systems – Sea Operations – Sonar Systems

#### SUBSEA FABRICATION



**NEW Industries**  
6032 Railroad Avenue  
Morgan City, LA  
Tel: 985-385-6789  
E-mail: bill.new@newindustries.com  
Website: www.newindustries.com  
Contact: Bill New

*New Industries (NI) provides quality fabrication services to the offshore oil & gas and marine industries. NI focuses on large diameter, pressure vessels and deepwater subsea equipment such as jumpers, PLETs, PLEM, suction piles and ROV components.*

#### SUBSEA TOOLING



**Seanic Ocean Systems**  
8860 Fallbrook Drive  
Houston, TX 77064  
Tel: 713-934-3100  
E-mail: contact@seanicusa.com  
Website: www.seanicusa.com  
Contact: Karen North

*Seanic Ocean Systems is an industry leader in providing simple, rugged and reliable subsea tooling for remote intervention.*

#### SWITCHES



**SEACON Advanced Products, LLC.**  
1321 Nellis Road, P.O. Box 767  
Bellville, Texas 77418, USA.  
Tel: (979) 865-8846, Fax: (979) 865-8859  
E-mail: sales@seacon-ap.com  
Website: www.seacon-ap.com

*SEACON Advanced Products, LLC., manufactures a wide variety of versatile and robust switches to suit a number of applications. These include Limit, Positive Action and Proximity switches in a range of materials including Titanium, Plastic and Stainless Steel which can be supplied in varying load capacities up to 7 amps and pressure rated to 10,000 psi. To further aid simplicity, our proven range of Modular Proximity Switches have been integrated with the Micro WET-CON electrical wet-mate connector making this switch a very modular component that is easily installed and replaced in the field, but without compromising reliability.*



#### UNDERWATER THICKNESS GAUGES



**Cygnus Instruments, Inc.**  
PO Box 6417  
Annapolis, MD 21401 USA  
Tel: (410) 267 9771  
Fax: (410) 268 2013

E-mail: sales@cygnusinstruments.com  
Website: www.cygnusinstruments.com  
Contact: Rod Sanders

*Cygnus manufactures the world's first true multiple echo ultrasonic thickness gauge. Multiple echo means that coatings, such as paint or epoxy, do not have to be removed in order to measure the steel. We offer hand held gauges that divers take into the water. Also have models that can communicate topside to a display repeater or PC. Also offer a range of shallow to deepwater units for ROVs. Manufacturing to ISO 9002 standards. Approved by classification societies.*

#### UNDERWATER VEHICLES

##### AUVs



**Exocetus Development LLC**  
1444 East 9th Avenue, Anchorage, AK, 99501  
Tel: 858-864-7775, Fax: 907-569-0268  
E-mail: sales@exocetus.com  
Website: www.exocetus.com  
Contact: Ray Mahr, VP Sales & Marketing

*The new Exocetus Coastal Glider is specifically designed for use in coastal waters where high currents and large variations in water densities occur. A larger buoyancy engine than legacy gliders designed for open-ocean operation enables the Exocetus Coastal Glider to easily operate in up to 2 knots of current, handle densities from 7 ppt to 37 ppt, operate up to 60 days with a lithium battery pack and easily integrate additional sensors.*



**A KONGSBERG COMPANY**

**Hydroid, Inc.**,  
a subsidiary of Kongsberg Maritime  
6 Benjamin Nye Circle, Pocasset, MA 02559-4900, USA  
Tel: 508-563-6565, Fax: 508-563-3445  
E-mail: glester@hydroid.com  
Website: www.hydroid.com  
Contact: Graham Lester

*Hydroid, a subsidiary of Kongsberg Maritime, is the world leader in manufacturing advanced Autonomous Underwater Vehicles (AUVs). REMUS AUVs provide innovative and reliable systems for the marine research, defense, hydrographic and offshore/energy markets. Hydroid vehicles represent the most advanced, diversified and field-proven family of AUVs and support systems in the world.*

#### ROVs



**Subsea Technologies**  
*everything remotely possible*  
**Perry Slingsby**  
10642 West Little York, Suite 100  
Houston, TX 77041  
Tel: 713-329-8230, Fax: 713-329-8299  
E-mail: perry.sales@f-e-t.com  
Website: www.f-e-t.com/Subsea

