

# OCEAN NEWS

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## & TECHNOLOGY

March 2015

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**DSP&L**

**Advancements in Subsea High  
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# Integrated Sensor Solutions

Sea-Bird Scientific Product Manager Jon Bumgardner, with the new Satlantic PAR sensor integrated onto the Sea-Bird 19plus V2 CTD.



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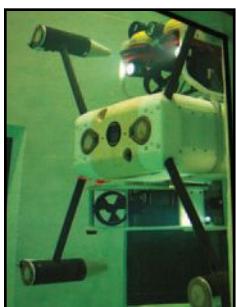
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## Cover Photo



A subsea view of Liquid Robotics Wave Glider SV3, the world's first wave and solar powered ocean robot.

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More News, More Technology, More Data

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## A Community Approach to Advancing Technology and Exploration in Ocean Sciences

by NOAA OER

Here at NOAA's Office of Ocean Exploration and Research, we believe the ocean community should work toward an open-source ocean, where observations are made by many, digitally recorded and distributed widely and quickly to audiences within the realms of science, industry and education, among others.

Unfortunately, the path to an open-source ocean comes with a set of very tough challenges, including the extreme working environment of the deep ocean and the increasing cost of conducting at-sea operations.

Luckily, the last 75 years have seen two forces increasingly come together to address these challenges: technological innovation and increased collaboration. The former has led to greater efficiencies in collecting, analyzing and distributing digital information; the latter encourages partners to leverage available funding, operational expertise and needed equipment to accomplish mutual goals. Together, technology and collaboration allow oceanographers to explore the deep and largely unknown ocean in ways never before imagined.

As part of the community that explores and researches the ocean, OER supports and conducts voyages of exploration and projects that are highly leveraged through partnerships with other NOAA offices and programs; international, federal, state and local agencies; industry; and non-governmental organizations.

These partnerships are an increasingly important way to expand the return on investments, whether to taxpayers, board members, stockholders or investors of any kind. They are also essential to the viability of needed but otherwise prohibitively expensive investigations of our ocean world. Further, these collaborations have included the development and use of advanced and emerging undersea technologies and communication strategies to expand exploration and broaden community engagement in at-sea-science.

One of the newest areas of technology is the increasing utilization of unmanned maritime systems. These systems can operate throughout most ocean depths and be equipped with a wide variety of oceanographic sensors or sonar systems. Used in weather and ocean measurement, ecosystem assess-

ment and hydrographic survey, this technology has shown promise in demonstration projects. With continued investment and technology advancement, the near future will likely see these systems increasingly employed as a key component of the operational ocean observing system.

A second emerging area is telepresence – the live transmission of exploration data from sensors and systems at sea to shore in real time. In addition to allowing live video and data transmission from the seafloor, telepresence also facilitates new technological ideas and applications such as a lab at sea that would include real-time sharing of mass spectrometry results and DNA sequencing, as well as close inspection of external and internal parts of recovered marine animal specimens that could lead to the identification of known species and rapid declaration of new species. This application of technology could increase the value and scope of intellectual capital ashore to expeditions at sea and open field-based science to persons not able to participate in any other way.

OER and its partners are continuously seeking out innovative approaches to meeting long-standing ocean observing challenges. Besides the two explored above, these include testing the ability of autonomous vehicles to collect geological, biological and archaeological samples from the seafloor; pursuing methods of non-invasively generating information typically derived from analyzing physical specimens in a laboratory; and fostering development and utilization of lightweight, low-cost, fly-away ROV and telepresence systems. All of these capabilities are presently within reach or already being tested.

Meeting the ocean management challenges of the coming decades will require continued advancement of new technologies and expanded collaboration from all sectors of the ocean science community. OER is interested in learning about and working with others in the community to design, develop, test and evaluate platforms, sensors, and procedures capable of increasing the pace, efficiency and scope of ocean exploration and providing the value and benefit that ocean discovery and exploration uniquely provides for the nation.



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DSP&L's HD Multi SeaCam(R) mounted on Teledyne Seabotix vehicle.

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Ocean News & Technology

# Advancements in Subsea High Definition Imaging

By: Brian Braden, Sales Engineer with DeepSea Power & Light

DeepSea Power and Light (DSP&L) has been an innovative leader in the oceanographic community for over 30 years. Their unique approach is focused on technology solutions to provide quality products that stand up to the rigors of harsh subsea environments over time.

Starting in his garage in 1983, Scripps Institution of Oceanography Ph.D. student Mark Olsson created DSP&L's first product, the SeaBattery™ power module. Capable of supplying stable and reliable power at full ocean depth, this product remains widely utilized worldwide over 30 years later. DSP&L's collaborative and creative approach to product design put them in the position to engineer custom lighting for the Titanic expeditions. Product designs that push the technological boundaries of their time continue to be among DeepSea Power & Light's core strengths.

## Performance Under Pressure

DSP&L emphasizes a beyond-minimum approach, commonly designing products to withstand depths beyond existing industry limitations. The team is guided by several basic principles when creating any new product design: performance, immersion longevity, durability, and compact form factor are just a few of the underlying concepts considered a necessity for any product that bears the DSP&L name. Examples of this include sapphire crystal ports used in place of glass or acrylic; titanium housing options, and industry-leading miniaturization of lights and cameras. The DSP&L design approach ensures that products will perform where and when needed while minimizing costly down-time. This has resulted in the design of the industry leading LED SeaLite® Sphere family of lights. Flicker free and fully dimmable, these units are capable of outperforming a 400 watt Metal Halide (HMI) at a fraction of the price and size.



**6km Hard-Anodized Aluminum & 11km Titanium High Output SeaLite(R) Sphere Lights.**

family of cameras: the industry's first full-HD tooling camera with integrated coax and fiber optic outputs. The compact size of the HD Multi SeaCam tooling camera enables integration of HD video on smaller platforms and in a wider variety of placements than previously possible; including manipulator arms, pan and tilt units, and smaller ROVs. As well as for tooling purposes, the wide angle view on these cameras creates a new class of HD context cameras providing pilots with full operational awareness. In 2015 DSP&L is continuing this innovative drive with the announcement of the industry's most compact full HD optical zoom camera and their innovative FleXlink™ HD-SDI transmission technology.

## The FleXlink Advantage – Hassle Free HD

Existing coax and fiber optic interconnects are bulky, expensive, and delicate compared to the compact and robust HD Multi SeaCam tooling camera. In order to decrease the footprint, improve reliability, and reduce operation costs for HD video systems, DSP&L engineered their FleXlink technology: a HD-SDI transmission solution utilizing existing Ethernet interconnects.

By taking advantage of the controlled impedance of twisted pair Ethernet cable, FleXlink sends full bit-rate, uncompressed HD-SDI formatted video over distances of 10 meters through existing subsea connectors and cables. A FleXlink media converter, placed in an existing multiplexer (MUX) or dedicated housing, converts the signal to



**(Left to Right) 4x HD Zoom, HD Multi SeaCam(R) with Fiber Optic, and HD Dome Port with FleXlink™.**

Beyond the simple physical design properties of a product, the philosophy of quality without compromise extends to the entire production process. All products receive comprehensive quality checks throughout every stage of assembly and every single product undergoes pressure testing to or in-excess of advertised depth rating. Instead of relying upon the LED manufacturer-provided performance specifications, every light is individually evaluated after assembly in a 1 meter integrating sphere for true color-temperature reading and luminous output. This commitment to quality has led DSP&L to the forefront of what is possible in lighting and imaging solutions.

## The High Definition Camera Evolution

Among its contributions to subsea imaging technology, DSP&L strives to enable new applications for HD video. This includes the HD Multi SeaCam®

# FEATURE STORY

either a coax or fiber optic HD-SDI output by means of a Small Form-factor Pluggable (SFP) module. With a compact size of just 63mm x 40mm (about the size of a typical business card), the FleXlink media converter can fit into even the most crowded multiplexer configurations. As the FleXlink board outputs either coax or optical HD-SDI data, no additional hardware is necessary to connect with commonly utilized multiplexing hardware.



Fiber Optic (Separate Electrical Connector)



Coaxial / Electrical Hybrid



*Comparison between FlexLink™ (Ethernet-type), fiber optic, and coax solutions. FlexLink allows more compact and robust HD-SDI video connections.*

of being able to swap out the SFP module to change optical wavelengths as systems are modified over time. This benefit is attained without the added burden of requiring factory service of the camera itself. With the current economic environment of the industry never far from the mind, FleXlink is poised to provide increased mission capability to existing platforms while reducing both capital and operational expenses required for HD imaging solutions.

## Looking Forward

DeepSea Power & Light is committed to pioneering technologies that increase product utility, performance, durability, and value. Solutions driven by technological capabilities are developed alongside demands from industry leaders. The FleXlink solution is the latest example of a DSP&L offering to provide greater earning potential to system operators while reducing long-term costs. This trend continues with the upcoming release in 2015 of its 4x Optical Zoom HD Camera, available with the FleXlink solution.

DeepSea Power & Light's philosophy of innovation and quality will bring new products with unique capabilities to the subsea marketplace for years to come.

There are numerous advantages to the FleXlink approach, all gained without increase in cost when compared to a camera that is equipped with a conventional HD-SDI interconnect method. The flexible nature of existing Ethernet cable and its pervasive use for other instruments are among the primary benefits. No longer are bend radii such a limiting factor as Ethernet cable can tolerate bends to a much greater extent than fiber optic or coaxial cabling, especially beneficial on dynamic installations such as pan&tilt units and manipulator arms. Additionally coax and fiber interconnects contribute 15cm or more to overall product length, not including cable bend radius restrictions. Standard Ethernet connectors are significantly more compact in comparison and available in a wide range of form factors including low-profile solutions. FleXlink also reduces maintenance and spares costs by leveraging commonly utilized Ethernet interconnects and cables. The standardized SFP module on the FleXlink media converter provides the added benefit



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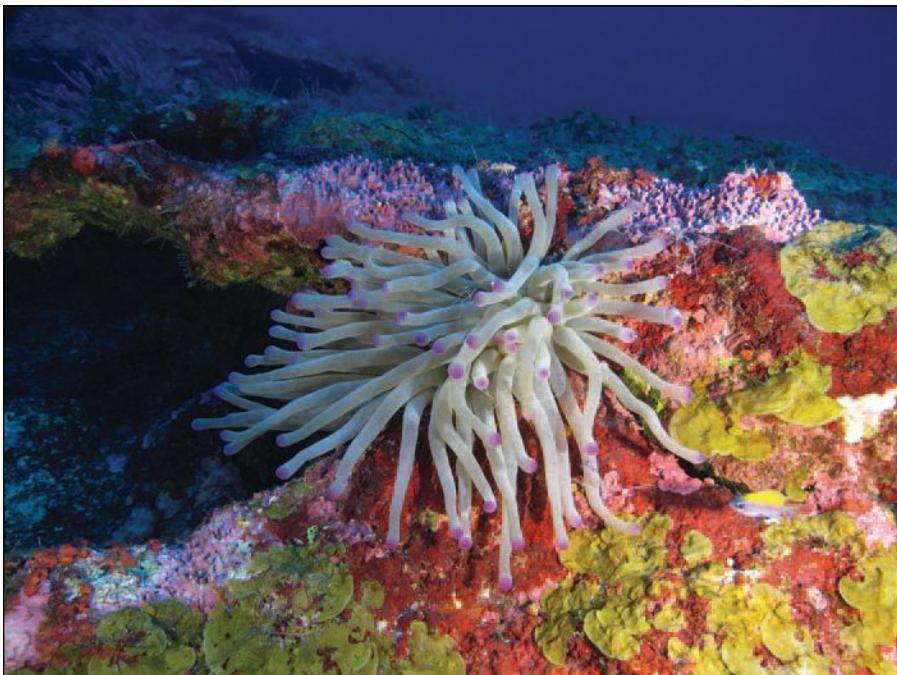
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# OCEAN INDUSTRY

## Kongsberg Maritime underwater image competition winners announced



(Copyright© - Undersea Vehicles Program, University of North Carolina Wilmington)

Kongsberg Maritime has selected the winners of 'The Full Picture Photo and Video Competition', which ran from 26th August until 30th November 2014. With iPad Minis on offer as prizes and the chance for some entries to be used in Kongsberg Maritime marketing activities, the company's international camera user-base submitted a wealth of fantastic underwater stills and video.

In the end, the judges decided to select two joint winners. Jason White, operations field manager from the undersea vehicles program at the University of North Carolina at Wilmington wins best digital stills images with a stunning, colourful image of a Caribbean (Giant) anemone (*Condylactis gigantean*) taken at 60 m depth using the Kongsberg Maritime OE14-408 digital stills camera. The image was captured on a shakedown cruise with a new Sub-Atlantic Mohawk ROV, purchased by the National Marine Sanctuaries Foundation and operated by the university. The shakedown cruise was on the R/V Manta and the team was working with the Flower Garden Banks National Marine Sanctuary out of Galveston.

The other joint winner was Patrick O'Driscoll, who submitted standard definition video footage from the Kongsberg Maritime OE14-366 color zoom camera acquired using the Irish Marine Institute's ROV Holland 1 during the 2011 Venture expedition, which located a new mid-Atlantic ridge vent field to the North of the Azores in 3,000 m of water. The footage featured on the National Geographic 'Alien Deep' series and was a major discovery for the expedition, which was led by Prof. Andy Wheeler from University College Cork, with partners from the National Oceanography Centre, Southampton.

"We'd like to thank everyone who entered the competition. It was a pleasure to review the professional images and video taken on our cameras. The quality of all entries was high, so it was tough choosing the overall winners, but Jason's still image and Patrick's video are both fantastic pieces of work. Both are worthy winners," comments Mark Esslemont, sales manager, Kongsberg Maritime Camera Division.

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

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### JFD acquires The National Hyperbaric Centre, Aberdeen

JFD, which was formed by the merger of James Fisher Defence and Divex in 2014, has announced the acquisition of the National Hyperbaric Centre in Aberdeen ("NHC"). The move broadens JFD's portfolio of services offered to customers in the oil and gas, hyperbaric medical, and defence markets. All employees and material assets will be retained as part of JFD's dedication to the continued safe delivery of world-class hyperbaric testing, decompression and training services for new and existing clients. NHC's training centres in Aberdeen and Singapore join JFD's training facility in Perth, Australia in the provision of industry-respected subsea training courses for commercial and defence divers.

### Rhode Island and Australian organizations sign agreement about shipwreck research

The Rhode Island Marine Archaeology Project (RIMAP) and the Australian National Maritime Museum (ANMM) have announced the creation of a new partnership to study the fleet of British transports scuttled in Newport Harbor during the American Revolution. Among those ships was the Lord Sandwich transport, previously known as Capt. James Cook's Endeavour Bark. In October, RIMAP and ANMM signed an agreement of mutual support for the work to identify the Endeavour, known to have been scuttled in Newport Harbor in 1778. Dr. Kathy Abbass (Director of RIMAP) and Kevin Sumption (Director of the ANMM) signed the document at the Australian Embassy in Washington DC. The witness was the Australian Ambassador to the United States, The Hon. Kim Beazley. On his three voyages, Capt. James Cook explored more of the world than any other person in history. After he mapped the east coast of Australia in the Endeavour, the British could claim that continent, and after the British lost their North American colonies in the Revolution, they began to settle Australia. That is why the Endeavour is considered to be the founding vessel of Australia. The Endeavour later came to Rhode Island as a British transport under the name Lord Sandwich, and was among the fleet sunk in Newport in 1778. Last year, RIMAP announced that it had found what appears to be the 9th vessel of the 13 known to have been lost in that fleet, which means that there is a 69% chance that the Endeavour is among those Rhode Island shipwrecks already found. This also means that, including the Royal Navy vessels it studied earlier, RIMAP has found the largest fleet of Revolutionary War shipwrecks in the world.

## President's 2016 budget proposes \$1.2 B for the USGS

The President's fiscal year 2016 budget request for the U.S. Geological Survey is \$1.2 billion, an increase of nearly \$150 million above the FY 2015 enacted level. The FY16 budget reflects the vital role the USGS plays in advancing the President's ongoing commitment to scientific discovery and innovation to support a robust economy, sustainable economic growth, natural resource management, and science-based decision-making for critical societal needs.

The budget request includes increases that ensure the USGS is at the leading edge of earth sciences research. It includes robust funding for science to inform land and resource management decisions, advance a landscape-level understanding of ecosystems, and develop new information and strategies to support communities in responding to climate change, historic drought, water quality issues, and natural hazards. The budget also funds science to support the Nation's energy strategy, to help identify critical mineral resources, and to address the impacts of energy and mineral development on the environment.

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

## World Ocean Council partners with The Economist

The World Ocean Council is partnering again with The Economist to help engage the ocean business community in upcoming events:

- Arctic Summit 2015 (Oslo, 12 March 2015)
- World Ocean Summit 2015 (Lisbon, 2-5 June 2015)

For the third Arctic Summit, the WOC is working with The Economist to help ensure Arctic business community participation. The event will gather senior level politicians, government bodies, NGOs, indigenous groups, inter-governmental organizations, and corporations from across the insurance, infrastructure, oil gas and mining, logistics, shipping, tourism and risk management industries. A special registration discount is available to WOC Members.

The speaker for Arctic Summit's lead industry sponsor - DNV GL (a founding WOC Member) - is Elisabeth Tørstad, CEO, DNV GL Oil & Gas. Other speakers include: Peter Hinchliffe, secretary general, international chamber of shipping (WOC founding member), the CEOs and senior managers of companies participating in WOC Arctic Business Leadership Council develop-

ments; and leading Arctic authorities from business, government and other stakeholder communities.

The Arctic Summit discussions will provide input to WOC's Arctic program, which continues to work towards developing multi-industry leadership and collaboration on responsible economic activity in the changing Arctic region.

For the 2015 World Ocean Summit, the WOC is also working again with The Economist to advance ocean industry multi-stakeholder dialogue on global ocean issues. This year's theme - "Blue economy, Blue growth" - is designed to capture the opportunity presented by blue growth for businesses, governments and the international ocean community, and identify solutions in the tension between economic development and sustainability.

The Economist has again invited the WOC to help shape the World Ocean Summit program and speaker's roster. Confirmed speakers from WOC to date include: Shontel Norgate, CFO, Nautilus Minerals (WOC Founding Member); John Lyras, Vice Chairman, International Chamber of Shipping (WOC Founding Member); and Paul Holthus, CEO, WOC.

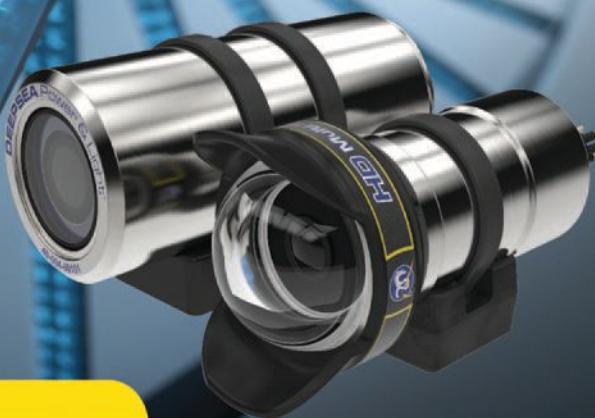


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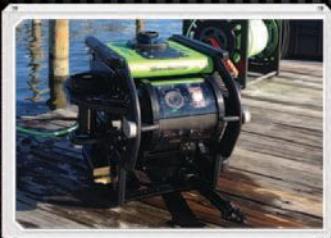
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## Final rule on vessel requirements for Notices of Arrival and Departure and Automatic Identification System published in Federal Register

The U.S. Coast Guard announced the publication of the final rule on Vessel Requirements for Notices of Arrival and Departure and Automatic Identification Systems. This final rule amends the applicability of notice of arrival requirements to include additional vessels, sets forth a mandatory method for electronic submission of NOAs and modifies related reporting content, timeframes and procedures. Additionally, the final rule extends applicability of AIS requirements beyond Vessel Traffic Service areas to all U.S. navigable waters and requires that additional commercial vessels install and use AIS. These changes will improve navigation safety, enhance the Coast Guard's ability to identify and track vessels, and heighten overall maritime domain awareness, thus helping the Coast Guard address threats to maritime transportation safety and security. The final rule takes effect 2 March 2015. Exceptions to this are amendments to 33 CFR part 160, which become effective 30 April 2015, and sections 160.204(a)(5)(vii), 160.205, 160.208 and 164.46(b) and (c), which contain collection-of-information requirements that have not yet been approved by the Office of Management and Budget. The Coast Guard will publish a document in the Federal Register announcing the effective date of these four collection-of-information-related sections. To read the final rule, go to [www.gpo.gov/fdsys/pkg/FR-2015-01-30/pdf/2015-01331.pdf](http://www.gpo.gov/fdsys/pkg/FR-2015-01-30/pdf/2015-01331.pdf).

## Crowley Accord Marine Management adds five tankers to its international ship management portfolio

Crowley Accord Management Pvt. Ltd., the international ship management venture managed globally by Crowley Maritime Corp.'s ship management group, was awarded full technical management contracts for five new tankers. These tankers will be joined in the coming weeks by three more, bringing Crowley's international ship management fleet to more than 70. The five products tankers brought under Crowley Accord management are the MT Dawn Hardidwar, MT Dawn Mansarovar, MT Dawn Mathura, MT Dawn Madurai and MT Portland Pearl. The first four are owned by Arya Tankers and will operate along the Indian Coast, while the fifth is owned by Union Maritime Limited and will operate in the Europe-to-Nigeria trade. Combined, these tankers represent over 130,000 gross tons in the market. The Crowley Accord acquisition, which took place in April 2014, immediately increased the size and scope of Crowley's technical ship management group and supported the company's expansion into the international ship management market with a foreign crewing presence. The acquisition also made Crowley a rare U.S. company – one that provides third-party international crewing and technical ship management.

## AML Ship Management fined \$800,000 for clean water act violations

Karen L. Loeffler, U.S. Attorney, announced that AML Ship Management GMBH, a German company, and Nicolas Sassin, chief engineer of a vehicle carrier ship it operated, the M/V City of Tokyo, were both charged with knowingly dumping oil into U.S. waters off the coast of Alaska in August 2014 in violation of the Clean Water Act. AML and chief engineer Nicolas Sassin have also been charged in separate cases filed in the District of Oregon with violating the Act to Prevent Pollution from Ships (APPS) for knowingly creating and presenting false records to the U.S. Coast Guard when it arrived in port in Portland, Oregon in September 2014. The Clean Water Act charges in Alaska and the APPS charges in Oregon are felony offenses. Under the terms of a plea agreement filed in federal court, AML will plead guilty to the Clean Water Act and APPS charges, pay a total of \$800,000 in fines and community service payments, implement a comprehensive Environmental Compliance Plan, and will be placed on probation for three years. chief engineer Sassin also signed a plea agreement filed in court today agreeing to plead guilty to the Alaska and Oregon charges.

## Harvey Gulf achieves historic milestone with LNG powered vessels



Harvey Gulf International Marine LLC made maritime history in North America by being not only the first owner/operator of a dual fuel offshore support vessel to bunker LNG as a marine fuel but to also successfully complete the first truck to vessel transfer of LNG and to power the M/V Harvey Energy on LNG.