*Forum Energy Technologies' Perry Slingsby brand supplies deepwater work class ROVs, tooling solutions, burial systems, and control-system-based products to the oil, gas, and telecommunications industries. Providing the most advanced, robust and dependable ROVs and subsea products in the world, Forum's Subsea group has facilities in the US and UK and sales offices and agents around the world.*



# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory

## UNDERWATER VEHICLES

**Continued**

### ROVs



#### SeaBotix Inc.

2877 Historic Decatur Road, Suite 100  
San Diego, CA 92106 USA  
Tel: +1 619 450-4000  
Fax: +1 619 450-4001  
E-mail: Info@SeaBotix.com  
Website: www.SeaBotix.com

SeaBotix Inc. is the world leading manufacturer of capable MiniROV systems. The Little Benthic Vehicle range of systems have become the benchmark in compact ROVs around the world. All systems perform a multitude of tasks including maritime security, body rescue, sensor deployment, object recovery, hazardous environment intervention, and hull inspection.



#### SUBSEA TECHNOLOGIES everything remotely possible®

### Sub-Atlantic

Woodburn Rd, Blackburn Business Park, Blackburn, Aberdeen, AB21 0PS, Scotland  
Tel: +44(0)1224 798660, Fax: +44(0)1224 798661  
10642 West Little York, Suite 100  
Houston, Tx, 77041-4014, USA  
Tel: +1 713 329 8730, Fax: +1 713 329 8299  
E-mail: sub-atlantic.slaes@f-e-t.com  
Website: www.f-e-t.com/Subsea

Forum Energy Technologies' sub-Atlantic brand manufactures world class ROVs ranging from portable units to light work class systems. Sub-Atlantic also supplies thrusters, hydraulic power units, valve packs, compensators and pan and tilt systems to other ROV manufacturers. Sub-Atlantic is part of the FET subsea group and has facilities in the US and UK and sales offices and agents around the world.



#### VideoRay

580 Wall Street, Phoenixville, PA 19460  
Tel: (610) 458 3000, Fax: (610) 458 3010  
E-mail: info@videoray.com  
Website: www.videoray.com  
Contact: Brian Luzzi

With more than 1,900 Remotely Operated Vehicles (ROVs) in service around the world, VideoRay has clearly become the global leader in Observation ROV technology. VideoRay is an extremely versatile, portable, affordable, and reliable solution for underwater operations including surveys, offshore inspections, search & recovery, homeland & port security, science & research, fish farming, and other unique applications in underwater environments. VideoRay is available on the General Services Administration.

## UNDERWATER VIDEO EQUIPMENT



**Kongsberg Maritime Ltd.**  
Camera Division  
Campus 1, Science & Technology Park  
Balgownie Rd Bridge of Don, Aberdeen  
AB22 8GT, UK  
Tel: +44 (0)1224 226500  
Fax: +44 (0)1224 226598

**KONGSBERG**  
E-mail: km.camsales.uk@kongsberg.com  
Website: www.kongsbergmaritime.com  
Contact: Bill Stuart

Kongsberg Maritime Ltd is a world leader in providing harsh environment underwater camera & imaging technology and marine CCTV systems to the Offshore Oil Field & Renewable Energy, Power Generation, Scientific, Maritime and Military sectors.



#### SIDUS Solutions, Inc.

San Diego, CA Office:  
Tel: (619) 275 5533  
Fax: (619) 275 5544  
Houston, TX Office:  
Tel: (281) 658-2555  
E-mail: info@sidus-solutions.com  
Website: www.sidus-solutions.com

SIDUS Solutions LLC is an integrated systems provider for security and video surveillance systems specializing in customization. Our products are operational to sub-sea depths of 6,500m, serving industries worldwide. We are a full service provider, offering end-to-end solutions from concept design, product selection, engineering, manufacturing, technical and customer support. Industries we serve are Oil and Gas, Scientific, Military and Academic.

## WINCHES, HANDLING & CONTROL SYSTEMS



#### Hawboldt Industries

220 Windsor Road  
Chester, Nova Scotia, Canada B0J 1J0  
Tel: 902 275 3591  
Fax: 902 275 5014  
E-mail: paul.phillips@hawboldt.ca  
Website: www.hawboldt.ca  
Contact: Paul Phillips

Hawboldt Industries has built robust commercial and scientific deck machinery for over a century, focusing on custom winch solutions and satisfying project requirements from engineering to commissioning. ROV winches, A frames, and electro-hydraulic power packs are available to satisfy the offshore and subsea markets. Our scientific winches, preferred by universities and governments worldwide, are renowned for their durability and performance particularly in harsh environments.



#### Markey Machinery Company

7266 8th Ave. South  
Seattle, WA 98108 USA  
Tel: +1 800 637 3430  
Fax: +1 206 623 9839  
E-mail: info@markeymachinery.com  
Website: www.markeymachinery.com

Preferred by the US fleet, Markey's advanced oceanographic winch systems provide ultimate dependability, reliability and precise performance when and where you want it. Operating within critical windows of opportunity you can count on our custom winches, capstans, windlasses and auxiliary machinery for the successful execution and completion of your research.



#### Radoil, Inc.

12251 FM 529  
Houston, TX 77041  
Tel: (713) 937 4494  
E-mail: pvanderlinden@radoil.com  
Website: www.radoil.com

Radoil's goal is to identify challenges, design innovative solutions and manufacture quality products that solve your deepwater problems. Our business is to save you time and money. Everyone encounters delays and with day rates where they are any delay can be very costly to you, your clients and your vendors.



#### RAPP HYDEMA

#### Rapp Hydema AS

Büroveien 31/33, Bodø, Norway  
Tel: +47 75550100, Cell: +47 90755058  
E-mail: runar.tunem@rappydema.com  
Website: www.rappmarine.com

State-of-the-art hydraulic and electric winches are key to the range, features efficient, computerized control system and Launch & Recovery Systems. ROV Winches and Heavy Lift Winches with Pentagon Control Systems incl. Active Heave Compensation. ROV Moon Pool LARS Systems and Winch Drive Conversions. Rapp Hydema AS is represented in 22 countries word wide.

## WINCHES - UNDERWATER

#### ALL OCEANS Engineering Ltd.

Tyreagger Works, Clinterty, Kinellar  
Aberdeen, AB21 0TT, UK  
Tel: +44(0)1224 791001, Fax: +44(0)1224 791002  
E-mail: admin@alloceans.co.uk  
Website: www.alloceans.co.uk  
Contact: Brian Abel

MECHANICAL HANDLING UNDERWATER  
Launch and Recovery Systems - 6,000m plus Underwater Winches - ROV and Diver operated Tether Management Systems - 6,000m plus Torque Tools - Electric and Hydraulic systems - ROV and Diver operated General Products - Compensators, latches, swivels, metrology sets, cable reels, pressure housings, junction boxes  
Workshop Services - Fabrication, assembly and testing  
Engineering - prototyping, product development, solutions engineering AC-ROV - The mini ROV that broke the mold.



## Keep Your ONT Directory Listings on Target

- Can be updated at any time throughout the year
- Keeps your market aware of your current contact and product information

**Call Today! 772-219-3067**

# Ocean News & Technology

## SUBSCRIPTION

FREE to all qualified Ocean Industry readers around the world.

Non-Qualified readers, please subscribe at [www.ocean-news.com](http://www.ocean-news.com)

*Unsigned or incomplete forms will be disqualified.*

Fill out this card completely and submit. Fax to: 772-221-7715 or  
Mail to: TSC, 8502 SW Kansas Avenue, Stuart, FL 34997

- 1** I am an industry member and wish to receive *Ocean News & Technology* FREE

PRINT EDITION       DIGITAL EDITION       BOTH

- 2** Complete and Sign if you wish to start or continue receive *Ocean News & Technology*

Name \_\_\_\_\_

Job Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Postal Code \_\_\_\_\_ Country \_\_\_\_\_ E-Mail \_\_\_\_\_

Telephone \_\_\_\_\_ Fax \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

- 3** Which categories best describes your business?

(Indicate the primary activity of your organization by placing a 1 next to the category. Place 2, 3 and 4 next to other markets served.)