The Harvey Energy built at GCSG in Gulfport, Mississippi is based on the Vard Marine 1 311 design and is 310 ft x 64 ft x 24.5 ft and powered by 3 Wartsila 6L34DF dual fuel gensets providing 7.5 MW of power fueled by Wartsila's LNGPac system. The Harvey Energy is U.S. flagged subchapter I and L, SOLAS compliant and is classed by the ABS as +A1, OSV, +AMS, +DPS-2, +ACCU, UWILD, FFV-1, ENVIRO+, GP, GFS (Dual Fuel Diesel) E. With 5,150 tons of deadweight, the vessel is capable of carrying 253,000 USG of fuel oil, 18,000 bbls of liquid mud, 1,600 bbls of methanol, 10,250 cu. ft of dry cement and 78,000 USG of LNG fuel.

This historic bunkering took place at a shore-based terminal owned by a subsidiary of Martin Midstream Partners L.P. in Pascagoula, Mississippi. Participating in the activities alongside the crew of the Harvey Energy was the U.S. Coast Guard, the ABS, Wartsila, Martin Energy Services LLC, State and Local Agencies and GCSG. The cool-down process took approximately 12 hrs to achieve the desired tank temperature and pressure utilizing 3,800 gallons of nitrogen. The LNG bunkering was successfully completed within a few hours of cool-down. The Harvey Energy will next proceed to LNG trials before delivery.

In concert with the Harvey Energy, Harvey Gulf is preparing to operate the first LNG marine fueling facility in the United States, located at its vessel facility in Port Fourchon, Louisiana. The fueling facility will be a vital addition to the growing national LNG supply infrastructure, supporting critical operations of the oil and gas industry's offshore support vessel fleet operating on clean burning LNG.

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



## Fugro launches G4 satellite positioning augmentation service

Fugro has further extended its technology leadership in the field of GNSS augmentation systems for offshore positioning applications with the launch of its G4 service. The new satellite correction service is the first to take advantage of all four GNSS (Global Navigation Satellite Systems): GPS, GLONASS, BeiDou and Galileo. GNSS augmentation services significantly improve position accuracy compared to unaided GNSS receivers, which are commonly used in the consumer sector.

By using all available GNSS satellites, Fugro's G4 service is designed to improve availability and reliability of offshore positioning and will thus enhance the safety and productivity of a wide range of survey and other activities offshore. G4 represents a significant advancement compared to augmentation systems which are based on GPS only or GPS combined with its Russian equivalent, GLONASS.

The BeiDou system operated by China currently provides coverage in the Asia-Pacific region. Fugro's G4 service already utilises the first BeiDou

satellites and is ready to start using the Galileo satellites as soon as the EU announces Initial Operational Capability (IOC) status for this system. Galileo and future BeiDou satellites will be automatically included as they come online, steadily increasing availability and robustness of this integrated augmentation service.

The new G4 service will be particularly beneficial when the line-of-sight to certain satellites is obstructed by offshore structures - a key consideration during critical positioning operations. The G4 augmentation signals, transmitted via seven high-powered communication satellites to provide at least two independent broadcast channels anywhere in the world, will offer Fugro's customers unrivalled coverage and availability.

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

## Cirebon Maritime Academy purchases VSTEP DNV Class A simulator

VSTEP will deliver and install a NAUTIS DNV Class A Full Mission Bridge Simulator at the Maritime Academy of Cirebon in Indonesia. The

new simulator will be used to provide certified maritime training and education in accordance with the latest international standards.

The Full Mission Bridge simulator is compliant with the Class A DNV Standards for Certification No. 2.14 for Maritime Simulator Systems and IMO model courses 1.22 and 1.32 and provides a 240° horizontal field of view. Following installation of the simulator, the academy instructors will receive extensive simulator instructor and maintenance training from VSTEP.

Robin Lim, Business Development Manager, VSTEP Asia Pacific: "We are proud to be working with one of the leading official maritime academies in the region. The new NAUTIS DNV Class A simulators will provide the academy students with a realistic, highly efficient training solution that allows them to immerse, prepare and learn in full compliance with maritime regulations. Our engineers will deliver and install the simulator in April 2015 and will be working closely together with the Cirebon Academy Staff."

The Maritime Academy of Cirebon, also known in the region as AMC, is the

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national higher education institution founded in 1986 by the Decree of the Minister of Education and Culture of Indonesia. The principal task of the AMC is to educate and train high school graduates to be officers and harbor cruise professionals. The AMC assists the government in meeting the need for highly qualified seafarers.

The NAUTIS Full Mission Bridge Simulator will allow the academy to expand its training curriculum with IMO and DNV certified simulator training courses.

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

## Advanced Composite Technology Centre selected for grant support

CTruk's plans to build larger vessels for offshore wind and diversify for sustainable growth were given a boost with Deputy Prime Minister Nick Clegg's announcement that the Essex-based SME has been selected to receive funding through Round 6 of the UK Government's Regional Growth Fund.

The £1 million RGF grant will catalyse private investment of around £7.3 million for the construction of an Advanced Composite Technology Centre, incorporating a training facility, on the River Colne in East Colchester. It is expected that the project will create over 120 new jobs over the next few years, including the provision of training skills for 15 new apprentices.

The centre will enable CTruk to build larger workboats designed to meet the complex demands of wind farms further offshore, educate the next generation of modern boat-builders and facilitate diversification into other commercial marine sectors (the company recently announced a hydrographic survey vessel order from the Port of London Authority). CTruk also plans to use its composite expertise for non-marine manufacturing at the centre in the longer term future.

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

## DNV GL to class world's largest containership

The world's leading ship and offshore classification society DNV GL welcomes the world's largest containership into class – the MSC Oscar. Delivered by Daewoo Shipbuilding & Marine Engineering (DSME) in Geoje, South Korea, in January the 19,224TEU vessel is already plying its trade on the new East-West service.

Not only does MSC Mediterranean Shipping Company's newest vessel set a size benchmark for containerships in terms of capacity, but it has also been designed with a number of efficiency enhancing features. For example, the engine has been optimized so that fuel consumption can be automatically controlled to take into account both speed and weather conditions and she has a broad optimal speed range for enhanced operational flexibility.

In less than twenty years the loading capacity of container vessels has more than tripled – with the length of the biggest vessels jumping from just over 300 to 400m during that time. MSC Oscar measures in at 395.4m long and 59m wide with a draft of 16m. Initially specified at 18,000TEU MSC Oscar was expanded during the building phase to add an extra tier above decks. The state of the art containership is unique in its wide beam design and use of torsion box and hatch coaming plates with steel plate thickness up to 100 mm. The vessel is able to carry dangerous goods in holds, and approximately 1,800 reefer containers.

The vessel's cargo capacity has also been enhanced by implementing the RSCL class notation (Route Specific Container Stowage). The RSCL notation was developed by DNV GL to provide an even more efficient usage of cargo capacity with more flexibility for laden containers on board for specific routes while not compromising on safety.

The cooperation between MSC and DNV GL stretches back to some of MSC's first vessels. And in 2005 the company's first entry into the large boxship market, the 9,000TEU MSC Pamela, was built to DNV GL class rules.

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

## Signet Shipyard delivers EPA Tier 3 ASD tug

Signet Maritime has taken delivery of its ninth technologically advanced ASD tug in less than four years. The Signet Vigilant was constructed at Signet Shipbuilding & Repair in

Pascagoula, Mississippi. The 30 metric tonne bollard pull, EPA Tier 3 compliant, ASD vessel, delivered in Q4 2014, is the first Castleman Maritime design for Signet. The new tug will operate from Signet's Pascagoula Division, where she will perform rig escort, ship assist and barge assist work.

The Signet Vigilant's compact design will allow Signet operators improved capabilities to assist marine vessels in tight quarters and shallow inland waterways. The environmentally friendly tug will have reduced exhaust and lower fuel consumption to meet EPA Tier 3 marine emission regulations.

At 72 ft in length and with a beam of 28 ft, the Signet Vigilant is powered by two MTU Model 8V-4000 M54 Tier 3 engines delivering a combined total of 2,400 BHP at 1,800 RPM. The engines drive two Rolls Royce US 155 P12-FP azimuth propulsion units. Electrical power is provided by two John Deere 4045AFM85 EPA Tier 3 engines coupled to 65-KW Marathon Magnaplust™ generators. Deck machinery includes a Markey DEPC-32, 20 HP winch on the bow, and two Patterson WWP40E 40-ton facing winches on the stern. The hawser winch capacity is 525 ft of 6.5-in. circumference Saturn 12™ synthetic line.

The Signet Vigilant is named after Vigilant, the victorious U.S. defender of the eighth America's Cup in 1893. This vessel was designed, built and skippered by Nathanael Greene Herreshoff and was the first of his five victorious America's Cup defender designs.

Signet currently operates 42 vessels providing marine transportation and logistics services and is expanding its fleet to meet the growing demands from the flurry of activity along the Gulf and East Coasts. The tug will be operated under Signet's ABS-certified International Safety Management (ISM) and ISO 9001-2008 Quality Management Systems.

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



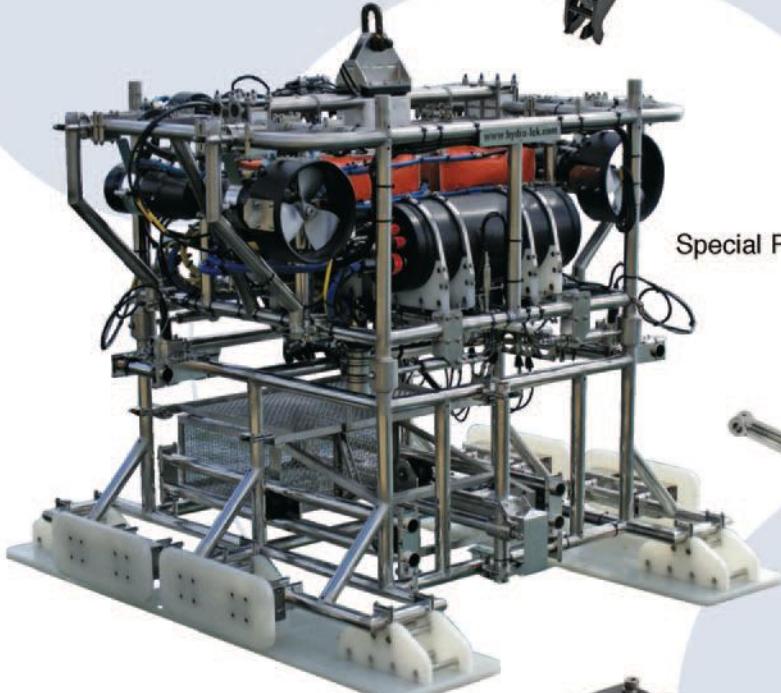
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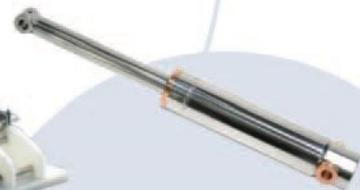
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## BOEM announces environmental study reports posted for Q1 FY 2015

The Environmental Studies Program (ESP) announces the availability of 13 recently completed study reports. These final reports were posted online via the Environmental Studies Program Information System. The new postings relay findings from regional studies for Alaska, the Gulf of Mexico, and the Pacific. The reports and associated technical summaries can be accessed through the Environmental Studies Program Information System (ESPIS). ESPIS makes all completed ESP reports available online as full electronic pdf documents, including images and graphics. Technical summaries of over 1,200 BOEM-sponsored environmental research projects and over 3,400 research reports are available online. To explore the ESPIS collection spanning 40 years, visit [www.data.boem.gov/homepg/data\\_center/other/espis/espis\\_master.asp?appid=1](http://www.data.boem.gov/homepg/data_center/other/espis/espis_master.asp?appid=1).

**Warm ocean temperatures may mean major coral bleaching**  
NOAA scientists are warning that warm ocean temperatures in the tropical Pacific and Indian Oceans could set the stage for major coral bleaching events across the globe in 2015. Their warnings follow severe bleaching in 2014, and come with the release of the most recent outlook from NOAA's Coral Reef Watch, a weekly product that forecasts the potential for coral bleaching up to four months in the future. "The new outlook gives us greater confidence in what it shows for future coral bleaching and it comes at an important time," said Mark Eakin, NOAA Coral Reef Watch coordinator. "The outlook shows a pattern over the next four months that is similar to what we saw during global coral bleaching events in 1998 and 2010. We're really concerned that 2015 may bring the third global coral bleaching event."

## Governments to expand U.N. Law of the Sea with new legally binding agreement on biodiversity

World governments agreed that the U.N. Convention on the Law of the Sea (UNCLOS) should be expanded to include a new legally binding instrument on the conservation and sustainable use of marine life in areas beyond national jurisdiction (ABNJ). The new ocean regulations are proposed to include:

- Area-based management tools, such as marine planning and marine protected areas
- Environmental impact assessment (EIA) requirements
- The transfer of marine technology
- The regime for managing marine genetic resources, including benefit-sharing

How will these new ocean laws affect companies currently or potentially operating in the high seas and deep seabed - shipping, oil and gas, cruise tourism, fishing, seabed mining, biotechnology, submarine cable, and others - as well those from associated support sectors, such as maritime legal, finance, and insurance companies? The Secretary General of the International Chamber of Shipping, Peter Hinchliffe, stated that, "It is important that ocean industries are informed and constructively engaged in ocean governance developments. The World Ocean Council (WOC) is providing this by monitoring, analyzing and reporting on the ocean policy and planning on behalf of the ocean business community. The WOC merits the support and involvement of companies concerned about the future of their ocean operations." The decision to recommend proceeding with the new legally binding instrument on biodiversity in the ABNJ under UNCLOS emanated from the U.N.'s 9th meeting of the "Ad Hoc Open-ended Informal Working Group to study issues relating to the conservation and sustainable use of biodiversity in the ABNJ". Governments recommended that they meet to develop the draft text of a legally binding instrument and that the U.N. General Assembly decides at its 72nd session on convening a formal intergovernmental conference to finalize the new ocean laws. Although these decisions are major steps forward towards expanding UNCLOS, there is still time for ocean industries to engage in this critical ocean governance process that will affect business access and operations. Industry involvement is critical and can help ensure that policies and regulations are developed with full and balanced information, are based on good science and risk assessment, are practical and implementable and engender the involvement and support of the ocean business community.

## CSA supports BOEM launch of Programmatic EIS public engagement website



## CSA supports BOEM launch of Programmatic EIS public engagement website

CSA Ocean Sciences Inc. (CSA) has successfully assisted the Bureau of Ocean Energy Management (BOEM) in the development of a public engagement website and online GeoPortal associated with the preparation of a Programmatic Environmental Impact Statement (EIS) for the 2017-2022 Outer Continental Shelf (OCS) Oil and Gas Leasing Program. BOEM's vision for the Programmatic EIS scoping process is to engage a wide range of stakeholders and promote a dynamic stakeholder interaction that will comprehensively capture relevant and diverse input as it relates to local expertise and perspectives. The primary website provides access to information regarding the public involvement process, Programmatic EIS education, GeoPortal access, and best practices for formulating comments.

CSA, in association with Kearns & West, supported BOEM in the development of an improved method for collecting useful scoping comments to inform the Programmatic EIS process. Users of the website and GeoPortal are encouraged to provide comments that are specific, geographically-focused, concise, and supported by scientific evidence or sound reasoning. Stakeholders are encouraged to participate in the process by submitting comments online, creating maps on the GeoPortal site to support their comments, or uploading relevant geospatial datasets. Utilizing new web development toolsets, BOEM will be able to capture a broader, national range of stakeholder feedback while funneling comments and suggestions through an evaluation process aimed at collecting those most relevant to the scoping of the Programmatic EIS.

Understanding the need for insightful visualizations, BOEM commissioned CSA to design, develop, and construct a GeoPortal built around spatial data focused on the conditions and features of the OCS within the areas under possible consideration of potential new leases in Alaska, the Gulf of Mexico, and Mid- and South Atlantic. Stakeholders will be able to investigate areas being considered, identify data gaps, create maps to submit with comments, and enhance their knowledge of resources that may be affected. The GeoPortal provides a variety of data sets that range from bathymetry contours and commercial fishing areas to critical habitats for protected species and managed areas. Interactive features such as drawing, measurement, and identification tools allow users to create customized maps to support their comments or suggestions.

For more information, visit [www.csaocean.com](http://www.csaocean.com) or [www.boemoceaninfo.com](http://www.boemoceaninfo.com).

## SeeByte awarded contract for the adaptive autonomous ocean sampling networks

SeeByte, the global leader in creating smart software for unmanned maritime systems, are pleased to announce that they have been awarded a contract by the Small Business Research Initiative (SBRI). This contract is to undertake work in collaboration with Autonomous Surface Vehicles (ASV), a world leading manufacturer of unmanned marine systems, and the Marine Biological Association of the UK. The work seeks to provide a flexible Autonomy Framework for the range of oceanographic and environmental scenarios outlined in the SBRI AAOSN call.

The project, funded by the Natural Environmental Research Council (NERC), Innovate UK and the Defence Science and Technology Laboratory (Dstl), aims to provide an open software tool-set and user interface that will enable improved use of autonomous systems for scientific research. Using SeeByte's SeeTrack Neptune, which already forms the basis of UK Maritime Autonomy Framework (MAF), the intended outcome is for autonomous maritime systems to adapt and change to the external environment and mission requirements. The initial target platform will be ASV's C-Enduro vehicle managed by the UK's National Oceanography Centre.

SeeTrack Neptune is an adaptive planning tool for optimising the execution of AUV operations. It supports high-level goal-based mission descriptions and allows the matching of mission requirements against vehicle(s) capabilities. SeeTrack Neptune also includes behaviours capable of adapting the mission based on changes in the environment, assets and mission objectives; benefits which will be useful for future unmanned operations.

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

## U.S. continues global leadership to address illegal, unreported, and unregulated fishing

In its 2015 biennial report to Congress on illegal, unreported, and unregulated fishing (IUU), NOAA has identified six nations – Colombia, Ecuador, Mexico, Nigeria, Nicaragua, and Portugal – as engaging in the practice. IUU fishing and seafood fraud undermine international efforts to sustainably manage and rebuild fisheries, and creates unfair

market competition for fishermen playing by the rules, like those in the U.S.

The report also highlights U.S. findings and analyses of foreign IUU fishing activities and of bycatch of protected species and shark catch on the high seas where nations do not have a regulatory program comparable to the U.S.

IUU activity of the identified nations included violations such as fishing in restricted areas, tuna discards, misreported catch, and improper handling of turtle entanglement. NOAA Fisheries will work with each of the cited nations to address these activities and improve their fisheries management and enforcement practices. If the nation does not take sufficient action and does not receive a positive certification in the next biennial report, the U.S. may prohibit the import of fisheries products from that nation and deny port privileges to their fishing vessels.

No countries were identified for bycatch of protected living marine resources or for shark catch on the high seas in the 2015 biennial report. However, Mexico was identified in the 2013 report for a lack of management measures for mitigating bycatch of North Pacific loggerhead sea turtles in the gillnet fishery in Mexico's Gulf of Ulloa. Mexico has since made meaningful progress in developing a regulatory program to address this issue. NOAA Fisheries will continue to work with Mexico and will delay its certification decision until May 2015.

"The U.S. is committed to working with all nations to combat illegal fishing, and to ensure the effective management of bycatch of protected species and shark catch on the high seas," said Eileen Sobeck, assistant NOAA administrator for NOAA Fisheries. "We are encouraged by the positive steps these nations took to address IUU fishing and will continue to explore all avenues to combat IUU activity on a global scale." In addition to undermining international fisheries efforts, IUU fishing can also devastate fish populations and their productive marine habitats, threatening global food security and economic stability.

The report is a requirement of the High Seas Driftnet Fishing Moratorium Protection Act, as amended by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act and the Shark Conservation Act.

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

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## BMT Oceanica wins remote imaging coastal monitoring study

Marine and coastal environment specialist, BMT Oceanica (BMT), a subsidiary of BMT Group Ltd, has won the tender to be the sole consultant delivering the Town of Cottesloe's (ToC) project "Coastal Monitoring to Improve the Understanding of Long-Term Coastal Change".

The project will develop an ongoing coastal monitoring programme that will initially involve the collection of remote imagery at the coastline and twice-yearly beach profile surveys. This will assist in formulating a better understanding of coastal change, informing future decision making regarding the management of the coastline and facilitating improved planning for future coastal protection and adaptation work.

BMT's scope of work covers a review of existing information on local coastal dynamics; design and implementation of remote imagery monitoring and analysis of remote imagery, together with the beach profile data collected in-house. The innovative, cost-effective monitoring regime involves the use of remote imagery units to capture still imagery of the beach every hour.

Vicky Walkley, coastal geomorphologist and project manager at BMT Oceanica, comments: "The remote imagery monitoring service provides a simple, flexible and cost-effective tool which can inform and improve coastal management decisions. With the increasing need to monitor the effects of climate change on our coastlines, we expect the use of this technology to expand over the coming years."

Once the Town of Cottesloe has completed the second beach profile survey, BMT Oceanica's dedicated team of coastal scientists will draw on over 15 years' of experience in coastal science to analyse the beach profile data along with the remote imagery, to define key mechanisms and drivers of significant coastal change where possible.

Melissa Rachan, Sustainability Officer at the Town of Cottesloe comments: "BMT Oceanica has done an excellent job of providing us with exceptional service and project management expertise. Its extensive experience in deploying remote imagery units made them the ideal candidate for this project. The team has been outstanding to work with, providing prompt responses and expert advice, as well as having a high



regard for safety. The Town looks forward to working closely with BMT over the next year to establish baseline data for this study, being the first of its kind in Cottesloe."

BMT Oceanica has been initially engaged to assist with the first year of this monitoring project, and it is expected that the coastal monitoring at Cottesloe will continue long into the future to provide an understanding of long-term coastal change. BMT Oceanica's work will set the benchmark for how future monitoring is carried out, and will ensure a reliable baseline dataset against which future monitoring data can be compared.

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

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## Mapping landscapes in the deep ocean

Researchers at the National Oceanography Centre (NOC) have developed a new, automated method for classifying hundreds of kilometres of the deep sea floor, in a way that is more cost efficient, quicker and more objective than previously possible.

Currently there is very little information about the geographic distribution of life on the sea floor. This is largely because of the practical difficulty in accessing creatures which live at such a great depth in the ocean. However, this research soon to be published in the journal *Marine Geology*, reveals a new method of estimating this distribution using a combination of: submarine mapping technology, statistics and a 'landscape' ecology technique called 'Niche Theory', which is generally used on land.

The Niche Theory states that biodiversity is driven by spatial variability in environmental conditions, i.e. the greater the range of habitats, the greater the biodiversity. The lead author of this study, Khaira Ismail from the University of Southampton, has used

this concept to create broad-scale, full coverage maps of the sea floor. The objective of these maps is to estimate the location of biodiversity hotspots, by identifying areas where the deep-sea landscapes are relatively more varied.

Dr Veerle Huvenne, from the NOC, said "By informing us of where to look and where to plan more detailed surveys, this new method will help to make our deep-sea research more targeted and efficient, by advancing our understanding of life in the deep ocean, which at the moment is still very limited."

These maps cover areas approximately 200km across, and have pixel sizes around 25m. They are created using information on the topography and sediment type of the sea floor, collected from a multi-beam echo sounder and a side scan sonar, respectively. The resulting map is then analysed in order to break down the sea floor into a series of zones, using statistical analysis to identify distinct 'geomorphological terrains' in an objective and repeatable way.

Khaira said "using statistical methods to identify these 'terrain zones' allows us to be more objective than if we were picking them out by hand. This

objectivity means that the results are consistent and repeatable, which allows different areas of the sea floor to be compared more easily."

This research forms part of the €1.4M European Research Council funded CODEMAP project, and was applied in the Lisbon-Setúbal and Cascais Canyons, off the Portuguese coast. These submarine canyons were classified into six marine 'seascapes', based on their geomorphological features.

Future work will use submarine robot cameras to take photos and videos of life in the deep-sea areas that have been subjected to this mapping technique. This will allow researchers to start to identify new deep sea habitats.

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

## Carbon release from ocean helped end the ice age

A release of carbon dioxide (CO<sub>2</sub>) from the deep ocean helped bring an end to the last Ice Age, according to new collaborative research by the University of Southampton, Universitat Autònoma de Barcelona (UAB), the Australian National University (ANU), and international colleagues.



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Published in *Nature*, the study shows that carbon stored in an isolated reservoir deep in the Southern Ocean re-connected with the atmosphere, driving a rise in atmospheric CO<sub>2</sub> and an increase in global temperatures. The finding gives scientists an insight into how the ocean affects the carbon cycle and climate change.

Atmospheric CO<sub>2</sub> levels fluctuate from about 185 parts-per-million (ppm), during ice ages, to around 280 ppm, during warmer periods like today (termed interglacials). The oceans currently contain approximately sixty times more carbon than the atmosphere and that carbon can exchange rapidly (from a geological perspective) between these two systems.

Joint lead author Dr. Miguel Martínez-Botí from the University of Southampton adds: "The magnitude and rapidity of the swings in atmospheric CO<sub>2</sub> across the ice age cycles suggests that changes in ocean carbon storage are important drivers of natural atmospheric CO<sub>2</sub> variations."

Joint lead author Dr. Gianluca Marino, from ANU and previously at the ICTA, UAB, says: "We found that very high concentrations of dissolved CO<sub>2</sub> in surface waters of the Southern Atlantic Ocean and the eastern equatorial Pacific coincided with the rises in atmospheric CO<sub>2</sub> at the end of the last ice age, suggesting that these regions acted as sources of CO<sub>2</sub> to the atmosphere".

"Our findings support the theory that a series of processes operating in the southernmost sector of the Atlantic, Pacific and Indian Oceans, a region known as the 'Southern Ocean', changed the amount of carbon stored in the deep-sea. While a reduction in communication between the deep-sea and the atmosphere in this region potentially locks carbon away from the atmosphere into the abyss during ice ages, the opposite occurs during warm interglacial periods."

The international team studied the composition of the calcium carbonate shells of ancient marine organisms that inhabited the surface of the ocean thousands of years ago in order to trace its carbon content.

While these new results support a primary role for the Southern Ocean processes in these natural cycles, we don't yet know the full story and other processes operating in other parts of the ocean, such as the North Pacific, may have an additional role to play.

For more information, visit [www.southampton.ac.uk](http://www.southampton.ac.uk) or [www.uab.cat](http://www.uab.cat).



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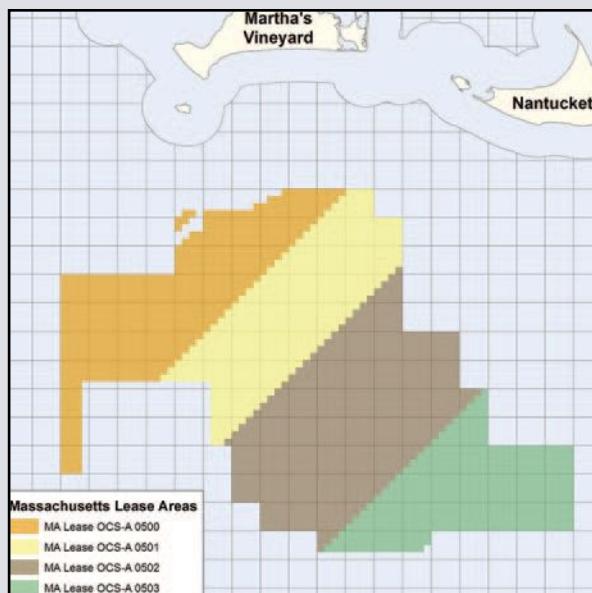
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### Interior leases area offshore Massachusetts for wind energy development

The Interior Department's Bureau of Ocean Energy Management (BOEM) held the nation's fourth competitive lease sale for renewable energy in federal waters offshore Massachusetts for potential wind energy development. Developing offshore wind energy is part of President Obama's comprehensive Climate Action Plan to create American jobs, develop domestic clean energy resources and cut carbon pollution. The auction consisted of two rounds before determining RES America Developments, Inc. and Offshore MW LLC as the provisional winners of Lease Area OCS-A 0500 (187,523 acres) and OCS-A 0501 (166,886 acres), respectively. Winning bids totaled \$448,171 in high bids. The total acreage of these two areas nearly doubles the amount of acreage leased for wind energy through competitive sales. Lease OCS-A 0502 (248,015 acres) and Lease OCS-A 0503 (140,554 acres) did not receive bids. According to an analysis prepared by the U.S. Department of Energy's National Renewable Energy Laboratory, if fully developed, the area leased could support approximately two gigawatts of commercial wind generation, enough electricity to power over 700,000 homes. Including this auction, competitive lease sales have generated more than \$14.5 million in high bids for more than 700,000 acres in federal waters. BOEM expects to hold another competitive lease sale offshore New Jersey later this year. Efforts to spur responsible development of offshore wind energy are part of a series of Obama Administration actions to increase renewable energy both offshore and onshore, in coordination with state, local and federal partners. The Massachusetts Intergovernmental Renewable Energy Task Force has been a leading agent in intergovernmental collaboration for wind energy development. The two leased areas today are found within the Massachusetts Wind Energy Area, which starts about 12 nmi offshore Massachusetts. Each lease will have a preliminary term of one year, during which the lessee will submit a Site Assessment Plan to BOEM for approval. A Site Assessment Plan describes the activities (installation of meteorological towers and buoys) a lessee plans to perform for the assessment of the wind resources and ocean conditions of its commercial lease area. If a Site Assessment Plan is approved, the lessee will then have up to five years in which to submit a Construction and Operations Plan (COP) to BOEM for approval. This plan provides detailed information for the construction and operation of a wind energy project on the lease. After BOEM receives a COP from a lessee, BOEM will conduct an environmental review of that proposed project. Public input will be an important part of BOEM's review process. If the COP is approved, the lessee will have an operations term of 25 years. For more information, visit [www.boem.gov](http://www.boem.gov).



## MPI WTIVs continue work on E.On's Amrumbank



*MPI Adventure leaving Tees Base*

MPI Offshore's wind-turbine-installation vessels (WTIV) are enjoying a positive start to 2015, supported by the newly acquired Tees Base.

MPI Adventure recently completed her mobilization and left the Tees Base earlier this week. She is now in Esbjerg for loading of the Siemens 3.6MW WTGs for the first installations in the next stage of the E.On Journey – the Amrumbank Turbine installations.

Preparation work for this WTG installation campaign was undertaken at the modern MPI Offshore Tees Base, a facility that MPI has now taken over permanent residency of. The complete process of sea-fastening design, subsequent local construction and installation on board the WTIV was managed from Tees Base by a dedicated project management team, working in close cooperation with E.On.

The Tees Base provides MPI Offshore's expanding fleet with quay frontage for project mobilization/demobilization, plus warehousing space for specialist equipment and customer components. The quayside and frontage have access to hard-standing and lay-down areas suitable for offshore wind components.

We look forward to increasing MPI Offshore's presence at the Tees Base in the months to come.

Since September 2014, sister vessel MPI Discovery has been installing monopiles and TPs on the Amrumbank site, with the work being carried out by MPI's own installation and heavy-lift crews. Co-ordinated management of construction crews on board MPI Discovery has guaranteed effective use of the integrated gripper assembly and the vessel's SPMT multi-wheel trailers, whilst simultaneously deploying NMD (noise-mitigation devices) to comply with noise restrictions for piling offshore. This has ensured effective progress throughout the winter months.

MPI Discovery is scheduled to complete the foundation phase of the project this Spring. The vessel will then return to Tees Base for demobilization or – with her spread of installation tools and equipment – to be made available for other offshore installations through 2015.

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

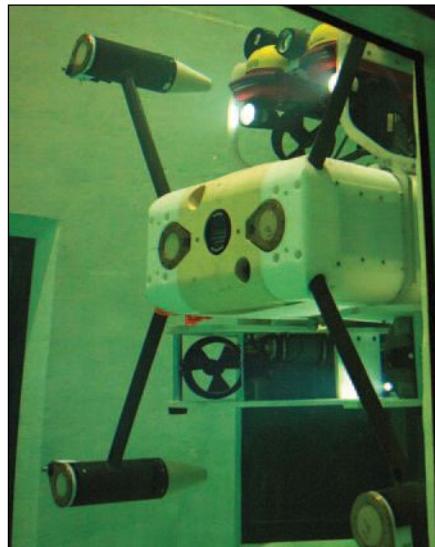
## New tool monitors effects of tidal, wave energy on marine habitat

University of Washington researchers building a new underwater robot they've dubbed the "Millennium Falcon" certainly have reason to believe it will live up to its name.

The robot will deploy instruments to gather information in unprecedented detail about how marine life interacts with underwater equipment used to harvest wave and tidal energy. Researchers still don't fully understand how animals and fish will be affected by ocean energy equipment, and this instrument seeks to identify risks that could come into play in a long-term marine renewable energy project.

The UW research team tested the Millennium Falcon and the instruments it transports, called the Adaptable Monitoring Package, underwater for the first time in January in a deep tank on campus. Researchers will continue testing in Puget Sound under more challenging conditions. They hope this tool will be useful for pilot tidal- and wave-energy projects and eventually in large-scale, commercial renewable-energy projects.

The instrument package can track



and measure a number of sights and sounds underwater. It has a stereo camera to collect photos and video, a sonar system, hydrophones to hear marine mammal activity, sensors to gauge water quality and speed, a click detector to listen for whales, dolphins and porpoises, and even a device to detect fish tags. A fiber optic cable connection back to shore allows for real-time moni-

toring and control, and the device will be powered by a copper wire.

The breadth of sensors and various conditions this instrument can measure is unprecedented, researchers say. The tool also is unique for its ability to attach to most types of underwater infrastructure, ranging from tidal turbines to offshore oil and gas rigs. This allows researchers to easily deploy the instrument far offshore and recover it quickly at a relatively low cost compared with other approaches.

This speedy deployment and recovery — sometimes in rough seas — is possible because the instrument fits inside an ROV, that can maneuver underwater and drop off the instrumentation package at a docking station integrated onto a turbine or other existing subsea infrastructure.

This project is a collaboration between researchers in mechanical engineering and the Applied Physics Laboratory, within the larger Northwest National Marine Renewable Energy Center, which is a multi-institution organization that develops marine renewable energy technologies through research, education and outreach. The center and

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the Applied Physics Laboratory recently received \$8 million from the U.S. Navy to develop marine renewable energy for use at its facilities worldwide.

The project is funded by the U.S. Department of Energy, the U.S. Naval Facilities Engineering Command, the Snohomish County Public Utility District and the UW.

For more information, visit [www.washington.edu](http://www.washington.edu).

### **Supacat delivers refurbished "Lifesaver" wave energy converter**

The refurbished BOLT Lifesaver wave energy converter has been delivered to owner Fred.Olsen Ltd by Supacat following a three month project refurbishing the converter's 'intelligent systems' at the Devon engineering firm's facilities in Dunkeswell and Blackhill Engineering.

After over two years of full scale sea testing at FabTest UK, the device has undergone an upgrade and refurbishment program in preparation for further trials in Hawaii where the device will undergo further trials with the US Navy.

Supacat is a strategic partner to Fred. Olsen on Lifesaver and has provided vital design and manufacturing skills both during and after the innovative technology project, which was part funded by the Technology Strategy Board (TSB). To develop Lifesaver Fred.Olsen Ltd turned to a collaboration of industry and academia partners, which in addition to Supacat, included the University of Exeter (Falmouth campus).

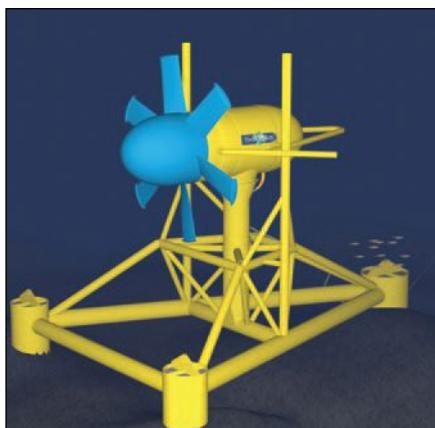
The Devon based innovative engineering firm, Supacat, has a complete engineering capability spanning design, prototyping, testing and trialing, certification and low rate production. Services include system integration and support services across post design services, repairs, spares, to deployed support on site.

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

### **GreenLink connectivity solution for Sabella tidal turbine array**

MacArtney is delighted to announce that French marine renewable energy pioneer Sabella S.A.S. has placed an order for a complete MacArtney connectivity solution for its new industrial scale 'Sabella D10' tidal stream turbine project.

Over the past decade, Sabella has developed an original concept for a screen of tidal turbines positioned on the seafloor. By means of efficient simplicity and robust quality - acting as a guarantee of reliability and low maintenance requirements in hostile environments -



the Sabella subsea turbine concept aims to differentiate itself from other technologies emerging around the world.

Pre-orientated in the direction of natural tidal currents and empowered by symmetrical rotor blades, the turbines effectively capture the energy generated by the shift between ebb and flow. The rotor is activated even by modest current motion and powers a generator, which exports the electricity produced to the land based grid via a submarine cable anchored and embedded at its landfall.

After successfully installing and testing the Sabella D03 demonstrator turbine unit, Sabella has now successfully secured the funds to install and test its full scale 'Sabella D10' 0.5 kW rated power and 1 MW maximal output power turbine in the Fromveur Strait near South Ushant (Brittany, France). Future Sabella tidal farm sites could feature units with a capacity up to 2 MW.

For successfully transmitting the harnessed tidal power to the onshore grid, the 'Sabella D10' relies on a total custom MacArtney subsea connectivity solution. Based on a GreenLink Inline Termination for connecting the turbine to the grid via the dynamic subsea export cable, the solution also comprises a couple of hang-off stress terminations, a custom made flange including various medium and low voltage connectors (Gisma) for the turbine nacelle, a junction box jumper cable and various test cables.

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

### **AOE, T'Sou-ke First Nation partner in wave energy project**

AOE Accumulated Ocean Energy Inc. and T'Sou-ke Economic Development Limited Partnership (TED LP), a T'Sou-ke Nation-owned partnership, have completed an agreement to pursue business opportunities located in the traditional territory of the T'Sou-ke Nation called the T'Sou-ke Ocean Energy Limited Partnership (TOE LP).

AOE is working toward the advancement of its' proprietary technology in the area of ocean wave energy production and the two entities will mutually benefit from the establishment of a formal business arrangement. Both entities are greatly concerned about the environment and a responsibility to develop renewable energies.

The first of the projects proposed by the newly formed TOE LP will be the installation of a test system off the shores of the T'Sou-ke traditional territory. An array of ocean buoys Ocean Buoy Array System (OBAS) will be deployed near the coastline to transform wave energy into highly compressed air, which will then be transported by pipeline or hoses to onshore reservoirs for storage and later used to power machinery producing electricity, hydrogen gas, potable water, aeration for aquaculture, etc. An OBAS will also support marine life habitat creation due to the unique AOE anchoring system.

It is expected that available energy, produced by the OBAS, could displace energy currently produced by diesel generators for many Vancouver Island First Nations in proximity to suitable waves. It is perceived as a major benefit for many First Nations communities to be less reliant on diesel power and electricity by developing independent and renewable energy. Additional projects would include coupling the AOE OBAS with ocean aeration systems to combat ocean acidification, hypoxia, and reclaim barren ocean floors.

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

### **Milestone reached for commercial wind energy development offshore North Carolina**

Secretary of the Interior Sally Jewell and BOEM Director Abigail Hopper announced the release of an Environmental Assessment (EA) supporting a potential lease sale for more than 300,000 acres of federal waters off the coast of North Carolina for wind energy development.

The announcement builds on BOEM's work to jumpstart development of offshore wind through a collaborative state-federal process to identify Wind Energy Areas and hold competitive lease sales. To date, BOEM has awarded seven commercial wind energy leases off the Atlantic coast: two non-competitive leases (Cape Wind in Nantucket Sound off Massachusetts and an area off Delaware) and five competitive leases (two offshore Massachusetts-Rhode Island, two offshore Maryland and another offshore Virginia). Together, the competitive lease sales

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have generated more than \$14 million in high bids for over 357,000 acres in federal waters. BOEM is expected to hold two additional competitive lease sale auctions in 2015.

The Wind Energy Areas identified by BOEM offshore North Carolina total about 307,590 acres and include the Kitty Hawk Wind Energy Area (about 122,405 acres), the Wilmington West Wind Energy Area (about 51,595 acres), and the Wilmington East Wind Energy Area (about 133,590 acres).

Consistent with the Interior Department's "Smart from the Start" strategy for offshore wind, each of the Atlantic Wind Energy Areas are designed to make available areas that are attractive for commercial offshore wind development, while also protecting important viewsheds, sensitive habitats and resources and minimizing space use conflicts with activities such as military operations, shipping and fishing.

In accordance with the National Environmental Policy Act, BOEM looked at potential impacts associated only with issuing leases and approving site assessment activities in these Wind Energy Areas. If, after leases are issued, a lessee proposes to construct a commercial wind energy facility, it must submit a construction and operations plan for BOEM's review and approval. BOEM would then prepare a site-specific NEPA analysis for the project proposed.

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

## Offshore wind in Germany passes the gigawatt mark

The German market for offshore wind energy projects broke through the gigawatt barrier last year. By 31 December 2014, 258 offshore wind turbines in the German North and Baltic Seas with a total capacity of 1,049.2 MW fed into the grid. This figure was ascertained by Deutsche WindGuard on behalf of the four organizations – VDMA Power Systems, the German Wind Energy Association (BWE), the Wind Energy Agency (WAB) and the German Offshore Wind Energy Foundation (SOW).

According to the survey, 142 offshore wind turbines providing a capacity of 528.9 MW were newly connected to the grid. This represents more than a doubling of the capacity increase of the previous year. In addition to the grid-connected offshore wind turbines, the construction of a further 268 turbines with a capacity of 1,218.1 megawatts was completed in 2014, but these had not been fully grid-connected by the end of the year. The cumulated capacity of the 285 offshore turbines installed by

the end of 2014 but not hooked up to the grid amounts to 1,303.1 MW. Another 220 foundations have been already put in position.

The manufacturers of offshore wind turbines, foundations and grid technology expect that the capacity increase in 2014 adds to more than just a symbolic mark.

From the operators' point of view, the increase in the number of installed turbines in 2014 confirms that when the revised EEG came into effect in August of last year, it triggered massive investment.

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

## DEME orders two new vessels to strengthen its position in the offshore energy market

DEME has ordered two new vessels serving the offshore energy market. Contracts have been signed with shipyards La Naval in Spain and Uljanik in Croatia to build respectively the multi-purpose vessel Living Stone and the self-propelled jack-up vessel Apollo. Both vessels will be delivered in 2017.

The new jack-up vessel Apollo will join GeoSea's current fleet of self-propelled jack-ups.

The vessel will be equipped with an 800-ton leg-encircling crane. The vessel deck provides free area of 2000m<sup>2</sup> with a load carrying capacity of 15 t/m<sup>2</sup>. The jack-up Apollo will be outfitted with 106.8m long lattice legs that allow her to operate in water depths of up to 70m. Apollo will have standard accommodation for 90 persons on board upgradable to 150.

The multipurpose vessel Living Stone will join DEME's fleet of fall-pipe vessels servicing the offshore energy market, which currently includes the Flintstone, Rollingstone and Seahorse. The vessel will be equipped with a fall-pipe system as well as cable/umbilical loading & installation facilities and will have advanced subsea construction capabilities. Living Stone will be able to accommodate 100 persons.

Living Stone has rock installation capabilities and serves transport- and installation projects as well as offshore power cable and umbilical installation for amongst others, interconnectors for the future European supergrid.

Apollo is an installation vessel that will also be deployed by GeoSea's subsidiary EverSea, which is providing services to the oil and gas industry with particular focus on the installation, maintenance, rejuvenation and decommissioning of platform facilities as much as well intervention and well P&A (plug & abandonment) activities.

The vessels Apollo and Living Stone have been designed as green vessels



with dual-fuel main engines, solar panels and wind turbines on board, use of biodegradable grease and oil and heat recuperation, in order to operate them with the lowest possible fuel consumption while also keeping CO<sub>2</sub> and NO<sub>x</sub> & SO<sub>x</sub> exhaust to the strictest minimum. Both ships will have a Green Passport and a Clean Design notation.

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

## Evopod completes 6 months winter survival trials

Oceanflow has successfully completed six months of continuous deployment of its Evopod™ low visual profile, low motion turbine support platform off the west coast of Scotland. The mono-turbine variant of Oceanflow's semi-submerged tethered pod which the company calls E35-01 supports a 35 kW rated output tidal stream turbine and has been continuously tested in the fast flowing currents and harsh wave environment of Sanda Sound since early August 2014. The trials have demonstrated Evopod's low motions and survivability characteristics in the moderately fast 4 to 5 kts tidal site, which in the winter months is also exposed to a harsh wave environment from the Atlantic and Irish Sea. The floating platform's streamlined surface piercing struts and turret mooring system ensure that the device always faces into the flow whatever the wave direction while the small waterplane area of the struts and the device's deeply submerged tubular hull ensure that the buoy has very low motions compared to more conventional surface floating platforms or buoys. The unit rode out a particularly severe "weather bomb" storm in December which combined spring tides with record breaking wind speeds and wave heights which led to shipping being constrained to port and the downing of power lines.

The E35 unit has a very compact above waterline profile that supports

mast mounted and hull mounted instrumentation for above and below water-line environmental and platform performance monitoring. While the device is primarily developed for tidal stream and ocean current power generation Oceanflow's CEO Graeme Mackie says that a variant of the E35 platform could also support a more extensive electronic monitoring suite for environmental, maritime or defence applications with autonomous power supplied by batteries charged up by its underwater turbine generator.

The E35-01 unit in Sanda Sound is fitted with a 35kW rated generator driven by a 4.5m diameter turbine. The E35 unit in Sanda Sound will be exporting electricity into the grid later in 2015 via an umbilical and subsea cable connection.

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

#### **U.S. Navy invests in research and development of seawater air conditioning technology**

Makai Ocean Engineering, Inc. has completed a contract by the Office of Naval Research (ONR) through the Hawaii Natural Energy Institute (HNEI)

to research and develop Seawater Air Conditioning (SWAC) technology. SWAC is a method to provide cold air conditioning to buildings using a district cooling system that uses an available cold water reservoir as its source (usually deep cold water from a lake or ocean). SWAC can provide air conditioning using about one-tenth of the energy required for conventional air conditioning. The Navy has recently expressed interest in implementing SWAC district cooling systems at island bases using the Energy Savings Performance Contract (ESPC) model.