- |   |   |
|---|---|
| A. <input type="checkbox"/> SHIPS, CONSTRUCTION, SALVAGE      | O. <input type="checkbox"/> DIVING EQUIPMENT / SERVICES     |
| B. <input type="checkbox"/> U/W VEHICLES / COMPONENTS         | P. <input type="checkbox"/> CONSULTING, DATA SERVICES       |
| C. <input type="checkbox"/> NAVIGATION / POSITIONING          | Q. <input type="checkbox"/> MARINE ELECTRICAL / ELECTRONICS |
| D. <input type="checkbox"/> RESEARCH & DEVELOPMENT            | R. <input type="checkbox"/> COMPUTER SERVICES / SOFTWARE    |
| E. <input type="checkbox"/> OCEAN INSTRUMENTATION             | S. <input type="checkbox"/> OCEAN RENEWABLES                |
| F. <input type="checkbox"/> OFFSHORE OIL & GAS                | T. <input type="checkbox"/> SUBSEA IRM                      |
| G. <input type="checkbox"/> COMMUNICATIONS / UTILITIES        | U. <input type="checkbox"/> OCEAN OBSERVING                 |
| H. <input type="checkbox"/> SCIENCE, ENVIRONMENTAL            | V. <input type="checkbox"/> SHIPPING / TRANSPORTATION       |
| I. <input type="checkbox"/> EDUCATIONAL INSTITUTION / LIBRARY | W. <input type="checkbox"/> SUBMARINE TELECOM               |
| J. <input type="checkbox"/> GOVERNMENT MILITARY               | X. <input type="checkbox"/> EQUIPMENT RENTAL                |
| K. <input type="checkbox"/> GOVERNMENT CIVILIAN               | Y. <input type="checkbox"/> MANUFACTURERS' REPRESENTATIVE   |
| L. <input type="checkbox"/> MARINE HARDWARE / DECK EQUIP.     | Z. <input type="checkbox"/> OTHER (Please specify below)    |
| M. <input type="checkbox"/> FISHING INDUSTRY, AQUACULTURE     |   |
| N. <input type="checkbox"/> SURVEY, MAPPING, EXPLORATION      |   |

- 4** Which category best describes your job function? (check only one)

- |  |  |
|--|--|
| 1. <input type="checkbox"/> OWNER / EXECUTIVE      | 5. <input type="checkbox"/> BUYER                        |
| 2. <input type="checkbox"/> MANAGEMENT / PROFESSOR | 6. <input type="checkbox"/> SALES                        |
| 3. <input type="checkbox"/> ENGINEER / SCIENTIST   | 7. <input type="checkbox"/> OTHER (Please specify below) |
| 4. <input type="checkbox"/> TECHNICIAN / OPERATOR  |  |

- 5** How many other people will read your issue of ON&T at this location? \_\_\_\_\_



★ I would like to also receive *Environment coastal & offshore (ECO)* magazine FREE