Makai's SWAC study produced a software tool that is capable of quickly and accurately assessing the feasibility of a SWAC system anywhere in the world. Makai had previously been in continuous development of the predecessor of the software (dubbed the "SWAC Model") during the last 20 years of design and development of SWAC systems, and the recently completed project provided a major overhaul and upgrade.

The cost with the greatest uncertainty for SWAC is often the deep seawater pipeline. Accordingly, the most critical

input for any SWAC feasibility or cost analysis is often accurate pipeline construction cost data, which Makai has been providing as a part of successful pipeline projects worldwide over the last 35 years. During the study, the existing SWAC Model was improved by upgrading it to a modern programming language and incorporating new cooling technologies, which may enable SWAC systems to achieve the same cooling comfort as earlier SWAC designs using lower flows and warmer seawater. These improvements would mean smaller and shorter cold water pipelines for a given cooling load and an increased number of economically feasible SWAC sites worldwide. Finally, Makai validated the software by running several hypothetical scenarios for SWAC systems at Navy bases. These improvements have increased the scope of the model to include modern air conditioning systems, reduced the time and cost required for a SWAC feasibility study, and broadened the applicability of SWAC to sites that were previously thought to be infeasible.

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



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Ocean News & Technology

**SAAB chooses Kongsberg sonar and multibeam systems**  
Defence and security company SAAB has selected a cutting-edge Kongsberg Maritime hydroacoustic package for installation on two Swedish A19 submarines. The delivery will consist of SA9510S Mine Avoidance and Navigation Sonar for submarines and the leading EM 2040 Dual RX multibeam echosounder. The main purpose of the SA9510S sonar is to detect mines, obstacles and the sea-floor in a wide swath ahead of the submarine. The sonar generates target warnings or alarms with sufficient time available to perform an avoidance manoeuvre. It is a vital tool providing information to crew for bottom navigation purposes and for submerged navigation. The SA9510S sonar has the ability to detect and display the bottom profile in several selected horizontal directions in front of the submarine. Mine-seeking and submerged navigation can be performed simultaneously. The EM 2040 Dual RX to be delivered is an enhanced version of the leading EM 2040 multibeam echosounder system. The EM 2040 Dual RX features two TX-Transmitters and two RX-Receiver and is designed for mapping in shallow areas at higher speed. It will provide A19 crews with accurate survey data and excellent range performance (both depth and swath width) at the highest resolution available in the market.

**Coast Guard cutter commissioned**

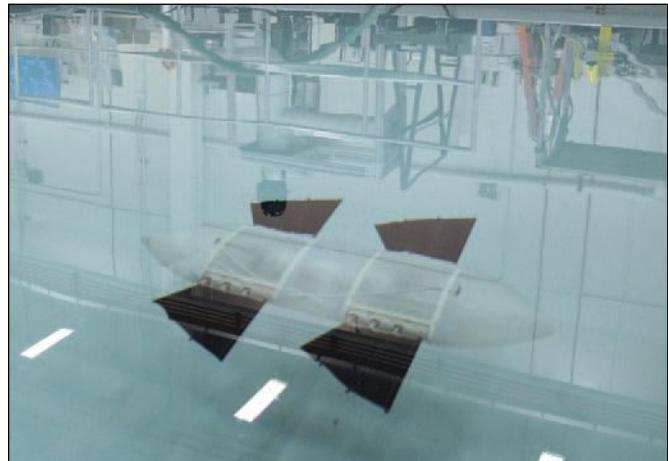
On 24 January 2015, the U.S. Coast Guard commissioned its 11th fast response cutter, the William Trump. Each fast response cutter is named for an enlisted Coast Guard hero who distinguished him or herself in the line of duty. This vessel is named after U.S. Coast Guard Petty Officer 3rd Class William Trump who earned a silver star for valor in action during the assault phase of the landing at Normandy during WWII. Trump served aboard Landing Craft Infantry 90 and volunteered to set the anchor line ashore on Omaha Beach to give the troops that his vessel was carrying a route for them to follow into the fight. He successfully accomplished his mission and narrowly escaped death when an enemy bullet dented his helmet. Trump retired from the Coast Guard in 1965 and went on to work aboard oil tankers. Coast Guard Cutter William Trump, homeported in Key West, is 154-ft long, has a beam of 25-ft, and a maximum sustained speed of more than 28 kts. The William Trump is armed with a stabilized 25 mm machine-gun mount and four crew-served .50-caliber machine guns. The Key West Navy League Commissioning Committee is supporting the commissioning through funding of activities traditionally associated with a commissioning, separate and apart from the U.S. Coast Guard. The William Trump is the fifth fast response cutter homeported in Key West.

**Ships from around the world are supporting CMF operations**

Ships from various nations assigned to the Combined Task Force 150 (CTF-150) rendezvoused briefly for a transit in the Gulf of Oman, demonstrating the international commitment to the Combined Maritime Forces (CMF) counter-terrorism and maritime security mission. CTF-150 counter-terrorism and maritime security operations aim to deter and deny terrorist organizations from using the seas to smuggle narcotics, weapons, and other illicit cargo while ensuring safe passage for merchant vessels in some of the busiest waterways in the world. While assigned to CTF-150, the ships and their helicopters are busy searching, identifying, approaching and boarding suspicious vessels. CTF-150 vessels also assist mariners in distress and provide humanitarian assistance as required. For more information, visit [www.combinedmaritimeforces.com](http://www.combinedmaritimeforces.com).

**Lockheed Martin to improve Virginia's acoustic sensing**

Lockheed Martin Mission Systems and Training, Manassas, Virginia, is being awarded a \$71,630,738 undefinitized contract action for the procurement of engineering development efforts and Economic Order Quantity (EOQ) long lead material for four Virginia New Construction boats in support of Acoustic Rapid Commercial-Off-The-Shelf (A-RCI) Technical Insertion (TI) 16. A-RCI TI16 program concept is that vast improvements in acoustic sensing can be achieved without changing the sensors. By sharply upgrading ship sensor processing, it integrates and improves the boat's towed array, hull array and sphere array sonars.

**Bio-inspired autonomous vehicles expand Navy littoral capabilities**

(Photo: U.S. Naval Research Laboratory/Jamie Hartman)

Inspired by the pectoral fins of reef fish, particularly the bird wrasse, researchers at the U.S. Naval Research Laboratory (NRL) have integrated artificial pectoral fins into a man-portable AUV known as the Wrasse-inspired Agile Near-shore Deformable-fin Automaton, or WANDA. Much of the development and testing of the WANDA platforms takes place in NRL's Laboratory for Autonomous Systems Research (LASR) — a multi-environment facility that can emulate tropical, desert, and littoral conditions on-site. Four side-mounted fins, two forward and two aft, provide all the propulsion and control necessary for the vehicle. WANDA can perform low-speed maneuvers including forward and vertical translation, turn-in-place rotation, and station keeping in the presence of waves.

AUVs have demonstrated many successful capabilities in inspection, surveillance, exploration, and object detection in deep seas, at high speeds, and over long distances. However, operations in littoral zones requiring low-speed and high-maneuverability present mobility and sensing challenges that have not been satisfactorily resolved.

The artificial pectoral fin has been integrated into a man-portable, unmanned vehicle named the Wrasse-inspired Agile Near-shore Deformable-fin Automaton, or WANDA. Four side-mounted fins, two forward and two aft, provide all the propulsion and control necessary for the vehicle. A set of custom control algorithms uses information about the vehicle motion and surrounding environment to inform changes to the fin stroke kinematics, or fin gaits. This kind of artificial fin technology can adapt to varying flow conditions and provide the thrust control necessary for low-speed maneuvering and precise positioning.

WANDA is designed to operate at speeds in excess of two knots, or hold position in the presence of two-knot currents, giving it the propulsion and control authority needed in many harbor and other near-shore operational zones. WANDA can also successfully coordinate maneuvers to achieve waypoint navigation.

As WANDA's fish-inspired technologies are perfected, the AUV is being prepared for payload testing. The vehicle's modular construction enables easy integration of different mission-specific payload packages, and one such payload that will be developed and tested on WANDA starting this year is a biochemical sensing system for trace level detection.

of chemical signatures. This sensor system built onto a capable low-speed platform such as WANDA will enable missions in plume tracking and target localization in shallow water environments.

The WANDA program has spawned other related programs to enable Navy critical missions using AUVs. NRL's Flimmer (Flying Swimmer) program seeks to develop an unmanned platform that will be deployed from the air, glide to a water surface landing in an area of interest, and transition into a swimming AUV. NRL is leveraging its expertise in unmanned aerial vehicle (UAV) technologies to design and build the Flimmer vehicle. Modifications have been made to the WANDA fins to enable them to function as aerodynamic control surfaces and to survive the impact of landing.

As the Navy's focus on autonomy and unmanned systems intensifies, NRL's bio-inspired research into capable propulsion and control technologies for low-speed operation in near-shore environments is helping to close a clear gap in AUV technology. An unmanned vehicle that can effectively operate in these areas, where traditional platforms experience stability and control problems, will improve performance for critical missions including harbor monitoring and protection, hull inspection, covert very shallow water operations, and riverine operations.

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

#### **U.S. Navy releases fiscal year 2016 budget proposal**

The Department of the Navy released its proposed \$161.0 billion budget for fiscal year 2016. This budget is part of the \$534.3 billion defense budget President Barack Obama submitted to Congress.

Rear Adm. William Lescher, Deputy Assistant Secretary of the Navy for Budget, briefed media at the Department of Defense budget press conference about the Navy and Marine Corps portion of the budget.

"Our PB16 budget submission balances warfighting readiness with our Nation's fiscal challenges," said Lescher. "Our force employment approach aligns capability, capacity and readiness to regional mission demands, ensuring our most modern and technologically advanced forces are located where their combat power is needed most, delivering presence where it matters, when it matters."

This year's budget submission was guided by the Chief of Naval

Operations' tenants of warfighting first, operate forward, and be ready. It makes critical investments in people, ships, and innovation, so that the Department of the Navy can execute the Defense Strategy.

The Department of the Navy requested \$44.4 billion for procurement, focused on providing stability in the shipbuilding account and keeping the Navy on track to reach 304 ships by FY20. In FY16 the Navy will buy nine new ships, including two Arleigh Burke destroyers, two Virginia-class submarines, three Littoral Combat Ships as well as the first next generation logistics fleet resupply ship, the T-AO(X).

Additionally, this includes fully funding the refueling for the aircraft carrier USS George Washington, and the procurement of a Dock Landing Ship (LPD 28) that Congress provided partial funds for in the FY15 budget. The budget includes a \$50.4 billion request for operations and maintenance, reflecting a strong emphasis on restoring stressed readiness as the Navy and Marine Corps team continue to operate forward in a challenging security environment.

This year's submission includes \$17.9 billion for research and development, reflecting the emphasis on developing key capabilities for the future. This increase in research and development funding supports the Navy-Marine Corps team by providing technological advantages against adversaries in all environments and spectrums.

To view the proposed FY16 DoN budget documents, visit <http://www.finance.hq.navy.mil/fmb/PB/BOOKS.htm>.

#### **UK to make £100m investment in Portsmouth Naval Base**

On a visit to the home of the Royal Navy, the United Kingdom Chancellor of the Exchequer, George Osborne, announced a new national shipbuilding strategy in advance of a decision later this year on orders for the brand new Type 26 Global Combat Ship.

The Chancellor also announced that these multi-million pound ships will be based at the Navy bases in Portsmouth and Plymouth.

As part of the development of the national shipbuilding strategy, the Chancellor has asked to look at the potential to build a new complex warship every two years. As well as maximizing export opportunities, this will ensure the Royal Navy continues to have the capability it needs to protect our nation's interests, retaining its status as the most modern Navy in the world.

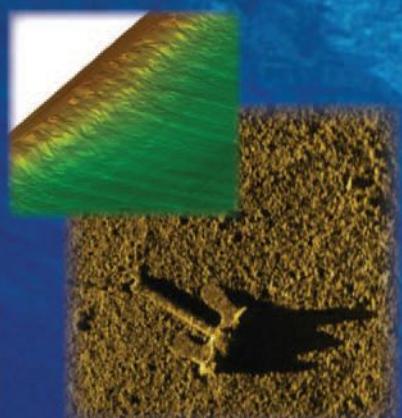
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class ships for the Royal Navy while ensuring the best value-for-money for the taxpayer. It will also ensure that the Navy continues to have the capability it needs to protect our nation's interests and ensure continued investment in UK warship production. It will help maintain jobs, provide new apprenticeships, and develop advanced engineering skills.

Today, the Royal Navy is being modernized with new equipment, ships and submarines; it is building two of the second largest new aircraft carriers in the world, which will operate the most sophisticated fighter aircraft ever produced.

It will receive the world-leading new Type 26 frigate. Two Astute Class submarines, the most advanced nuclear submarines in the world, have already deployed on operations and the UK is working to deliver a further five of the class over the next decade.

Combined with the Type 45 Destroyer and four modern tankers to support the fleet at sea, as well as the forthcoming renewal of Trident, this means the Royal Navy of today is being equipped for the challenges of the 21st century.

While on the visit to one of the world's oldest dry docks, the Chancellor

also announced almost £100m of infrastructure development in new dock facilities at Portsmouth Naval Base to further support the arrival of the Queen Elizabeth Class Aircraft Carriers.

The new work will encompass berthing and jetty improvements, new power supply and distribution, and significant dredging in the approach to the harbor to enable the base to accommodate the largest warships ever built for the Royal Navy. The move will provide significant employment opportunities in the Portsmouth area.

For more information, visit [www.royalnavy.mod.uk](http://www.royalnavy.mod.uk).

### Saab and Damen team for Walrus future submarine replacement programme

Swedish defence and security company Saab is teaming with Dutch shipbuilder Damen Shipyards Group to explore future opportunities in the international submarine market. The companies have signed an exclusive teaming agreement to work together in pursuit of the potential Walrus-class submarine replacement programme for the Netherlands. In addition to this project,



Saab and Damen will also explore ways in which they might bid jointly on other submarine procurement programmes.

Through the acquisition of Kockums Saab has extensive experience in the design and manufacture of submarines and surface vessels for a global customer base, integrating advanced systems and using a range of ultra-modern materials and construction techniques. Key technology includes Saab's unique Air Independent Propulsion System based on the Stirling engine. In addition, Saab delivers many complex defence programmes in cooperation with governmental and commercial partners in customer nations worldwide.

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

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## HMAS Success assist CSIRO with robotic floats

During their transit to the Middle East in November and December 2014, the crew of HMAS Success assisted the Commonwealth Scientific and Industrial Research Organisation (CSIRO) with their global Argo program. This innovative project aims to gather up ocean data using robotic floats.

Success supported this venture by deploying eight Argo floats at specified drop points in the Indian Ocean between Western Australia and the Gulf of Oman. The global Argo program relies on over 3,000 autonomous drifting sensors from around the world routinely collecting sub-surface observations from the earth's open ice-free oceans. Around 800 floats need to be deployed each year to maintain coverage and replace those with exhausted batteries.

The 1.5 m profilers drift between 1 to 2 km in depth once deployed.

Every 10 days they descend to a depth of 2,000 m and measure water temperature and salinity as they rise back to drifting depth. They repeat this cycle for approximately four years.

The information collected is transmitted to satellites and relayed to data

centers around the world. Argo data complements other observations collected from ships, moored instruments and earth-observing satellites.

Success Officer of the Watch, Sub Lieutenant Rhian Campbell-McBride was involved in coordinating the Argo float drops along the transit.

"It is satisfying to think that we are contributing to research for climate change, as that is a significant global concern at the current time," she said.

Since then Australia has deployed over 500 floats on transits similar to this. Success personnel recognize the importance of the information these floats collect for knowing more about our oceans.

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

## Submarine force will begin integration of enlisted women

Following the successful integration of female officers onboard submarines, the Submarine Force will be immediately opening service on submarines for enlisted female Sailors. The Chief of Naval Operations detailed the enlisted women integration plan in Naval

Administrative (NAVADMIN) message 19/15 entitled, "Opening Submarine Force Billets to Enlisted Women." The plan was formally approved for federal funding by Congress.

With Congressional approval, Vice Adm. Michael Connor, commander, Submarine Forces, can begin implementing the plan which was first submitted and approved by CNO, 30 June 2014, and Secretary of the Navy, 1 July 2014. The plan includes opening all submarine ratings and Navy enlisted classification codes to enlisted women in Fiscal Year 2015 for a two-phase integration onboard the Ohio-class ballistic-missile submarines (SSBN) and Ohio-class guided-missile submarines (SSGN), and the Virginia-class attack submarines (SSN).

"We are the most capable submarine force in the world," said Connor. "While we have superb technology, the ultimate key to our success is our people. In order to continue to improve and adapt in a rapidly changing world, we need to ensure that we continue to recruit and retain the most talented Sailors."

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

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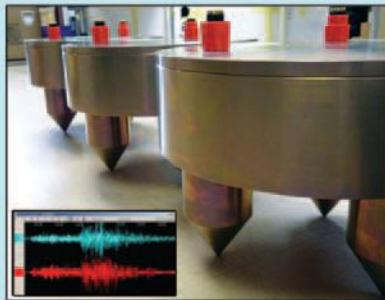
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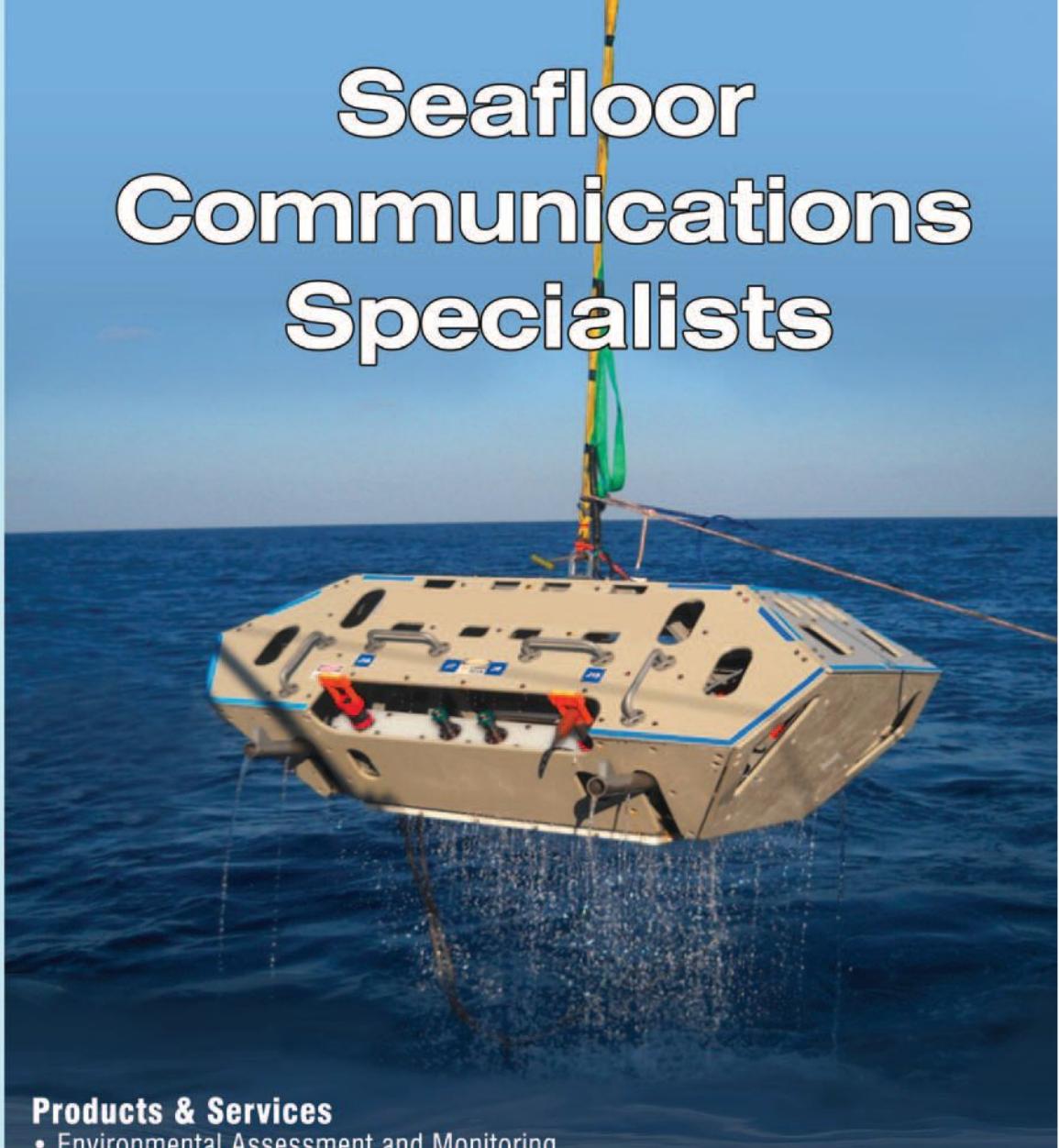
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# OFFSHORE INDUSTRY

## Wood Mackenzie looks at possible effects of further oil price declines

Wood Mackenzie concludes that a Brent price of \$40/bbl or below would see producers shutting in production at a level where there is a significant reduction of global supply.

Once the oil price reaches these levels, producers have a sometimes complex decision to continue producing, losing money on every barrel produced, or to halt production, which will reduce supply," said Robert Plummer, corporate research analyst for Wood Mackenzie.

The analysis of world liquids production of 75 mmbbl per day resulted in delineation of three oil price points, the impact on production, and the percent of supply that would turn cash negative:

At \$50/bbl Brent, only 190,000 bbl per day of oil production is cash negative, representing 0.2% of global supply. Seventeen countries supply oil that is cash negative at \$50, with the main contributors being the UK and the U.S.

At \$45, 400,000 bbl per day is cash negative, or 0.4% of global supply. Half of this production is from conventional onshore production in the U.S.

At \$40, 1.5 mmbbl per day is cash negative, or 1.6% of global supply. At this point, the biggest contribution is from several oil sands projects in Canada. Tight oil production only starts to become cash negative as the Brent oil price falls into the high \$30s.

## Schlumberger announces 9,000 job cuts due to lower commodity pricing

Oilfield services giant Schlumberger has announced it will cut 9,000 jobs in response to lower commodity pricing and expects lower exploration and production spending this year. The company, which employs approximately 120,000 persons, has decided to reduce its overall headcount to better align with expected activity levels for this year.

Schlumberger, the world's largest oilfield services company operating in more than 85 countries, recorded a \$296 million charge related with the employment reduction. The company has decided to restructure its WesternGeco marine seismic fleet to reduce its operating costs.

The cuts were announced despite Schlumberger chief executive Paal Kibsgaard announcing that the company's 2014 revenue of \$48.6 billion

increased 7% year-on-year and grew for the fifth consecutive year.

"Fourth-quarter results were led by record revenue in North America due to



Paal Kibsgaard

continued efficiency improvements and new technology uptake in pressure pumping land and by the recovery of activity in the U.S. Gulf of Mexico," Kibsgaard said. As a result of the recent decline in commodity prices, Schlumberger concluded that the carrying value of its investment in a single point monitoring system development project in the Eagle Ford Shale was in excess of its fair value. The company recorded a \$199 million impairment charge.

## EIA: U.S. crude oil production will approach record level in 2016

U.S. crude oil production will continue to rise this year and next, the U.S. Energy Information Administration said in a new report. The agency also projected that in 2016, the U.S. could come close to approaching its all-time crude oil production record. The findings were contained in its monthly short-term energy outlook.

The study found that U.S. crude production averaged 9.2 mmbbl of oil per day in January. The agency expects average production of 9.3 mmbbl daily in 2015 and 9.5 mmbbl daily in 2016. That would come close to the record level of average U.S. production, set in 1970, when the country produced 9.6 mmbbl per day.

Those results are in stark contrast from recent forecasts from consulting firm IHS Energy, which recently said it expects U.S. production to stop increasing at some point this year.

But they're in line with other forecasters' estimates, who say it could take time for U.S. producers' spending cuts to actually result in fewer barrels of oil coming from the ground. The timing of a U.S. production decrease is critical. In the face of slower crude oil demand growth, many analysts say oil prices won't start to rise significantly until U.S. producers slow down their production. WTI will average \$55/bbl in 2015 and \$71/bbl in 2016, the agency said, adding that Brent will average \$58/bbl in 2015 and \$75/bbl in 2016.

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### McDermott's DB50 executes record lift of platform jacket in U.S. Gulf

McDermott International's Derrick Barge 50 (DB50) has installed a drilling and production platform in the U.S. Gulf of Mexico. Installation work included the heavy-lift of a 3,250-ton jacket, which the company said was the largest jacket lifted by the vessel to date.

The six-pile platform was lifted by the DB50 in tie-back mode over the stern of the vessel in water depths of 391 ft on an existing well site. A 2,300-ton drilling and production deck was deployed on the jacket after the delivery of piles to a designed penetration of 430 ft, according to the company.

Following the platform installation, McDermott secured additional transportation and installation contracts for the US Gulf, McDermott said, adding that it expects to undertake the contracts using the DB50 in the first half of this year.

"This milestone for the DB50 further demonstrates that McDermott has the right assets to meet the demands of our clients. The project specified that the jacket be lifted, not launched, and



DB50 installing 3,250-ton jacket.

our heavy-lift vessel fit the criteria, providing the flexibility required to install a jacket of this magnitude and its corresponding deck," said Scott Munro, McDermott International vice president for Americas, Europe and Africa.

DB50 completed a \$150 million upgrade in 2012 that increased lift capacity, engine horsepower, number of thrusters (to six from four), lift capacity, in addition to adding new stabilization, control, and electrical systems. It is capable of lifting surface loads of around 4,400 tons and lowering up to 480 tons in 11,500 ft of water.

# OFFSHORE INDUSTRY HEADLINES

Research & Development • Environmental Assessment • Discovery

## UK association urges government to implement further tax breaks

Industry group Oil & Gas UK has called for more government intervention to sustain UK offshore oil and gas activity.

"Evidence of the threat from the falling oil price to UK investment and jobs is mounting daily with oil and gas companies cutting exploration and capital budgets and reviewing headcounts," said Malcolm Webb, the association's chief executive officer.

The Treasury's promise in last year's statement of a simplified tax allowance to encourage new investment must be delivered by budget 2015 if it is to have any impact, he said, adding that, with the continued falling and potentially sustained low oil price, this is no longer enough.

"We are encouraged to see a growing political and industry consensus around the now pressing need for more fundamental and urgent changes to the tax regime," Web said. "With a significant amount of UK oil and gas production not even covering costs at a \$50 oil price, the industry cannot carry the burden of a tax rate between 60 and 80%."

Webb called for Chancellor George Osborne to abolish the 30% supplementary charge on corporation tax in his March Budget, assuming the oil price has not recovered. This was introduced and then increased in 2011 response to rising oil prices. Such a change would still leave UK North Sea oil and gas producers paying corporation tax at 30%, 50% above the level imposed on the remainder of British industry.

"In parallel, the Oil and Gas Authority must be rapidly resourced with the right capability and capacity to swiftly implement the recommendations of the Wood Review," Webb said. "The industry is resolutely focused on tackling the cost and efficiency challenge it faces to improve the competitiveness of North Sea operations."

## Shell wants to return to Alaska's Chukchi Sea this summer to drill

Royal Dutch Shell chief executive Ben van Beurden said the company intends to return to the Chukchi Sea this summer to drill exploratory wells. But he said Shell still needs permits and faces other challenges.

"So, will we go ahead? Yes, if we can," he said at a press conference in London announcing fourth quarter financial results. "It will depend upon a number of things. First of all, will we be technically, logistically ready to go ahead? I'd be so disappointed if we wouldn't. We've been working on this for a long



*Kulluk goes aground near Kodiak, Alaska.*

period of time. And we've kept all our capability in place, tuned it, upgraded it just to be ready to drill this coming summer season."

Shell's last effort to drill in Arctic waters, in 2012, was plagued by trouble, culminating in a drill rig running aground near Kodiak. One of Shell's subcontractors recently agreed to pay more than \$12 million in fines for a range of environmental crimes.

Van Beurden told reporters the company will only proceed if it can do so responsibly. He also said Shell is as prepared as any company can be. At least five different federal agencies must still issue permits, and the Interior Department has to re-approve the lease sale after a legal challenge. A decision on that is expected in March.

Van Beurden said the company isn't deterred by the current low oil prices.

## Oil and gas M&As hit 10-year highs for deal value and volume

Mergers and acquisitions (M&A) in the oil and gas industry hit 10-year highs in terms of deal value and volume in 2014, according to PwC US. The record breaking year was primarily driven by deals valued at more than \$1 billion each. Overall, there were 49 of these "mega" deals worth a total of \$266.1 billion in 2014, compared to 24 deals worth \$71 billion in 2013.

"While 2014 was a very strong year for oil and gas deal activity, we saw a steady decline in November and December as the drop in oil prices accelerated, contributing to a marked shift in deal sentiment from playing offense to playing defense as companies focused on maintaining liquidity," said Doug Meier, PwC's US energy sector deals leader.

That downward trajectory in oil prices, coupled with the impact of leverage, drove a number of deals related to corporate restructurings and portfolio right sizing activities.

"In today's low price environment, the effects of debt could drive additional deal activity as leveraged companies look to strengthen their balance sheets by focusing on cash flow optimization and operational efficiencies," Meier said.

For all of 2014, there were 193 asset deals worth \$94 billion, PwC said, adding that foreign investors continued to show interest in the United States as both deal value and volume were at 10-year highs, contributing 56 deals worth \$71.2 billion in 2014. PwC's Oil & Gas M&A analysis is a quarterly report of announced U.S. transactions with value greater than \$50 million analyzed by PwC using transaction data from IHS Herold.

## FPS activity to slow this year, rebound in 2016 predicts EMA

In its 2015-2019 Floating Production Systems Outlook Report, Energy Maritime Associates (EMA) accounts for 30 contract awards in 2014 and predicts 105-188 FPU units will be built over the next five years.

Last year's 30 contracts are valued at more than \$18 billion and consisted of 10 FPSOs, eight FSOs, five FSRUs, four FLNGs, two MOPUs, and one production barge. Late in the year, Exmar and Golar added speculative FLNG orders. Eight of the awards went to Singaporean yards, four to Korea, and three to China.

Also in 2014, 27 units were delivered: 11 FPSOs, nine FSOs, four FSRUs, one semi, one spar, and one MOPU, with 13 of these units for Southeast Asia. Three units were delivered to Brazil, as compared to 11 in 2013.

Nine units were decommissioned: four FSOs, two FPSOs, two MOPUs, and one production semi-submersible. Three of these units, all FSOs, were scrapped, two redeployed, and the remaining four units are available for lease or sale.

Looking ahead, EMA predicts as many as 188 orders could be placed in the next five years at capital spending of \$157.4 billion. Depending on mitigating factors, the estimate calls for a most likely build number of 142 units at a cost of \$118.5 billion.

The 142 number considers that fewer oil processing units will be built because of lower oil prices. However, the total considers that there will be an increase in FLNG and FSRU orders because of financing available for small to mid-size LNG related projects. FPSOs will remain the largest category with 45% of the expected orders and 60% of the capex.

After a pause in 2015, contracting activity is expected to increase in 2016, to levels exceeding 2014.

## Poll: 64% of Florida voters favor offshore oil and gas development

Nearly two-thirds of voters in Florida support offshore drilling for domestic oil and natural gas resources, according to a new poll conducted by Harris Poll for the American Petroleum Institute's (API) "What America is Thinking on Energy Issues" series.

"Florida has an opportunity to expand its energy portfolio and access the jobs and government revenue currently locked away in America's large offshore energy reserves," said Dave Mica, executive director of the Florida Petroleum Council. "We could bring good-paying jobs to Floridians and lift our economy simply by allowing more oil and natural gas production off our shores."

The state-wide telephone poll, conducted for API by Harris Poll among 610 registered Florida voters also found that: 90% agree increased oil and natural gas production could strengthen America's energy security; 85% say increased oil and natural gas production could help lower energy costs for consumers; 80% say increased oil and natural gas production could benefit federal and state budgets through lease payments, royalty fees and other sources of revenue; and 58% say that the federal government does not do enough to encourage U.S. oil and natural gas development.

The Florida Petroleum Council is a division of API, which represents all segments of America's technology-driven oil and natural gas industry. Its more than 625 members – including large integrated companies, exploration and production, refining, marketing, pipeline, and marine businesses, and service and supply firms – provide most of the nation's energy.

## U.S. to offer 7,788 blocks in Central Gulf of Mexico Lease Sale 235

The U.S. government will provide 41.2 million acres for oil and gas exploration and development in the Gulf of Mexico in Lease Sale 235 of the Central Planning Area. The sale, which is due to be held in New Orleans, Louisiana, on March 18, features 7,788 unleased blocks located from three to 230 mi offshore Louisiana, Mississippi and Alabama, in water depths ranging up to 3,400 m.

The Gulf of Mexico contributes around 18% of oil and 5% of gas production to the domestic market. Lease Sale 235 will be the seventh offshore auction under the federal government's Outer Continental Shelf Oil and Gas Leasing Program for 2012 to 2017. It builds on the first six sales in the program that provided more than 60 million acres for development and collected \$2.4 billion in high bids.

# Leasing plan falls short of oil industry expectations

**Oil industry leaders said the Obama administration's draft plan for selling drilling rights offshore United States from 2017 to 2022 does not go far enough, because it excludes promising territory along the Northeast and off Florida's east coast, while also locking up some Arctic waters previously open to development.**

The draft program, developed by the Interior Department's Bureau of Ocean Energy Management, proposes 14 sales of offshore drilling leases: 10 in the Gulf of Mexico, three off the coast of Alaska and one for territory along mid-and south-Atlantic states. No sales are planned for Pacific waters, and the possible Alaska and Atlantic sales would be scheduled near the end of the 2017-2022 time frame.

Interior Secretary Sally Jewell stressed that the plan would allow offshore oil development "while protecting areas that are simply too special to develop."

"This is a balanced approach,"

Jewell told reporters in a conference call. "It supports thoughtful, careful, well-structured oil and gas development ... complemented by significant effort the administration has made to stand up renewable projects around the world."

Jewell also emphasized that the ocean energy bureau is only in the beginning stages of a long process of assembling the five-year plan, which is required by federal law and is critical step for new oil and gas exploration on the United States' outer continental shelf. Offshore oil leases can only be sold through auctions contained in the final schedule.

However, the proposal can only get smaller, whittled down by regulators in response to public comments. In a "frequently asked questions" document issued by the ocean energy bureau, it clarified that if an area was left out of the draft proposed program, it is out for good: "No sale or area can be added to the program without restarting the program preparation process at the stage in which (it) was deleted."

That's one reason oil industry leaders had implored the administration to keep more territory on the table in this first proposed draft program.

"The government's first draft should permit full consideration of all planning areas where significant discoveries are possible," said Erik Milito, upstream director for the American Petroleum Institute. "Opening new areas offshore is critical to continuing America's energy renaissance."

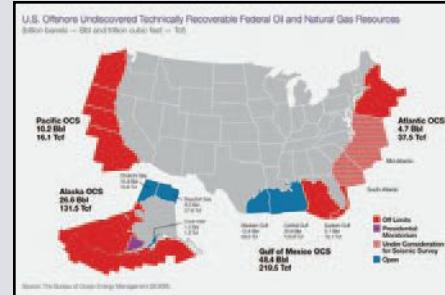
The Obama administration's proposed Arctic sales would auction off territory in the Chukchi Sea, Beaufort Sea and the Cook Inlet, where state waters are now home to oil production.

But President Barack Obama formally designated 9.8 million acres of the Beaufort and Chukchi seas as off limits to future oil and gas leasing, following his similar move to protect Bristol Bay last December. Obama's designation formally insulates whaling areas in the Beaufort Sea, creates a 25-mile coastal buffer in the Chukchi Sea and protects the Chukchi's Hanna Shoal area, which is home to a high concentration of marine life.

Four of the five Arctic areas affected by Obama's announcement were already excluded from leasing under the government's current leasing plan, which expires in August 2017. For instance, the existing plan – also drafted by the Obama administration – already includes a buffer zone along Alaska's Chukchi shoreline. Under the current five-year program, a whopping 87% of the offshore area under federal control is closed to development.

As it stands now, the proposed five-year plan would double down on Gulf of Mexico sales, scheduling two sales annually in both the western and central Gulf of Mexico. That's a shift from recent practice of holding one sale per year in each of those planning areas. But it schedules no potential lease sales in the eastern Gulf of Mexico, where a statutory ban blocks those sales until 2022. Industry officials had asked regulators to keep that territory in the plan in anticipation of a sale in 2022 or earlier, if Congress lifted the restrictions.

Public opinion polls have reflected overwhelming support for expansion of the U.S. offshore leasing program.



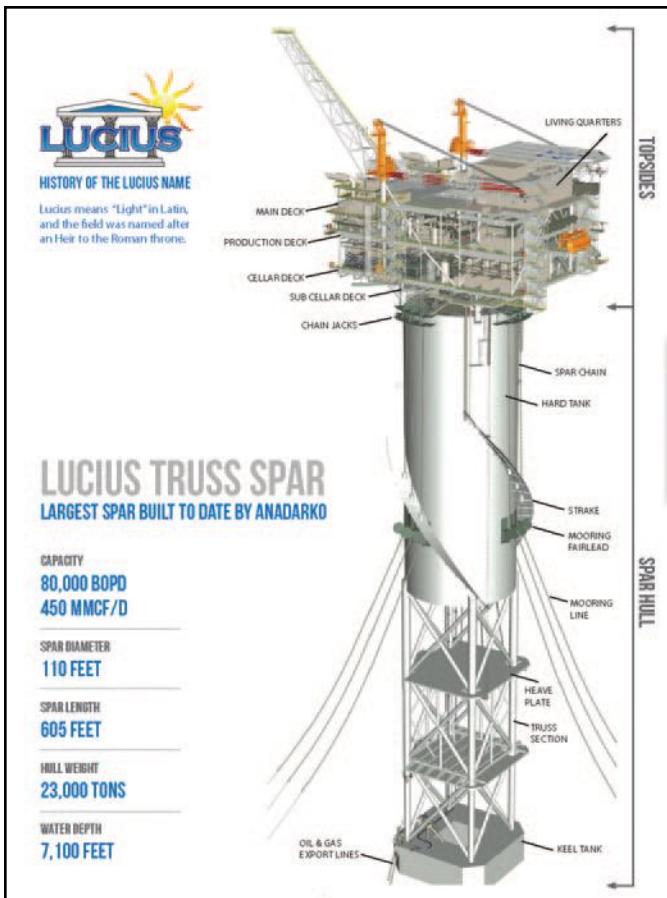
**Statoil taps Expro for well test, fluid sampling support**  
 Statoil has awarded Expro a contract to provide integrated well testing and fluid sampling services for the company's interests across the Norwegian continental shelf (NCS). The four-year, \$200-million contract could be extended by a further six years. Expro's supply comprises downhole tools, gauges, tubing, surface well testing, rig cooling and subsea services, complemented by a range of fluid sampling services that include downhole samplers, surface sampling, and specialized analysis and metering. It applies to exploration, appraisal, and development activity for Statoil's mobile offshore drilling units and fixed platforms within the NCS. This summer Expro expects to open its new \$10-million, 200,000-sq ft base in Tananger, Norway, which will support the new contract. It includes a 200,000-sq ft workshop with capacity to rig-up four well test packages and service six more simultaneously.

**Technip secures two subsea contracts in Gulf of Mexico**  
 French engineering firm Technip has secured two new subsea contracts from Stone Energy to support the Amethyst field, located on Mississippi Canyon Block 26 in the Gulf of Mexico. The first deal requires Technip to provide detailed engineering, procurement, fabrication, assembly and testing of a 5 in production static riser and related hardware. Technip will manufacture the flexible pipe at its Asiaflex Products plant in Tanjung Langsat, Malaysia, and install it using its Deep Blue deepwater pipelay vessel. Under terms of the second contract, Technip will install the pipe as a tieback to the Pompano fixed platform, which lies at an approximate water depth of 395 m. The project, which is expected to be completed in the second half of this year, will be managed by Technip's operating center in Houston, Texas.

**LMC to supply turret mooring system for Libra field FPSO**  
 London Marine Consultants (LMC) has secured a \$110 million contract from Sembcorp Marine's Jurong Shipyard to deliver an external turret mooring system for the Libra oil field's floating production, storage and offloading (FPSO) vessel. The Libra field is a large, ultra-deepwater oil prospect situated in the Santos Basin, approximately 230 km off the coast of Rio de Janeiro, Brazil, north of the Tupi field. The deal requires Ezra Holdings subsidiary LMC to supply engineering, procurement and construction (EPC) of the complete external turret for the extended well test (EWT) FPSO vessel. LMC will also design the mooring lines, analyze the risers and offer engineering support for integration of the turret and swivel stack onto the FPSO at Jurong Shipyard.

**Cellula awarded contract for CRD100 seafloor drill system**  
 Cellula Robotics was awarded a multi-million dollar contract from Fukada Salvage & Marine Works and Mitsubishi Heavy Industries for the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) to provide a customized CRD100 seafloor drill system. The CRD100 is a fourth-generation seafloor drill designed to operate in waters down to 3,000 m depth for borehole sampling and mineral exploration. The CRD100 provides an unprecedented level of intelligent control that facilitates efficient core sampling. A wireline tool system further enhances the speed of operation. Built on proven subsystems, the standard CRD100 is self-contained with a 100 horse power pack. Using commercial off the shelf (COTS) "size H" drilling tools, the standard CRD100 can sample for 65 m of continuous coring. The JAMSTEC CRD100 includes less size H tooling but also supports optional tools for surface sampling (T146) and large cased boreholes.

# Production launched at Lucius in U.S. Gulf



Oil production has commenced at the Lucius field, located in the ultra-deep Keathley Canyon area of the U.S. Gulf of Mexico. The oil field's spar, which is 240 mi south of the Louisiana coast, in roughly 7,000 ft of water, has a daily design capacity of 80,000 bbl of oil and 450 mmscf of gas.

Oil produced by the Lucius spar will be exported to the South Marsh Island (SMI) Area Block 205 Platform by an 18 in-diameter pipeline, which was laid in three sections by Cronus Technology.

Six subsea wells were tied back to a moored production-handling spar linked to shore via oil and gas pipelines. The \$2-billion project covers portions of Keathley Canyon blocks 874, 875, 918 and 919.

Anadarko Petroleum operates the field with a 23.8% working interest, while Eni holds an 8.5% working interest. Freeport and ExxonMobil own 25.1% and 23.3% stakes, respectively, while Petrobras has an 11.5% interest and Inpex holds a 7.75% stake.

The Lucius field was discovered in November 2009 and the subsequent development project was approved in late 2011. The Lucius project co-venturers signed an agreement with the Hadrian South field partners in 2011.

The discovery well encountered more than 200 ft of net pay in subsalt Pliocene and Miocene sands. Lucius was drilled to a total depth of about 20,000 ft by the ENSCO 8500 semi-submersible rig. The agreement allows natural gas produced from the Hadrian South field to be processed at the Lucius processing facility.

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*Intervention vessel Ocean Alliance.*

### **Shell Offshore to use Ocean Alliance vessel in Gulf of Mexico**

Shell Offshore has agreed to use Oceaneering International's Ocean Alliance vessel for its U.S. Gulf of Mexico operations. The company will use the U.S. flagged vessel, which was built in 2010, under a two-year, multi-service vessel charter agreement.

The Ocean Alliance vessel, which accommodates 69 people, features a helideck, a 150-ton active heave compensated crane and a working moonpool. Shell expects to undertake subsea inspection, maintenance and repair (IMR) projects, as well as hardware installations, using the vessel, which has an overall length of 309 ft.

IMR projects may feature a range of intervention tasks, including chemical well stimulation and hydrate remediation. Hardware installations are expected to include flowline jumpers, umbilicals, production trees and flying leads. The vessel features a satellite communications system, which has the capacity to stream video for real-time work observation by shore personnel.

### **Maersk Interceptor starts drilling at Ivar Aasen in Norway's North Sea**

The jack-up Maersk Interceptor has started a three-year development program on the Ivar Aasen field in the Norwegian North Sea. Operator Det norske oljeselskap has commissioned 15 wells – eight producers and seven water injectors – and three pilot wells. The program extends across production licenses 001B, 028B, 242, 338, and 457.

Initially the rig will drill the three pilot wells, which are designed to provide reservoir information at an earlier stage, according to Ivar Aasen drilling manager Inge Sundet.

Det norske has contracted Maersk Interceptor, claimed to be the world's largest jack-up rig, for five years with an option of two further years. Ivar Aasen, west of the Johan Sverdrup field, contains an estimated 210 mmboe. Production is

due to start in the fourth quarter of 2016, and could continue for 20 years, depending on the oil price and production trends.

### **Eni extends contract another year on Ocean Rig's Poseidon drillship**

Ocean Rig UDW Inc. has agreed to extend Eni Angola S.p.A.'s contract for the drillship Ocean Rig Poseidon for a further year until the second quarter of 2017. As part of the contract extension, Ocean Rig has agreed to adjust the existing day rate of the contract in exchange for Eni agreeing to enter into two contracts to use one or more of Ocean Rig's available drillships in West Africa starting in the first quarter of 2015 for an aggregate period of about eight months.

This agreement increases the company's total contract backlog by approximately \$187 million. The agreement is subject to customary closing conditions including the approval by national authorities, which is expected before the end of the 2015 first quarter.

Last September Eni announced a new oil discovery in Block 15/06, in the Ochigufu exploration prospect, in deep water offshore Angola. The well was drilled by the Ocean Poseidon in a water depth of 4,386 ft and reached a total depth of 14,665 ft.

Ochigufu was the 10th commercial oil discovery made in Block 15/06. The



*The drillship Ocean Rig Poseidon.*

new discovery is estimated to contain 300 mmbbl of oil in place.

The Ochigufu 1 NFW well, which has led to the discovery is 93 mi off the coast and 6 mi from the Ngoma FPSO (West Hub). The proximity to the Ngoma FPSO allows the increase of the resource base of the West Hub project, currently under way.

### **Transocean Arctic to drill follow up wells in Pil area off Norway**

Rocksource said the partners in last year's Pil and Bue discoveries in the Norwegian Sea license PL 586 have secured a rig for follow-up wells this year. Combined resources of the two finds are estimated in the 95-175 mmboe range. This year the partners are targeting further potentially high-impact prospects on the license with unrisked resources of



*The semi-submersible Transocean Arctic.*

200-500 mmboe. They have agreed on two back-to-back well slots for the semi-submersible Transocean Arctic, and expect drilling to start in mid-2015. They have also identified further upside in the license. Otherwise, Rocksource has no wells currently scheduled for 2015, although its goal is to develop further exploration targets for drilling in 2016 and beyond.