PRINT EDITION       DIGITAL EDITION       BOTH

TSC, 8502 SW Kansas Avenue, Stuart, FL 34997, (772) 221-7720



# Advertiser Index

AK Industries <a href="http://www.ak-ind.com">www.ak-ind.com</a>	47	ISE, Ltd. <a href="http://www.ise.bc.ca">www.ise.bc.ca</a>	5	Real Time Systems - RTSYS <a href="http://www.rtsys.fr">www.rtsys.fr</a>	69
Ashtead Technology/ Seanic Ocean Systems <a href="http://www.ashtead-technology.com">www.ashtead-technology.com</a>	71	Imagenex Technology Corp <a href="http://www.imagenex.com">www.imagenex.com</a>	31	RESON <a href="http://www.reson.com">www.reson.com</a>	12
BIRNS, Inc. <a href="http://www.birns.com">www.birns.com</a>	15	ISE, Ltd. <a href="http://www.ise.bc.ca">www.ise.bc.ca</a>	5	ROVSCO, Inc. <a href="http://www.rovoco.com">www.rovoco.com</a>	80, 82
Bluefin Robotics <a href="http://www.BluefinRobotics.com">www.BluefinRobotics.com</a>	35	JW Fishers Manufacturing, Inc. <a href="http://www.jwfishers.com">www.jwfishers.com</a>	70	SBG SYSTEMS s.a.s <a href="http://www.sbg-systems.com">www.sbg-systems.com</a>	21
Ceramco, Inc. <a href="http://www.ceramicoceramics.com">www.ceramicoceramics.com</a>	37	Kongsberg Maritime Ltd <a href="http://www.km.kongsberg.com">www.km.kongsberg.com</a>	25	Sea-Bird Electronics, Inc. <a href="http://www.seabird.com">www.seabird.com</a>	100
Chesapeake Technology, Inc. <a href="http://www.chesapeaketech.com">www.chesapeaketech.com</a>	73	L-3 Communications Klein Associates <a href="http://www.L-3Klein.com">www.L-3Klein.com</a>	65	SeaBotix <a href="http://www.seabotix.com">www.seabotix.com</a>	4
CSA Ocean Sciences Inc. <a href="http://www.csaocean.com">www.csaocean.com</a>	45	LinkQuest, Inc. <a href="http://www.link-quest.com">www.link-quest.com</a>	59	Seacon <a href="http://www.seaconworldwide.com">www.seaconworldwide.com</a>	23
Csnet International, Inc. <a href="http://www.csnetintl.com">www.csnetintl.com</a>	61	MacArtney A/S <a href="http://www.macartney.com">www.macartney.com</a>	3	Seanic Ocean Systems/ Ashtead Technology <a href="http://www.seanicusa.com">www.seanicusa.com</a>	71
DeepSea Power & Light <a href="http://www.deepsea.com">www.deepsea.com</a>	60	Marine Sonic Technology <a href="http://www.marinesonic.com">www.marinesonic.com</a>	52	SeaRobotics <a href="http://www.searobotics.com">www.searobotics.com</a>	29
Det Norske Veritas AS <a href="http://www.dnv.com/software">www.dnv.com/software</a>	7	New Industries <a href="http://www.newindustries.com">www.newindustries.com</a>	57	Shark Marine Technologies, Inc. <a href="http://www.sharkmarine.com">www.sharkmarine.com</a>	80
DOE, Inc. (Deep Ocean Engineering) <a href="http://www.deepocean.com">www.deepocean.com</a>	36	NOBSKA, Inc. <a href="http://www.nobska.net">www.nobska.net</a>	38	Sidus Solutions, LLC <a href="http://www.sidus-solutions.com">www.sidus-solutions.com</a>	84
ECA ROBOTICS <a href="http://www.ecahytec.com">www.ecahytec.com</a>	30	Ocean News & Technology <a href="http://www.ocean-news.com">www.ocean-news.com</a>	87, 90	Star Oddi <a href="http://www.star-oddi.com">www.star-oddi.com</a>	98
ECO Magazine <a href="http://www.eco-fsc.com">www.eco-fsc.com</a>	66	Ocean Sensor Systems <a href="http://www.oceansensorsystems.com">www.oceansensorsystems.com</a>	85	Submarine Cable Newsfeed <a href="http://www.subcableworld.com">www.subcableworld.com</a>	46
EvoLogics GmbH <a href="http://www.evologics.de">www.evologics.de</a>	99	Ocean Specialists, Inc. <a href="http://www.oceanspecialists.com">www.oceanspecialists.com</a>	67	SubSea Survey <a href="http://www.subseasurvey.com">www.subseasurvey.com</a>	55
FORUM Energy Technologies, Inc. <a href="http://www.f-e-t.com">www.f-e-t.com</a>	9	Oceans 2013 MTS/IEEE Bergen <a href="http://www.oceans13mtsieebergen.com">www.oceans13mtsieebergen.com</a>	89	Teledyne BlueView, Inc. <a href="http://www.blueview.com">www.blueview.com</a>	27
Geofac Systems, Inc. <a href="http://www.geofac.com">www.geofac.com</a>	19	Oceans 2013 San Diego <a href="http://www.oceans13mtsieesandiego.com">www.oceans13mtsieesandiego.com</a>	83	Teledyne Marine Group <a href="http://www.teledynemarine.com">www.teledynemarine.com</a>	63
Geometrics, Inc. <a href="http://www.geometrics.com">www.geometrics.com</a>	49, 53	OceanServer Technology <a href="http://www.ocean-server.com">www.ocean-server.com</a>	79	Tritech International Ltd <a href="http://www.tritech.co.uk">www.tritech.co.uk</a>	20
GJ Land & Marine Food Dist., Inc. <a href="http://www.gjfood.com">www.gjfood.com</a>	72	Outland Technology <a href="http://www.outlandtech.com">www.outlandtech.com</a>	82	Underwater Intervention <a href="http://www.underwaterintervention.com">www.underwaterintervention.com</a>	84
Gulf Engine <a href="http://www.gulfengine.com">www.gulfengine.com</a>	40	Quest Offshore Resources, Inc. <a href="http://www.questoffshore.com">www.questoffshore.com</a>	88	Valeport Limited <a href="http://www.valeport.co.uk">www.valeport.co.uk</a>	62
Hydro-Lek Limited <a href="http://www.hydro-lek.com">www.hydro-lek.com</a>	81	Radar Screen Report <a href="http://www.subcableworld.com">www.subcableworld.com</a>	46	VideoRay <a href="http://www.videoray.com">www.videoray.com</a>	2
Hydroid, Inc. <a href="http://www.hydroid.com">www.hydroid.com</a>	26	RBR, Ltd <a href="http://www.rbr-global.com">www.rbr-global.com</a>	24	Yale Cordage, Inc. <a href="http://www.yalecordage.com">www.yalecordage.com</a>	48