### **COSL takes delivery of Wood Group Mustang-designed semi-submersible**

Wood Group Mustang Norway (WGWN) said the first newbuild semi-submersible drilling rig incorporating its GG5000 floating hull design has been delivered to COSL Drilling Europe (CDE). COSLProspector, which is set to work offshore Norway, can work in water depths of up to 5,000 ft and drill wells up to 25,000 ft deep.

WGWN was responsible for the basic design and participated in the detailed design of the semi-submersible hull and main marine systems. The company adds that the 50,000 man-hour project was engineered to Norwegian Petroleum Directorate (NPD) standards.

"The delivery of the rig as designed is the result of a highly successful collaboration among WGWN, CDE and Yantai CIMC Raffles Shipyard," said Otto Søberg, president of WGWN.

"We worked closely with CDE to ensure the design of the rig would meet its needs and objectives and with the shipyard to deliver the rig as planned, thereby avoiding costly construction modifications common to the industry."

Previously WGWN performed the modification design and engineering for three other CDE drilling rigs: COSLPioneer, COSLInnovator, and COSLPromoter.

WGWN is providing engineering services for another rig to CDE's parent company, China Oilfield Services Ltd. (COSL), which selected the A5000 semi-submersible drilling rig design for its newbuild HYSY982.

## N-Sea extends construction vessel charter accord with Siem Offshore

Inspection, maintenance and repair specialist N-Sea has extended its charter agreement with Siem Offshore for the subsea construction vessel, Siem N-Sea, previously Siem Stork. The agreement has a duration of up to six years beginning January 1, 2015.

The Siem N-Sea is a dive, multi-support and construction vessel, designed to meet the needs of the offshore subsea industry. It is one amongst N-Sea's fleet of six dive support and specialist intervention vessels, designed to deliver a range of subsea services for offshore assets, platforms, FPSOs and renewables operations, with minimal impact made upon production.

The ship is equipped with efficient azimuth thrusters and a DAPII dynamic positioning system for safe and economic operations on a world wide scale. Featuring N-Sea's ground-breaking TUP Diving System®, the vessel is also fitted with complete air and nitrox diving spread and daughter craft, WROV and Obs ROV.

## Vroon launches platform-supply vessels Primrose and Prince

Vroon Offshore Services said the VOS Primrose and VOS Prince, two multi-purpose platform-supply vessels (MPSV), were launched in January at Fujian Southeast Shipyard (FSES) in Fuzhou, China. The two vessels, the third and fourth in a series of ten sister vessels ordered during 2012 and 2013 by Vroon, have an SPS code.

All ten vessels are equipped with full (under-deck) supply capabilities, that include stainless-steel tanks for the carriage of methanol, but also provide accommodation and work space for up to 40 client staff. The company said that this vessel concept provides a free deck space of 720 sq m and is based on a KCM design. In close cooperation, Khiam Chuan Marine (KCM), Vroon's new-building engineering department, the

world-renowned yacht designer KER Yacht Design & Engineering and Force Technology in Copenhagen worked together to fully optimize the design in order to ensure favorable motion and sea-keeping ability and efficient fuel consumption, both in DP mode and during transit. According to Vroon, six of these vessels are expected to be delivered by FSES later this year, followed by four sister vessels in 2016.

## Maersk takes delivery of third ultra-harsh environment jack-up

Maersk Drilling has taken delivery of its third ultra-harsh environment jack-up, XLE-3, from the Keppel FELS shipyard in Singapore ahead of schedule. The rig was to start development drilling for Statoil on the Gina Krog field in the Norwegian North Sea in late February.

The rig, which was to be named at a ceremony in Singapore, is the third of four newbuild ultra-harsh environment jack-ups to enter Maersk Drilling's rig fleet in 2014-16. The four rigs represent a total investment of \$2.6 billion.

The fourth rig will be delivered from the Daewoo Shipbuilding and Marine Engineering (DSME) shipyard in South Korea in 2016. With a leg length of 678 ft, the rigs are designed for year-round operation in the North Sea, in water depths up to 492 ft.

## Damen delivers third coastal survey vessel Fugro Frontier

Fugro has received the third of a series of three Fugro offshore coastal survey vessels (FOCSV) being built by Damen. Fugro Frontier is a compact, diesel-electric FOCVS designed for a variety of tasks. However, according to Damen, Fugro Frontier has benefited from tailoring to the conditions she will meet in its chosen market offshore Africa. Fugro took delivery of the first of three FOCSVs, Fugro Proteus, in July 2014 and the second one, Fugro Pioneer, in September.

According to the company, all three vessels have an advanced design capable of taking on geotechnical work, environmental baseline surveys, moon pool deployment plus monitoring and inspection duties.

"However since these vessels are to work in different areas, each is adapted to suit a particular environment. As a result, this series has been developed specifically to allow for a number of optional configurations," said Mijndert Wiesnekker, sales director for Damen's Benelux region.

Therefore the Fugro Frontier, which is aiming to work across a number of various African markets, has a slightly differ-



*Survey vessel Fugro Frontier.*

ent deck layout to her sisters including a small daughter craft, Damen explained. This will be utilized as a survey vessel where areas of shallow water would prevent a larger craft from entering. Damen said that another vessel for Fugro is presently under construction in Brazil.

## Maersk subsea vessels to use new-design Huisman cranes

Huisman has signed a contract to supply COSCO (Dalian) Shipyard with four 441-ton Rope Luffing Knuckle Boom Cranes and two 110-ton Knuckle Boom Cranes. The equipment is for two new Maersk Supply Service subsea support vessels. The first vessels, Marin Teknikk design MT 6027, are scheduled for delivery in the 2016 fourth quarter.

Huisman said its new patented crane is designed for subsea installations in increasingly deeper water and offshore construction in severe weather conditions. The active heave compensated (AHC) cranes combine the benefits of a normal rope luffing crane and a traditional knuckle boom crane, the company added. As such it offers a low overall construction weight, high lifting height, and large capacity at outreach.

The contract contains an optional scope for two 400-metric cranes for two additional vessels.

## Jindal takes delivery of second Lamprell jack-up drilling rig

Lamprell has delivered its second newbuild LeTourneau Super 116E (enhanced) Class drilling jack-up to Singapore-based Dev Drilling, a subsidiary of D.P. Jindal Group. The fabricator signed the contract for the Jindal Pioneer in January 2013. Later that year it delivered the Jindal Star, which is operating on the Mumbai High oil field offshore western India for ONGC.

Jindal Pioneer was officially named during a ceremony last month at Lamprell's Hamriyah facility in the UAE. This is the twelfth Super 116E jack-up that the company has delivered to various clients over the past seven years. It is currently building seven new jack-ups at Hamriyah.



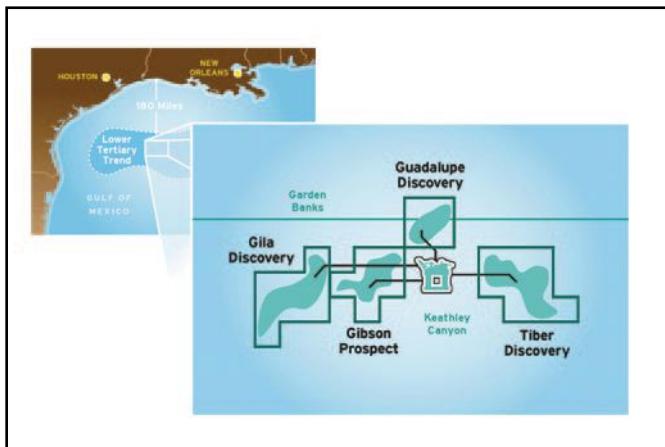
*Vroon's VOS Primrose supply vessel.*

## Producers to study leases in GoM's Keathley Canyon

Chevron USA, Inc. said it will work with BP Exploration and Production Inc. and ConocoPhillips Co. to explore and appraise 24 jointly-held offshore leases in the northwest portion of Keathley Canyon in the deepwater Gulf of Mexico. Chevron will be the operator.

"We will work with our co-owners to evaluate how to develop these leases, along with our recently announced discovery at Guadalupe," said Jay Johnson, senior vice president of Chevron's upstream operations.

The transaction encompasses the Tiber and Gila discoveries, and the Gibson exploratory prospect. Chevron recently acquired an interest in Tiber and Gila from BP. Chevron, BP and ConocoPhillips already held interests in the Gibson prospect.



The scope of the collaboration between Chevron, BP and ConocoPhillips includes further exploration and appraisal of these leases as well as evaluating the potential of a centralized production facility, which would provide improved capital efficiency, similar to Chevron's Jack-St. Malo project. Chevron, BP and ConocoPhillips also plan to work together to achieve efficiencies in schedule, realize cost savings, and optimize the use of human resources.

"By collaborating across several prospects and discoveries, and incorporating the technologies and experience of the three companies, we expect to develop these fields in the most cost effective way and shorten the time to final investment decision and first production," said Jeff Shellebarger, president, Chevron North America Exploration and Production Co.

The recently-announced discovery at Guadalupe, located adjacent to Keathley Canyon, could also be developed by utilizing the centralized production facility. Chevron, BP, and Venari, the Guadalupe co-owners, will evaluate this possibility during the upcoming appraisal phase of that discovery.

## Wintershall increases volumes at Maria off Norway

Wintershall has raised its estimate of recoverable resources from the Maria field in the Norwegian Sea by 40 mmboe to around 180 mmboe, following a series of laboratory tests and studies and model calculations. Maria is one of the three largest prospective development projects on the Norwegian continental shelf. Wintershall is looking to produce the field via two seabed templates, with production tied back to Statoil's Kristin semi-submersible platform, 12.4 mi to the west and also to Statoil's Heidrun and Åsgard B production platforms. Maria is due to begin production in 2018.



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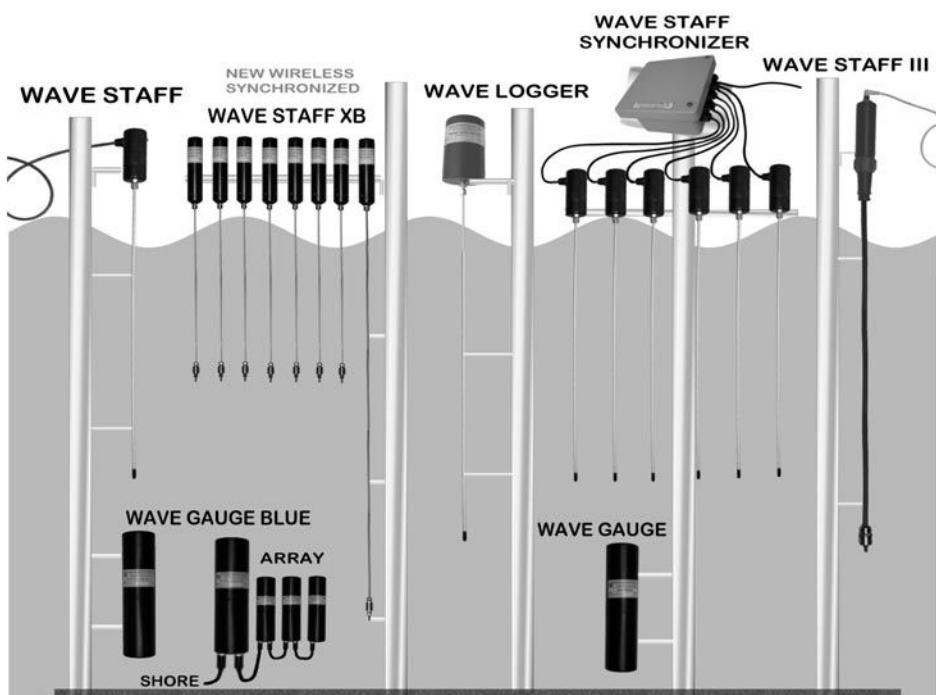
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## Norway opens 34 blocks in Barents Sea to bids in 23rd licensing round

The Norwegian Ministry of Petroleum and Energy has made available 57 blocks and partial blocks under Norway's 23rd licensing round. These comprise 34 blocks in the newly opened southeastern Barents Sea (the formerly disputed area toward Russia), 20 blocks in other parts of the Barents Sea, and three blocks in the Norwegian Sea. Forty oil companies had nominated a total of 160 blocks and part-blocks by deadline.

"The interest in exploration in the Barents Sea has increased significantly following the exciting discoveries in recent years: 7324/8-1 (Wisting), 7120/3-1 (Gohta) and 7220/11-1 (Alta)," said Sissel Eriksen, exploration director at the Norwegian Petroleum Directorate (NPD).

"By initiating petroleum activity in the southeastern Barents Sea we reach yet another milestone for Norwegian petroleum activities," said Tord Lien, the Minister of Petroleum and Energy.

"For the first time since 1994, we will explore an entirely new area on the Norwegian shelf. This will generate unique possibilities for value creation, growth and employment opportunities, particularly for northern Norway."

However, the Ministry has imposed time restrictions for exploration drilling on the blocks on offer to safeguard environmental assets along the actual-observed ice edge where the ice is located at any given time.

"The framework ensures that no petroleum activities can start along the ice edge during this parliamentary term," Lien said.

## Government awards 10 offshore licenses in Croatia's first bid round

Croatia's government has awarded 10 licenses for exploration and development of hydrocarbons in the Adriatic Sea, under the country's first licensing round. Six companies submitted bids for a total of 15 exploration areas.

Marathon Oil, in partnership with OMV, secured a license for seven exploration blocks, namely North Adriatic 8, Central Adriatic 10, Central Adriatic 11, Central Adriatic 22, Central Adriatic 23, South Adriatic 27, and South Adriatic 28.

ENI and Rockhopper subsidiary Medoilgas, which already work together offshore eastern Italy, gained license Central Adriatic 9 block in relatively shallow water in the prolific Northern Adriatic gas province. The concession includes the discovered Ksenija accumu-

lation and the Klaudija prospect.

According to Rockhopper, the work program will likely comprise seismic acquisition, processing, and re-processing during the first three-year exploration phase, followed by drilling of a well in the second phase if the partners elect to proceed. Croatian company INA-Industrija naftne d.d. was awarded a license for blocks South Adriatic 25 and South Adriatic 26.

The government estimates the value of the cumulative investment plans at \$621 million, adding that \$15.5 million will be paid directly to the state budget after contracts are negotiated and signed.

## Trio wins undeveloped West Teal Block 21/24b in UK North Sea

Britain's government has awarded a further block to PA Resources and partners First Oil and Gas and Dyas UK under the UK's 28th Seaward Licensing Round. Block 21/24b in the UK central North Sea contains the undeveloped West Teal oil discovery, with further prospectivity. The partners' bid included a contingent well in the initial four-year term of the license term. The block is said to complement two tracts awarded earlier.



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## No buyer for Octabuoy platform means construction must stop

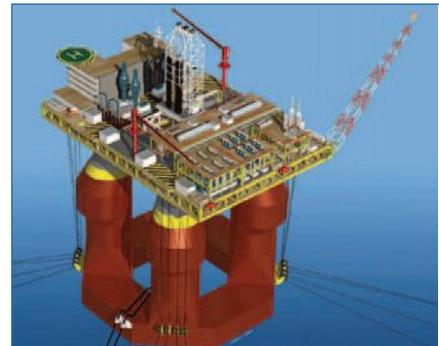
China's COSCO Nantong shipyard has scrapped the construction of the unconventional Octabuoy offshore production platform because it was unable to find a buyer. In 2008, the company secured a contract to build the platform hull and the topside for ATP Oil & Gas' UK subsidiary. U.S.-based ATP Oil & Gas in 2012 filed for bankruptcy.

That meant that the shipyard needed to find another buyer for the Moss Maritime-designed unit, which had originally been planned to be used for the development of the Cheviot field in the UK North Sea.

Petroleum Equity, a private equity firm focused on the upstream oil and gas market, last year bought ATP UK from its U.S. parent company ATP Oil & Gas Corp for \$133 million.

On that occasion, Bernhard Schmidt, a founding partner at Petroleum Equity and former head of exploration and production at Wintershall, said: "As part of the restructuring, the expensive and overdue Octabuoy development concept for the Cheviot field has been shelved."

He added that the most likely devel-



*Octabuoy falls victim to oil prices.*

opment solution for Cheviot would be a conventional FPSO.

In a recent statement, COSCO said that while it has been making efforts to find a buyer for the Octabuoy and several potential buyers had previously expressed interest, COSCO Nantong has so far not entered into any agreement for the sale.

"The steep fall in crude oil prices over recent months has had an adverse impact on the global offshore marine industry. This has made it even more difficult to secure a buyer for the Octabuoy as industry players have cut back even further on new orders.

"This difficulty is compounded by the

specialized design of the Octabuoy and the substantive investment in the customized equipment that is required to continue the project.

"In light of the above, a decision has now been made by the management of COSCO Nantong to discontinue the project and this is expected to result in a one-off charge of approximately (U.S.\$72 million) for the company for the financial year ended 31 December 2014," COSCO explained.

## Enbridge plans new GoM pipeline to Hess' Stampede development

Enbridge Inc. said it plans to build, own, and operate a crude oil pipeline in the Gulf of Mexico to connect Hess Corp.'s planned Stampede development to an existing third-party pipeline system. The lateral pipeline is expected to cost \$130 million and to be operational in 2018. The Stampede development was previously sanctioned by Hess and its project co-owners in October 2014.

Approximately 16 mi long and 18 in. in diameter, the Stampede lateral will originate in Green Canyon Block 468, 220 mi southwest of New Orleans in 3,500 ft of water at the planned location, according to the company.

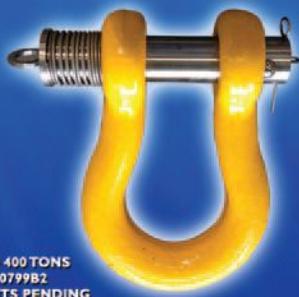
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## CNOOC's new South China Sea gas discovery has 240 ft of pay

CNOOC Ltd. has made a mid-to-large deepwater natural gas discovery at Lingshui 25-1. The structure is in northeast Ledong Sag in the Qiongdongnan basin of the South China Sea, with an average water depth of about 3,215 ft.

The discovery well was drilled and completed at a depth of about 13,123 ft and encountered the oil and gas pay zone with a total thickness of about 240 ft. The well tested at 35.6 mmcf per day of natural gas and 395 bbl per day of oil.

Lingshui 25-1 follows Lingshui 17-2. The new discovery has not only opened up a new exploration chapter in deepwater area of the northern South China Sea, but also further proven the good exploration prospects in deepwater area of C basin, CNOOC said.

## Petrobras proves more deepwater oil in Brazil's Sergipe-Alagoas basin

Petrobras has confirmed a second oil find in the Fanfan area in the deepwater Sergipe-Alagoas basin offshore Brazil.

Last August the company reported an initial discovery with well 9-SES-188D in the BM-SEAL-11 concession in Block SEAL-M-426. It encountered 37-40 degrees API light oil and with good porosity conditions in the turbidite reservoirs. The well subsequently proved another light oil accumulation in a deeper-lying reservoir.

The location is 66 mi offshore Aracaju, 3.5 mi from the initial discovery in the block announced last August, in a water depth of 8,176 ft. Petrobras operates in partnership with IBV-BRASIL.

## Production starts at Sakhalin-1 project's Arkutun-Dagi oil field

Oil production has started at the Sakhalin-1 project's Arkutun-Dagi field, located off the northeast coast of Sakhalin Island in the Russian Far East. The field, which is located around 25 km from the northeastern shore of the Sakhalin island in the sea of Okhotsk, will bring total daily production at Sakhalin-1 to more than 200,000 bbl.

Peak daily production from the Arkutun-Dagi field is estimated to reach 90,000 bbl. The other two fields, Chayvo and Odoptu, commenced production in 2005 and 2010 respectively. Production from the Arkutun-Dagi field will be routed via the existing Chayvo onshore processing facility, Sakhalin Island.

ExxonMobil subsidiary Exxon Neftegas operates the Sakhalin-1 consortium with a 30% stake. Sakhalin Oil and Gas Development and affiliates of Rosneft, RN-Astra hold 30% and 8.5%

stakes, while Sakhalinmorneftegas-Shelf and ONGC Videsh hold 11.5% and 20% interests, respectively.

## DNO reports oil shows from Jawhara appraisal well offshore Tunisia

Drilling has concluded on the Jawhara-3 well in Tunisia's Sfax offshore exploration permit, according to operator DNO. The well was drilled vertically drilled to a total depth of 7,168 ft. It encountered water in the targeted section of the Douleb and Bireno fractured car-

bonates formations, while two secondary objectives had oil shows.

DNO and partners Petrogas E&P Tunisia, Eurogas Internal, and Atlas Petroleum Exploration Worldwide will analyze logging and testing results to reassess the Jawhara field's oil-in-place estimates. Petrogas agreed to acquire a 35% interest in the permit last November with terms that included reimbursing DNO for prior expenditures. The deal remains subject to approval by the Tunisian authorities.

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## Aker gets engineering contract award for Johan Sverdrup field

On behalf of the Johan Sverdrup partnership, Statoil is to sign a detail engineering contract for the Johan Sverdrup development with Aker Solutions. Worth U.S.\$590 million the contract includes engineering and procurement management (EPma) until the scheduled production start in 2019.

The contract includes engineering and procurement management for the riser and processing platform topsides for the Johan Sverdrup field, phase one, in addition to hook-up work and gangways for the entire field.

Aker Solutions has so far been responsible for the front-end engineering of all four platforms that constitute the field center, a contract signed at the end of 2013.



"Together we have formed the basis for a seamless transition to detail engineering which will ensure a cost-effective progress plan," said Arne Sigve Nylund, Statoil's executive vice president for development and production Norway.

At plateau, he added, the production from this field will account for 25% of the combined production on the Norwegian continental shelf.

"This is an important contract for the project, and our expectations for the implementation are high," said Margareth Øvrum, Statoil's executive vice president for technology, projects and drilling. "As the EPma supplier Aker Solutions gets a key role in the Johan Sverdrup project, and is thus an important contributor to a successful project. We look forward to a close and good partnership."

The contract award was conditional on an investment decision for the Johan Sverdrup development in February 2015, and was subject to the approval of the Plan for Development and Operation for the field in Parliament in 2015.

### Premier to submit plan for Vette offshore Norway

Premier Oil said front-end engineering and design is nearing completion for the Vette (ex-Bream) field project in the Norwegian North Sea.

The company was expected to submit a plan of development to the Norwegian Petroleum Directorate. It remained in negotiations with key contractors about costs, with a formal sanction decision required later this year.

West of Shetland in the UK, the tank, jacket, and topsides facilities were installed last year at the Premier-operated Solan field. However, hookup and commissioning of the facilities have been impacted by bad weather conditions this winter.

Premier is targeting first oil this spring, although timing will depend on progress of the commissioning program. Once both producer wells are onstream, production is expected to reach a

peak of around 24,000 bbl per day. This year the company plans to drill six offshore exploration wells, including Anoa Deep offshore Indonesia in the second quarter, four potentially high-impact wells off the Falkland Islands, and the Myrhauk well on the Mandal High play offshore Norway.