Meet us at Ocean Business April 9-11, 2013, booth A21

## Small Data Loggers

**Data Storage Tag (DST)**

- Various depth ranges
- Selection of different sensors
- Option for memory extension
- Long battery life

**STAR ODDI**  
Logging Life Science

star-oddi@star-oddi.com  
www.star-oddi.com



## UNDERWATER COMMUNICATION AND POSITIONING SOLUTIONS

# Evo Logics®

### S2C TECHNOLOGY: COMMUNICATION AND TRACKING COMBINED

- time, space and cost-saving solutions
- low power consumption for autonomous operations
- advanced data delivery algorithms, addressing and networking, remotely configurable settings
- extendable platform with multiple configuration options: power-saving Wake Up module, acoustic releaser, additional sensors, custom solutions, OEM versions available

#### USBL POSITIONING SYSTEMS

**simultaneous** positioning and communication - no need to switch between positioning mode and modem mode

- SiNAPS – USBL positioning made simple and flexible
- reliable data transmissions
- range: up to 8000 m
- accuracy: up to 0.04 degrees

#### UNDERWATER ACOUSTIC MODEMS

reliable data transmissions even in adverse conditions, special edition available for network protocol developers

- range: up to 8000 m
- depth: up to 6000 m
- data rate: up to 31.2 kbps

#### LBL POSITIONING SYSTEMS

highly accurate, precise and stable performance

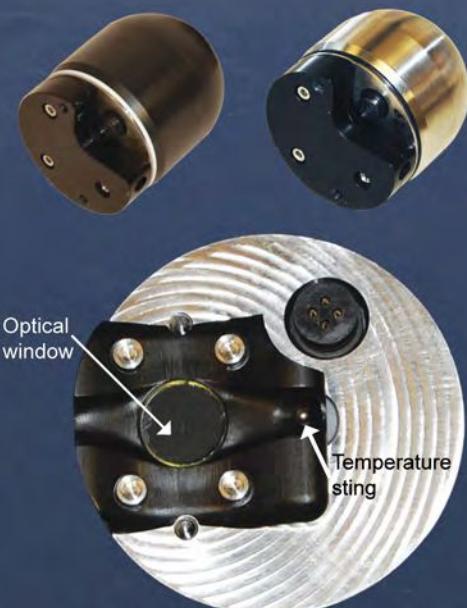
- multiple target tracking
- range: up to 8000 m
- accuracy: better than 0.01 m



**NEW!**

## Sea-Bird

# SBE 63 Optical Dissolved Oxygen Sensor



*With flow plenum removed*

- Long-term deployment applications
- High accuracy, resolution, and stability
- Each sensor fully and individually calibrated at 24 points
- For integration in CTD pumped flow path, providing maximum bio-fouling protection
- Shallow or deep housing



**Sea-Bird Electronics, Inc.**

13431 NE 20th Street, Bellevue, Washington 98005 USA  
[www.seabird.com](http://www.seabird.com)

E-mail: [seabird@seabird.com](mailto:seabird@seabird.com)

Telephone: +1 425-643-9866

Fax: +1 425-643-9954