### Indonesia sanctions Lengo gas project offshore Java

Indonesia's government has approved KrisEnergy's development plan for the Lengo gas field in the Bulu production sharing contract (PSC) offshore East Java.

The operator can now pursue formal negotiations for gas sales agreements with potential buyers.

Bulu extends over 269 sq mi in three separate areas – Bulu A, Bulu B, and Bulu C – in the East Java basin in water depths of 164-197 ft. Lengo, in the Bulu A area, will be produced via four development wells and an unmanned wellhead platform, with a 20-in, 40-mi subsea pipeline transporting the gas directly to shore. KrisEnergy expects production to begin around 24 months after the partners declare a final investment decision, building eventually to 70 mmcfd per day.

The acreage is adjacent to the company's East Muriah PSC, which contains the East Lengo gas discovery. A successful outcome from a planned appraisal well could lead to development of East Lengo via a single-well tieback to the Lengo facilities.

### Total brings West Franklin Phase 2 onstream in UK

Total has started gas and condensate production from the West Franklin Phase 2 project in the Central Graben area of the UK central North Sea. The facilities will supply 40,000 boe per day to the Elgin-Franklin offshore complex.

West Franklin Phase 2 will develop 85 mmboe of reserves. The project includes drilling three new production wells and the addition of two new installations, the West Franklin wellhead platform and the Elgin B platform, which will be also used to drill new wells on Elgin.

The location is roughly 149 mi east of Aberdeen. West Franklin was discovered by Total in 2003 and Phase 1 production started in 2007 with two wells drilled from the Franklin platform. Total operates Elgin-Franklin, including West Franklin, in partnership with Eni, BG, E.ON, ExxonMobil, Chevron, Summit, and Dyas.

### Seaway installs four topsides for Pemex in the Gulf

Seaway Heavy Lifting has installed four topsides and one jacket in the Gulf of Mexico for Protexa-Pemex. Three of the topsides were lifted into place in one week using the Oleg Strashnov crane vessel, says Seaway.

Out of a string of jackets and topsides in the Gulf of Mexico the last topside was installed on January 28 at the Bay of Campeche project. The last three topsides weights were 2,241 tons, 3,086 tons, and 3,450 tons. The jacket weighed 1,576 tons. The first topside, installed this past December weighed 1,984 tons. Seaway Heavy Lifting is a Subsea 7 joint venture.

### Cape Three Points off Ghana development to proceed

Eni, Vitol, and Ghana National Petroleum Corp. (GNPC), along with the President of the Republic of Ghana John Dramani Mahama and the Minister of Petroleum Emmanuel Armah-Kofi Buah, have signed an agreement to proceed with the Offshore Cape Three Points project in Ghana. First oil is expected in 2017, first gas in 2018, and peak production of 80,000 boe per day in 2019. The OCTP integrated project is a deep offshore development about 37 mi offshore Ghana. It comprises oil and non-associated gas fields and will access around 1.45 tcf of gas and 500 mmbbl of oil in place. Eni is operator with a 47.22% stake.

## InterMoor completes Juniper mooring, foundation installation

InterMoor has successfully completed a mooring and foundation installation campaign for bpTT's Juniper gas project offshore Trinidad and Tobago. This is the largest foundation installation campaign offshore Trinidad and Tobago to date.

InterMoor provided engineering and design services to identify the most reliable and cost-effective mooring solution and performed configuration studies as part of the mooring analysis.

The company designed and fabricated eight piles (4 ft in diameter by 128 ft long) at its facility in Morgan City, Louisiana, and provided offshore project management services for the mooring preset campaign. This included installing the driven piles using H-Links and 1,000 ft of ground chain per leg from the Boa Deep C construction vessel.

Trinidad restricts boat-to-boat transfers, so transporting the piles offshore using a single boat presented a challenge. However, InterMoor was able to complete the installation with the eight piles and additional equipment on the vessel's deck. The Juniper project was carried out in a water depth of 330 ft, with strong water currents.

## Byford Dolphin scheduled for upgrades and survey

Dolphin Drilling Ltd. has awarded Harland and Wolff a contract for the dry docking and renewal-special periodic survey of the Byford Dolphin MODU.

Following on the completion of its sister rig the Blackford Dolphin in 2014, the Byford project was expected to start in early 2015.

The Aker-H3 design semi-submersible drilling rig will have several modifications and upgrades including the fabrication and addition of two new columns and four buoyancy boxes for stability and deck load improvements, fitting of a new larger BOP requiring underdeck stiffening and the fabrication and installation of a new BOP control house, and installation of new drillstring handling equipment.

The project also includes several standard renewal and maintenance work such as repairs, renewals and refurbishment of pipework, steelwork, anodes, drilling equipment, electrical systems, propulsion machinery and accommodation areas.

Harland and Wolff began a three-month period of pre-fabrication, where new steel sections were to be constructed in advance of the rig arrival.

The rig has suffered some serious accidents over the years, most notably an explosive decompression in 1983 that killed five workers and badly injured one. In 2009, it was contracted for three years to BP.



*Byford Dolphin*

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Ocean News & Technology

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## ABS okays in principle Hyundai's new drillship design

ABS has awarded approval in principle (AIP) for Hyundai Heavy Industries' next-generation HD12000 heavy-duty, wide-beam drillship design. ABS reviewed the concept design and associated configurations interfacing with the drilling equipment and systems that will be installed on board the drillship.

The drillship, which can accommodate a 20,000-psi BOP system, has been designed in compliance with the ABS Guide for the Classification of Drilling Systems (CDS Guide) and other applicable ABS Rules and industry standards.

The HD12000 drillship will be capable of operating in 12,000 ft water depth with a drilling depth to 40,000 ft. Featuring an innovative hull form, the design based on HHI's proprietary technology includes enhanced dynamic positioning (DP-3) capability through reduced hull resistance and thruster interaction, improved motion performance in maximum roll angle, and reduced wave resistance at field transit conditions.

## Offshore laboratories speed up spill response time

New Industries, Inc. has delivered two laboratories and two operational modules to CSA Ocean Sciences, Inc. The mobile laboratories, outfitted with oil spill water monitoring equipment, instrumentation, and supplies, are designed to minimize response time for marine environmental operations and enable rapid mobilization of required equipment to an oil spill incident.

New Industries is an industry frontrunner in the development and manufacture of state-of-the-art service modules that provide laboratory, storage, and operational space for offshore use. The modules are certified structurally to Det Norske Veritas (DNV) 2.7-1 standards, the most stringent in the world, as well as American Bureau of Shipping (ABS) container safety standards, ensuring the highest quality in offshore safety and handling.

The mobilization-ready modules, commonly referred to as "vans" or "cabins," are manufactured at the New Industries facility in Morgan City, Louisiana. In addition to meeting DNV and ABS container safety standards, the modules are A60 fire rated and have been outfitted with a fire and general alarm system that complies with the latest U.S. Coast Guard standards.

Due to the potential hazards posed by a laboratory environment, New Industries supplemented customary module construction with the inclusion of loss of oxygen sensors and the assurance of proper air changes for personnel in order to maximize safety.

"This was an exciting and challenging project to take on," said New Industries Project Manager John Flores. "It's comforting to know we provided CSA with more than just standard laboratories and operational vans. We provided them with units they can feel safe in while operating in harsh environments offshore."

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## **Ice studied for liquefied natural gas (LNG) terminal in Cook Inlet**

ASL Environmental Sciences has a contract for a three-year metocean-ice study program in Cook Inlet, Alaska for the proposed Alaska LNG project terminal site. This turnkey metocean program includes program management, a PSO (protected species observer), vessel, HSE lead, data processing and analysis and engineering inputs.

During the summer and fall of 2014, ASL deployed three Ice Profiler/ADCP moorings close to Nikiski, on the Kenai Peninsula. Each mooring consisted of an Ice Profiler, ADCP, CT and OBS Turbidity and was mounted in ASL's designed bottom frame or a taut-line mooring.



*IceProfiler/ADCP*

Eight additional ADCP moorings have been deployed through the northern Cook Inlet from June through October 2014. Sediment transport and sand waves will be studied in this highly dynamic area (six knot currents). In later October the eight moorings were replaced with four custom-built heavy duty frames each containing an Ice Profiler, ADCP, CT and OBS. ASL will return to the sites biannually to download data and service the moorings.

## **University of Houston to lead offshore energy research center**

The University of Houston, Texas will lead a national research center for subsea engineering and other offshore energy development issues, including research and technology to improve the sustainable and safe development of oil and gas resources in the Gulf of Mexico.

The work is intended to reduce the risk of offshore accidents, oil spills, and other deepwater disasters. The Subsea Systems Institute, announced by the Texas Commission on Environmental Quality, will be funded by the RESTORE Act (Resources and Ecosystems Sustainability, Tourist Opportunities and Revived Economies of the Gulf Coast States), resulting from the 2010 Deepwater Horizon oil spill.

Outgoing Texas Gov. Rick Perry said that \$4 million in funds given to Texas by BP after the oil spill will be distributed to fund the center launched by the university, as well as a second center to be led by Texas A&M University-Corpus Christi.

The Institute will be led by UH, working in collaboration with Rice University, the Johnson Space Center, Texas Southern University, Houston Community College, and Lone Star College. It will serve as a liaison for industry and government regulators, testing and validating equipment, helping standard-setting institutions with neutral third-party knowledge and other best practices, developing new materials and science-based policies, as well as overseeing workforce training.

In addition to its technical work, the center will work on issues relating to training future subsea engineers.

"As the home of the nation's only subsea engineering program, the University of Houston is uniquely positioned to lead not just the United States but the world in developing educational programs to ensure future leaders are able to safely and efficiently discover and develop future sources of energy in the Gulf of Mexico and other deepwater regions," said Paula Myrick Short, vice president for academic affairs and provost at UH.

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### Petrobras saves through subsea deployment technique

At the end of last year, Petrobras deployed its first wet Christmas tree, or equipment installed on a wellhead, composed of a set of remotely operated valves designed to control the flow of fluids such as oil, water and natural gas from a reservoir to the surface using cables in the pre-salt area.

The main change involved was the use of a subsea equipment support vessel (SESV) to install the equipment rather than a traditional drilling ship. This resulted in a time saving of approximately 10 days, generating a gain of more than U.S.\$5 million. The well on which the Christmas tree was installed using this technique, called 7-SPH-2D-SP, is located in Sapinhoá field, in the pre-salt layer of Santos Basin, at a depth of 2,130 m, according to the company.

The operation, which involved lowering the Christmas tree into position and installing it on the wellhead using a suspended cable, was carried out from an SESV using a subsea equipment guidance system. This installation technique replaces the use of drilling ships, which are much more expensive to charter.

SESVs have some other major advantages in relation to traditional drilling ships. For example, using a drilling ship it takes around 10 hours to lower a riser 1,000 m in the open sea. Consequently, the time taken to lower a Christmas tree for installation on a well at a water depth of 2,300 m is 40 hours on average. SESVs, on the other hand, can perform the same maneuver in less than four hours, due to the cable launch and return speed, the company noted.

Petrobras had already used this technology at depths of up to 2,000 m. Following engineering studies, some adaptations were made to the SESV Skandi Santos, enabling the vessel to install equipment at depths of up to 2,300 m. After the success of this



*Christmas tree installer SESV Skandi Santos.*

first experience, the use of SESVs has now been proven as a viable option for the pre-salt layer, and this will help reduce operating costs and times.

### Cambla's game-changing technology to subsea market

Independent project services consultancy, Cambla, has announced the launch of its state of the art technology software, the Schedule Animation Tool (S.A.T), a first of its kind for the oil and gas industry. The multi-user software has been developed to meet the needs of businesses operating within the subsea sector, significantly reducing man-hours and offering substantial cost savings. S.A.T provides an accurate visual representation of a vessel's actual location and planned activities, making it easier to understand Simultaneous Operations (SIMOPs), construction sequences and plan global subsea and marine operations. Transforming the way that vessel schedules are analyzed before, during and after performing subsea operations, the software is capable of identifying occasions when vessels are required to be in close proximity to other vessels.

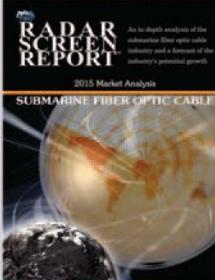
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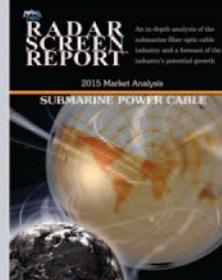
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## INDUSTRY DEALS

### Chevron acquires 30% exploration stake from Kosmos off Mauritania

Chevron Corp. wholly-owned subsidiary Chevron Mauritania Exploration Ltd. has reached an agreement to acquire a 30% non-operated working interest in blocks C8, C12 and C13 offshore Mauritania from Kosmos Energy. The transaction is subject to the approval of Mauritania's government.

Blocks C8, C12 and C13 cover a contiguous area of approximately 6.6 million gross acres in water depths ranging between 5,249 ft and 9,842 ft.

Under the agreement, Kosmos Energy retains a 60% interest and remains the operator. Societe Mauritanienne des Hydrocarbures et de Patrimoine Minier (SMHPM), Mauritania's national oil company, will continue to have a 10% interest. Following any commercial discovery after the exploration phase, Chevron will become the operator maintaining a 30% working interest.

### McDermott, GE launch offshore field development consulting firm

McDermott International, Inc. and GE Oil & Gas launched IO Oil & Gas Consulting, an independent venture designed "to transform" front-end offshore field development. Unlike other consulting firms in the market today, IO will consider the full field as one system and have the technical insight to develop every aspect of the front-end solution, according to a press release.

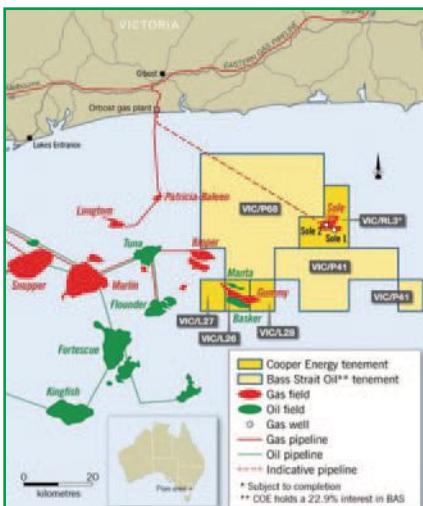
It's said to offer a new consulting model that leverages the breadth of the contractor community knowledge base end-to-end in a way that will allow clients to buy a holistic service from one integrated and unified service provider.

"The IO holistic offering is an innovative approach that leverages the experience of two leading contractors, which can remove the inefficiencies and interfaces between the major components of field development that have historically increased risks, uncertainty and costs for oil and gas operators," said David Dickson, McDermott's president and chief executive officer.

### Cooper Energy takes 50% interest in offshore permit, onshore plant

Cooper Energy has agreed to acquire a 50% interest from Santos in the VIC/RL3 permit offshore southeast Australia and the associated onshore Orbost gas plant.

Completion of the \$27.5-million transaction is subject to regulatory approval and finalization/approval of pre-



## Fugro's subsea services in the spotlight with new ingenuity initiative

The importance of having a variety of capabilities in subsea services is the focus of a new campaign by Dutch geo-services company Fugro. Every two weeks throughout the remainder of 2015, Fugro Subsea will spotlight a different challenge faced by companies that develop, install and operate seabed assets such as wind turbine foundations, pipelines and platforms. Addressing issues of logistics, efficiency, safety and the environment, Fugro's 'Subsea Ingenuity' initiative will identify familiar and not-so-familiar problems faced by the offshore industry and show how Fugro Subsea's solutions are addressing these issues around the world. Rolling out the campaign, Director of Fugro Subsea, Steve Thomson, acknowledged the diverse capabilities required to deliver effective solutions. "Monitoring, inspecting and conducting often complex repairs at depths of up to 3,000 m calls for technical and engineering ingenuity. We want to demonstrate how our significant breadth and depth of capabilities allows us to develop and deliver solutions to specific problems," he said. Over the coming months, Fugro will use industry conferences and exhibitions, together with a variety of online and offline media to unveil a new subsea problem and solution every two weeks. Employees and customers are encouraged to identify their own examples of Fugro's vast range of subsea solutions, and a dedicated web page - [www.fugro.com/problem-solved](http://www.fugro.com/problem-solved) - will capture each example and track the campaign as it evolves. In raising the profile of subsea activities, constraints and methodologies around the world, Fugro aims to create a comprehensive overview of its global capability.

## Ashtead Technology wins contract

Ashtead Technology has secured a new contract with Fugro to be a preferred supplier of subsea rental equipment and associated services to all its operating companies around the world. The award comes as the Aberdeen head-quartered business, which is the only global, independent provider of subsea electronic and survey equipment rental, sales and services, launches its 30th anniversary, marking three decades of subsea technical excellence. In the new two year agreement, Ashtead Technology will rent subsea equipment, including underwater positioning, subsea inspection, ROV survey sensors and tooling, metocean, hydrographic and geophysical and camera and video equipment, to FUGRO companies worldwide. Ashtead Technology, which made its biggest single annual investment of £10million in its fleet last year, is committed to further investment in the coming years. The company has marked three decades in business with a clear strategy for the future to further increase its range of services. Through the delivery of enhanced technical support services, increasing the capabilities of its teams across the business and investing in the latest technology to build the largest and most modern rental fleet in the subsea sector, Ashtead Technology is well on-track to achieving its ambitions and is committed to further improving and growing its range of value-added services which now include the supply of offshore personnel, equipment sales, complete asset management, calibration, repair and maintenance, custom engineering, cable moulding and training through the recently launched Ashtead Academy.

## Kongsberg underwater mapping group trains future hydrographers in Japan

Kongsberg Maritime has contributed to an extensive hydrography training course taking place in Japan. The company's Underwater Mapping group supported the international cooperation effort by supplying training on state-of-the-art Kongsberg Maritime shallow water multibeam survey equipment. The Japanese International Cooperation Agency (JICA) invited eight participants from Australasian countries as far afield as Kiribati, Myanmar and Papua New Guinea to participate in a seven months group training course in hydrographic survey. The course was run by the Japanese Coast Guard and successful participants are accredited with the IHO Cat B survey category certification. A GeoSwath Plus system was installed on a coastal fishing vessel in Tokyo Bay and the course participants trained in bathymetry data acquisition and processing in a one week session November 2014. The portable GeoSwath Plus system is used by hydrographic survey authorities worldwide to effectively map shallow water areas and produce nautical charts using small craft and vessels of opportunity.

## MMT reports results from ROV Surveyor Interceptor



MMT and Reach Subsea have recently finalized successful offshore tests on the new Surveyor Interceptor ROV from the vessel Edda Fonn and the results were above all expectations.

Ola Oskarsson, MMT's founder and project manager for Surveyor Interceptor ROV (SROV), explains in his report that the results from sea trials with the new SROV have been performed to collect background data for a specialized handling system, to test speed, maneuverability, stability, cable drag as well as data quality and density.

The result of the tests demonstrates that we have been able to reach the design speed of 8 knots. The vehicle produces high density data at 6 knots as well as 4 knots when operating close to pipe. The SROV, as a survey platform, is very stable and multibeam data has less than 0.4% noise.

"It is a very competent machine operating faster than WROV's and AUV's with unsurpassed accuracy and data quality. The vehicle is robust and can operate for long periods underwater thus being a tool to make pipeline surveys and inspections more effective" says Ola Oskarsson.

To view a video of the Surveyor Interceptor ROV, please visit <http://vimeo.com/118482947>.

## SMD to Supply KT Submarine with QT1000

SMD are delighted to announce a contract award with KT Submarine for a QT1000 high powered cable installation and maintenance ROV.

The relationship between SMD and KT Submarine began in 1998, with the supply of a standard cable plough. This was followed by the supply of an MD3XT Plough in 2012; the latest generation 500 kW jetting assisted, telecoms cable plough.

The combination of the MD3XT and this latest award illustrates a significant investment for KT Submarine as they continue to expand and become a key player in the submarine telecommunications and power cable markets.

The 2000 m rated ROV embraces the latest technologies in jet trenching and ROV design with 1000 hp of total installed power and 940 hp of variable jetting power. The QT1000 is capable of trenching rigid products, power cables and telecommunication cables up to three metres into the seabed.

With two of these vehicles already delivered and in service the QT1000 already has a proven presence in the trenching market, and positive client feedback indicates that the vehicle is the first choice for burial and protection of power cables.

The scope of work includes integration of a telescopic docking head onto an existing A-Frame on the M/V Miraero

## UNDERWATER INTERVENTION

with an option for installation on a new power cable installation vessel. The new launch and recovery equipment, including fast response winch and umbilical cable protection system will widen the M/V Miraero's operational weather window.

The trenching ROV will be delivered in Q3 2015, with installation and sea trials planned for Korea.

Paul Davison, Deputy MD at SMD commented, "KT have been a loyal customer for SMD and we are delighted our equipment is helping their business develop and expand. We are particularly pleased to convert KT to SMD jet trenching technology and help their growth into the power cable and oil & gas installation markets in Asia."

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

### World preview of latest generation Underwater Robot

The world's largest manufacturer of underwater ROVs launched its latest generation subsea robotic system at Subsea Expo in Aberdeen.

Forum Energy Technologies unveiled the XLX-C ROV – a highly capable work-class vehicle that is more compact than the highly successful XLX model but with similar capabilities. This new ROV has been two years in development and represents a multi-million pound investment by Forum.

Subsea 7 will be the first to use the XLX-C, having placed an order for six vehicles.

The XLX-C ROV is the latest evolution in Forum's XL series of underwater vehicles renowned for their performance and reliability. With a compact frame, the XLX-C has a generous payload, rationalised hydraulic systems and features a simplified electrical sub-system.

Graham Adair, vice-president sales and marketing at Forum said: "The XLX-C is truly a best-in-class system. Operator safety and environmental impact were fundamental drivers during the design process.

"The XLX-C is more compact so it takes up less deck space on-board a vessel. The hydraulic systems and electrical sub-systems have been rationalized while functionality and reliability have increased. We are very pleased that the XLX-C had its world premiere at Subsea Expo."

Manufactured at Forum's Kirbymoorside facility, the first of the six XLX-C ROVs ordered by Subsea 7 will be delivered in March.

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vehicles used for inspection, survey, intervention and deep water construction. From electric observation ROVs to large, hydraulic work-class vehicles, Forum manufactures the most well-known brands in the industry: Perry and Sub-Atlantic.

For more information, visit [www.f-e-t.com](http://www.f-e-t.com).

## Makai awarded small business grant for deep-drifting sonobuoys

Makai Ocean Engineering, Inc. has been awarded a competitive Small Business Innovation Research (SBIR) grant focused on developing a new deep-drifting sonobuoy. Sonobuoys consist of a surface float connected by a tether to a hydrophone array that is used to listen for submarines in the ocean. Sonobuoys with hydrophones that have a short/shallow tether have a limited listening range. The Navy wishes to develop sonobuoys that use longer tethers that extend 3 miles deep in order to increase the search coverage and detect targets located farther away. The desired operational life is 30+ days.

Makai competed for and won the Navy SBIR Phase 1 grant to analyze the

sonobuoy survivability under extreme ocean conditions, analyze dispersion of buoys due to ocean currents, identify suitable tether components, and perform parametric analyses of the new sonobuoy system. The ultimate goal of the project is to identify a configuration for a survivable, deep, drifting, persistent sonobuoy system that fits in the existing A-size form factor. Work on Phase 1 will be completed in mid-2015, when the project will be reviewed for a potential Phase 1 Option and/or a Phase 2 continuation of the project.

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

## MacArtney connectivity helps land UFO in the North Sea

Spearheaded by oceanographic experts from German Group Operations MBT GmbH, MacArtney has delivered the full connectivity package for the innovative UFO (Underwater Fish Observatory) which was recently deployed in the North Sea.

Realised through successful cooperation between the Hamburg based Thünen Institute of Sea Fisheries, the Department of Computer Science and

Electrical Engineering, the Development Center at the University of Applied Sciences in Kiel and MBT GmbH - the UFO project marks a noticeable leap forward in fish monitoring technology and methodology.

Basically, the UFO project provides an underwater observatory for the quantitative determination of fish stocks. Specifically, the UFO project is based on a rugged subsea lander boasting multiple oceanographic sensors and high-tech equipment. The purpose of this lander is to measure fish stocks by means of stationary monitoring with optical and acoustic technology. The novel approach provided by the UFO project is the purely observational and therefore non-invasive method applied. The successful application of this method is intended to significantly reduce cost and labour-intensive sampling catches.

The UFO system observes fish using a combination of high-resolution sonar system imagery and footage captured with extremely light-sensitive stereo installed underwater cameras, originally known from military applications. Together, these systems automatically register the passing fish, without having

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any influence on fish stocks in the area examined. Further sensor systems on board the UFO lander include a turbidity sensor, a current meter, conductivity and pressure sensors and a receiver for fish tag signals (fish tracking). The combination of the camera, sonar and sensor data provides comprehensive information about fish characteristics as well as the detection of fish stocks.

This way, the successful combination of this wide palette of sensors renders the UFO lander a very powerful and efficient oceanographic monitoring system. However, in order to ensure the best performance and results when it comes to interfacing the sensors and transmitting the gathered data back to the surface, the UFO project relies on a complete connectivity package from MacArtney. All sensors are interfaced by SubConn® connectors and MacArtney cable assemblies hooked up to a MacArtney NEXUS MK C multiplexer, which is, in turn, linked to topside via a modified MacArtney TrustLink chamber termination and a 500 metre armoured fibre optic signal and power cable.

Beyond providing signal and data infrastructure between sensors, topside and seabed, the MacArtney connectivity system also allows operators to trigger a pop-up recovery buoy to be deployed after the operational phase.

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

#### **Mojo and IKM secure EU Martec II grant for Hi Flo ROV development**

Mojo Maritime, leading British tidal energy marine operations specialists, and IKM Subsea, Norwegian ROV manufacturer and operator, have jointly secured a significant EU Horizon 2020 Grant to support a €1,200,000 R&D project to develop an ROV for use in high energy tidal sites, and capable of being operated from Mojo's ground breaking tidal energy vessel, the Hi Flo 4 (HF4).

A significant proportion of overall tidal energy costs are in array installa-

tion and, between 2012 and 2014, Mojo Maritime designed and developed the HF4, an offshore construction vessel (OCV) capable of lifting the heaviest envisaged tidal turbines and of dynamically positioning in up to 5.0 ms<sup>-1</sup> (10 knots) of tidal stream. These operational advantages will feed through into installation benefits, and Mojo's early analysis using Mermaid™ shows that in medium energy tidal sites HF4 can install tidal arrays in half the time and at a third of the cost of conventional methods. HF4 thus offers the possibility of levitated costs of energy for tidal arrays of £118 per MWh, already below that of many envisaged offshore wind projects, and Mojo is now working with its ship-owning partner, Hammonia Reedeira, to select a yard to build the first-of-class HF4, with an anticipated delivery date target of late 2016.

A next step in reducing tidal energy levitated costs is improving the performance of key installation tools, such as ROVs, which are used not only for turbine and foundation installation, but also for cable touch-down monitoring. Conventional ROVs are generally designed to operate in subsurface currents of up to 1.5 ms<sup>-1</sup> but, in Mojo's experience, many struggle above 1.0 ms<sup>-1</sup>. Conventional ROVs are thus a key operating limitation in the design (and cost) of the marine operations for tidal energy installations, where subsurface current speeds of 5.0 ms<sup>-1</sup>, are the norm in high energy tidal sites.

For this reason, Mojo and IKM joined forces in mid-2014 to bid for EU funding, from the Maritime Technologies (MARTEC II) call, to develop a HF ROV capable of being operated from the HF4 in high energy tidal sites. Mojo's extensive tidal technology installation background complements IKM's ROV manufacture and operations experience including the design, build and operation of modern WROVs, such as IKM's pictured Merlin WR200, intended to be the most efficient and reliable work class ROV on the market.

The two companies target is to develop a basic design for an HF ROV that is capable of then being manufactured according to a schedule that will align with the envisaged build schedule for the HF4 ship.

With its genesis in the tidal energy sector, the HF4 vessel is highly optimized and offers cost effective performance in wide range of applications, including offshore wind and oil&gas. It is therefore anticipated that the HF ROV will operate from both HF4 and OCV's in a range of offshore operations

and conditions. The companies were awarded the funding at the end of 2014, granted as part of the EU's Marine Technology II Horizon 2020 program, and administered by InnovateUK in the United Kingdom, and work began in earnest on the project on 5 January 2015 on the HF ROV, and will continue through to the end of 2015.

For more information, visit [www.mojomaritime.com](http://www.mojomaritime.com) or [www.ikm.com](http://www.ikm.com).

#### **Nuytco rely on SubConn® connectors for mission critical subsea connectivity**

Operating out of Vancouver (Canada), Nuytco Research is a world leader in the development and operation of undersea technology. The company designs, builds, and operates a range of atmospheric diving suits, submersibles, remotely operated vehicles, lights, thrusters and other specialty equipment for underwater applications. Nuytco and its sister company, Can-Dive Construction, hold more than forty years of experience working around the world.

Nuytco is best known for the 'DeepWorker' series of 2000 feet (600 metre) depth-rated microsubmersibles. One and two-person DeepWorker submersibles have been used all over the world for scientific, survey, construction, oilfield, tourism, film and photography work. Recent additions to the series include 3000 feet (950 metre) depth rated models.

The latest development introduced by Nuytco is the 'Exosuit' atmospheric diving system (ADS). Based on the technology behind the path-breaking 'ADS Newtsuit' developed and pioneered by Nuytco founder and President, Phil Nuytten, the Exosuit is a light-weight, one atmosphere, hard metal suit that allows divers to operate safely down to a depth of 1000 feet (300 metres) and yet still offer exceptional



dexterity and flexibility to perform delicate work. The Exosuit is able to maintain the cabin pressure of the surface and still allows the suit limbs to bend due to a unique rotary joint system.

Efficient and reliable connectivity solutions comprise a mission critical constituent of high-tech underwater systems. For this reason, SubConn bulkhead connectors and cable assemblies, in a variety of designs and body materials, are used extensively on both the Nuytco manned submersibles and on the Exosuit. On the latter, SubConn 13 pin Power and Ethernet and 8 pin Ethernet cable assemblies allow for the transmission of high definition video imagery from the suit back to vessel or shore based operators.

According to Nuytco Lead Engineering Technologist, Mike Reay, "the last eighteen months for the company have been all about the production of manned submersibles and Exosuits. So on-time and reliable delivery of mission critical system components is crucial in order for Nuytco to meet its customer imposed deadlines". Mike has been particularly impressed with just

how well SubConn products perform in high pressure subsea environments and applications. "Coupled with timely local and global MacArtney availability and customer support, the excellent performance and reliability of SubConn connectors make them an integral part of Nuytco's manned submersible product line" Mike Reay concludes.

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

### SeeByte and VideoRay successfully test software upgrades to sonar CoPilot system

SeeByte, a global leader in creating smart software for unmanned maritime systems, in collaboration with VideoRay have successfully developed and tested improvements to the Sonar CoPilot system. These software upgrades include improvements to the user interfaces and target tracking features. The system provides a comprehensive tool to allow for 1-click automated target inspections using a man-portable ROV.

The system has undergone successful testing in a variety of environments



to ensure its reliability. The VideoRay was flown in the FloWave Ocean tank, a new state-of-the-art facility located in Edinburgh University facilities, which aims to simulate ocean conditions. The system was also tested in-water at Dunbar pier off the North Sea and at the Wave Tank at Heriot-Watt University.

Tom Glebas, Vice President of Product Management, Technical Support & Documentation at VideoRay commented "These software upgrades have allowed us to provide our customers with an intuitive and user-friendly system which lets operators better focus on the task at hand".

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Sonar CoPilot by SeeByte for VideoRay Pro 4 ROVs incorporates the most advanced technology in software and imaging sonar to provide target tracking and automation. The software allows a target to be identified by the operator and the computer controls the thrusters to maneuver to within visual range. This solution simply takes a VideoRay Pro 4 ROV system with a BlueView P900 series imaging sonar and adds software which effectively allows click-and-go auto piloting as the vehicle is able to autonomously fly to a selected target.

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

#### **Sonardyne and Forum Subsea Rentals close major deal**

Sonardyne International Ltd., UK, has announced that Forum Subsea Rentals (FSR), a global provider of rental equipment to the offshore and marine industry, is to substantially increase its stock holding of Sonardyne 6G Long BaseLine (LBL) acoustic positioning technology. The order for an undisclosed sum was confirmed on the opening day of Subsea Expo 2015, Europe's largest annual subsea exhibition and conference, which is taking place from the 11th to the 13th of February in Aberdeen.

The consignment of 6G products due for delivery to FSR is extensive and includes high specification Compatt 6 transponders, RovNav 6 and Dunker 6 transceivers and iWand portable test and configuration devices. The new equipment will replace the previous fifth generation LBL equipment held by Forum Subsea Rentals in their Aberdeen rental pool and will be available to support oil and gas field development projects worldwide.

6G products incorporate Sonardyne's ultra-wideband width digital ranging and telemetry protocols that were developed to increase the precision, speed and reliability of subsea positioning operations. The technology has been proven to deliver significant operational savings, allowing all manner of survey and construction tasks to be completed in less time, and with less risk, than was previously possible. In 2014, Sonardyne 6G was awarded the Queen's Award for Enterprise in Innovation, the highest award a UK business can receive.

Commenting at Subsea Expo 2015, Richard Main, Forum's Global Asset Manager for Subsea Rentals said, "As one of the first rental companies to invest in 6G when it hit the market in

2010, Forum Subsea Rentals, and DPS before it, has continued to invest heavily in the product line. Last year we witnessed huge demand for 6G equipment, specifically instrumented Compatts. This investment will ensure that we are well placed to meet the needs of our customers across the globe and further reinforce Forum Subsea Rentals as one of the biggest suppliers of this technology in the rental market."

Dan Williams, Sales Manager at Sonardyne said, "6G continues to set the benchmark for construction survey operations. Its versatility, ease of use and reliability in the field ensures that it is always in high demand within the rental market. We're delighted to kick off our participation at Subsea Expo with such positive news."

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

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## Exelis completes sea acceptance testing of CMIS

Exelis recently completed a successful sea acceptance test of the company's latest Command Management Information System (CMIS), installed on board the Norwegian Coast Guard vessel KV Senja. The test formed part of a wide-ranging modernization effort of the ship's command and control (C2) capabilities that included integrating tactical data link, computer and display upgrades, a navigation distribution upgrade, and security enhancements. The CMIS incorporates leading-edge commercial components with sophisticated Exelis-developed operations software. The technology will be deployed aboard two Norwegian Coast Guard capital ships and one ice-strengthened vessel over the next two years. The Exelis CMIS design provides the performance and scalability needed to meet the requirements of a broad range of maritime platforms. The system can also be easily extended to support new sensor packages such as electronic support measures or advanced sonar systems. "Exelis has consistently demonstrated their commitment to provide innovative C2 solutions," said Kristian Demmo, senior commander in the Norwegian Defense Logistics Organization. "Their willingness and determination to work with both the Coast Guard and the Navy was instrumental in getting KV Senja modernized and back at sea for mission-critical operations." Exelis has been providing CMIS and data link solutions and support to the Norwegian Coast Guard and Navy for more than 20 years. Developed in close collaboration with the Norwegian Navy, the CMIS is an advanced shipboard C2 information system that provides users with the tools they need to enable success in a wide range of naval missions.

## Alphatron Marine appointed global partner for Hoox™

Alphatron Marine has been appointed as a global maritime partner for Hoox™ secured communications systems from Privatas. The far-reaching agreement will allow Alphatron Marine to offer the Hoox™ encrypted smartphone through its comprehensive worldwide sales and service network. In this ever-changing world where personal and corporate privacy is constantly subject to compromise, the Hoox™ encrypted smartphones from Privatas will allow all calls, emails and text messages to be completely secure. The Hoox™ has been awarded ANSSI certification and a listing on the NATO's list for secure communication devices. Perfectly suited security teams or owners of private jets or yachts, communications between all key personnel will remain with total discretion. With secure end-to-end exchange of information via voice, email and text messaging (SMS), and all data on the Hoox™ stored encrypted, it is virtually impossible to be hacked or cracked with the current state of technology. No matter what the privacy concerns, Hoox™ offers that peace of mind. Alphatron Marine will be able to offer personalized packages tailor made to appeal to discerning customers' needs, taking care of not just the airtime and Hoox™ smart phone, but also a 24/7 support network. It just takes one call to our service desk to get enlisted in the program, which is mandatory when using encryption systems. From that moment onwards, all the information over Hoox™ voice or data is immediately encrypted and not available for anybody else other than the Hoox™ smartphone being communicated with.

## Successful launch confirmed for Inmarsat-5 F2

Inmarsat announces the successful launch of its second Global Xpress (GX) satellite on board an International Launch Services (ILS) Proton Breeze M rocket from the Baikonur Cosmodrome in Kazakhstan on 1 February at 12:31 GMT. The Inmarsat-5 F2 (I-5 F2) satellite was correctly acquired by the Inmarsat Paumalu ground station at 18:10 GMT on 1 February, and launch provider ILS confirmed a successful spacecraft separation at 04:02hrs GMT on 2 February. Built by Boeing Satellite Systems International Inc. to a proven design (702HP), I-5 F2 is part of a US\$1.6 billion investment by Inmarsat into Global Xpress – the next generation of global mobile broadband communications. The fleet of high throughput satellites within the Global Xpress constellation will offer a unique combination of seamless global Ka-band coverage from a single operator, consistent higher performance, and the network reliability for which Inmarsat is renowned.

## Intellian achieves Inmarsat GX type approval



Intellian Technologies has been announced as one of the world's first manufacturers to receive type approval from the Inmarsat engineering team for the supply of two maritime terminals for the new Global Xpress® (GX) network.

Intellian has been working with Inmarsat for 3 years to develop both the 65cm Intellian GX60 and the larger 1m Intellian GX100 VSAT terminals. Inmarsat engineers type-approved both Intellian terminals after they successfully completed stringent live system tests at sea on the Inmarsat GX network.

Eric Sung CEO of Intellian, commented, "This is an important milestone in our company's progress. We have worked closely with Inmarsat to develop these revolutionary terminals which in conjunction with Inmarsat's GX network have been shown to provide true broadband with superfast throughput. Working alongside Inmarsat has ensured that we are among the world's first manufacturers to be able to offer fully approved and tested terminals for Inmarsat's groundbreaking GX service."

Announced earlier in 2014, the Intellian GX60 and GX100 include the all-new Intellian GX Below Deck Unit (BDU) which features a GX core module fully integrated within the system. Intellian GX terminals also feature Intellian's innovative and user-friendly One-Touch commissioning which dramatically reduces installation time.

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

## Marlink VSAT services chosen for complete Van Oord fleet

Marlink has been selected to provide high-end VSAT (Very Small Aperture Terminal) services for the fleet of the international dredging and offshore contractor Van Oord. The contract is expected to include 30 vessels being supported by Marlink's customized VSAT services by the end of 2015.

Marlink's VSAT services have provided voice and data connectivity services for 3 Van Oord vessels as from June 2013. The company is headquartered in Rotterdam and is a leading contractor for dredging, marine engineering and offshore energy projects. Their positive experience of Marlink's service provision and support was a key factor in selecting Marlink's VSAT services for its fleet. The flexibility of the VSAT service is unique, as it provides real Committed Information Rates (CIR) and short notice temporary bandwidth increases on request.

The Marlink VSAT services will provide operational benefits for Van Oord clients requiring high-end connectivity services. This is especially important for the clients in the off-shore/oil & gas segments, many of which rely on advanced software and processes for safe, efficient and environmentally friendly operation. VSAT services will also benefit Van Oord, turning all of its vessels into remote offices with high communication QoS (Quality of Service) to ensure voice and internet adapts to how much bandwidth is available at any given time.

In its role as a Van Oord's communication partner, Marlink is providing a number of Value Added Services as part of the new contract, such as support for Van Oord to run its own VOIP services, making it possible for Van Oord to integrate the voice services onboard their vessels with their onshore voice service.

"Marlink VSAT services meet Van Oord's very specific connectivity requirements for all their specialised vessels. The difference now is that we work together as partners where any Van Oord's challenge is considered as our mutual challenge. We are proud to work strategically with Van Oord on any needs or development related to communication on board", said Ab Argam, Sales Manager Benelux, Marlink.

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

## Inmarsat launches open technology strategy

Open technology platforms have revolutionized the technology industry, increasing levels of innovation and opening up new opportunities for developers and businesses alike. As part of the development of the next generation of the global mobile satellite technology and applications, Inmarsat will harness this culture of innovation by opening up its platforms to developers to encourage new ideas that will change the way satellite communications are implemented on land, at sea and in the air.

The new open technology strategy, to be announced at the first Inmarsat Developer Conference (IDC), will give the growing Developer Community the freedom to utilize Inmarsat technologies to develop innovative and bespoke applications.

During the three-day event, over 300 software, hardware and application developers will have the opportunity to hear about Inmarsat's strategy – both long term and for the coming year – as well as meet other companies, developers and organizations from across the world that are already using Inmarsat's infrastructure to develop innovative business solutions. Delegates will also learn how to become an Inmarsat developer through the Certified Application Partner program.

Ian Kennedy of Cisco, a key strategic partner of Inmarsat, will deliver the keynote speech on "disruptive innovation in a hyper-connected future". In his speech Ian will describe a vision of a hyper-connected 2020, a future where sensors and actuators are clustered and organised as systems that change the way we live and work.

Inmarsat's verticals – Maritime, Enterprise, Aviation and Government – will feature heavily during the event, with experts from across each product market area highlighting the biggest growth areas for satellite communications within each specialist sector, helping developers to pinpoint the best ways to utilise Inmarsat's open technologies.

Michele Franci, Chief Technology Officer, Inmarsat, said, "We recognize the constant need for people and things to be connected regardless of time or location. We have been providing global mobile connectivity for decades and want to leverage this position to facilitate the development of new applications, enhancing the way in which people interact with

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our technologies. Our new open technology approach, based on building blocks made easily available, will allow both new and existing partners to take advantage of our cutting edge technology, particularly Global Xpress, as a platform on which to build bespoke applications in new areas. This is the first IDC we are holding and I personally look forward to welcoming new developers into our already impressive community."

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

## Airbus releases SkyFile Mail version 9

Airbus Defence and Space has released version 9 of its SkyFile Mail software specialized for maritime operations. The new version includes a range of new functions designed to simplify and complement on board IT and email administration to help shipping companies to operate smarter and more efficiently. It is available now to existing users as a free update.

With SkyFile Mail, the ship's Master can easily manage email administration, i.e. add/delete users and set quotas for crew members. Version 9 introduces the possibility to create business connectivity profiles for even less administration onboard. Mailbox settings including mail size limit, filters and dial-in methods when switching connectivity type can now be fully automated. Connectivity profiles per terminal type are set just once. The appropriate profile is then used, ensuring the most optimal settings based on whether MSS (Mobil Satellite Services), VSAT (Very Small Aperture Terminal) or WiFi is available for transmitting data.

Following the introduction of SkyFile Mail Anti-Virus over-the-air updates, the SkyFile Mail software itself and associated voyage management functions such as Electronic Notification of Arrival and Departure (eNOAD) forms can now also be updated over-the-air. As soon as a new SkyFile Mail version or SkyFile eNOAD is available a pop-up window informs the master about availability and size of the download. The Master can then decide if and when to install it. Once permission is given, updating and configuration is automatic. This process can replace updating by CD or USB and as only the updated part of the software is downloaded, the process is highly bandwidth efficient.

Data back-up is another new func-

tionality which only needs configuration once. The introduction of an enhanced version of Automatic File Transfer (AFT) from within the SkyFile Mail software itself is also new and available. This new feature gives users a secure and organised way to transfer files between ship and shore.

SkyFile Mail is also now capable of providing precise vessel position, speed and direction via various file formats. GPS co-ordinates are picked-up several times per hour and delivered to the shipping companies own tracking system. The new GPS Monitoring function is part of the Premium package and can also be ordered as a SkyFile Premium on demand service.

With Version 9, Premium functions previously only available as one package are now available as standalone features. In addition to the new GPS Monitoring, the Premium options are POP3/SMTP (includes Quarantine and long SMS), Terrestrial access, I4 notification including Push emails and Premium service technical support. Users can upgrade to the full SkyFile Premium package at any time.

"All new additions to SkyFile Mail are designed to support our strategy of simplifying and homogenising on board IT and email administration, which in turn helps owners to operate smarter and more efficiently," says Tore Morten Olsen, head of maritime satellite communications in Airbus Defence and Space. "With our flexible connectivity services, the XChange communications management platform and SkyFile Mail, in addition to our on board network monitoring partnership with Palantir, we continue to make life easier for both master and ICT personnel."

SkyFile Mail is today used onboard 25,000 ships worldwide with more than 40,000 mariners using the software on a daily bases.

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

## Harley Marine enhances communications capabilities

Harley Marine Services recently installed an 8 by 6 meter industrial grade LCD screen in the communication center at the new Harley and Lela Franco Maritime Center in Seattle, WA. This state-of-the-art media wall provides a direct portal for Harley Marine's consolidated dispatch team to access real-time technology systems from both shore and vessel operations. The communication center is specifically designed to keep

our dispatch team better informed with unprecedented access to information. Collected data is transformed into straightforward, easy to read visual aids, giving dispatchers and management an overview of the entire operation.

Powered by a modern super-computer, the system is capable of displaying up to 16 different video inputs and over 1,000 different screen configurations. This cutting edge technology springboards Harley Marine to the forefront of the industry with its comprehensive, real-time communication platform.

Harley Marine Services will utilize the system in several different ways, a few being:

- Viewing the HMS vessel command center that blends both commonly available AIS data like tug and barge positions alongside relevant operational information like crewing, product onboard, and safety compliance.

- The Harley Marine scheduling view shows the dispatch and operations team a comprehensive overview of all current and upcoming vessel schedules and provides a single system-look across the global HMS fleet.

- Normal, low resolution AIS feeds are now brought to life with high-definition views of port operations.

- Real-time security cameras across the HMS offices and progressively across the HMS fleet are viewable from a single console.

The media wall is designed to accommodate ship-to-shore information available today as well as expand and change with HMS' growing operational capacities. The media wall represents Harley Marine's commitment to being at the forefront of safety management, technology and operational efficiency. Given the screens capabilities today and in the future, the wall will ultimately prove to be essential in both incident management and day-to-day operations.

Harley Marine Services is a leading provider of marine transportation services in the United States, with operations along the West Coast (including Alaska), New York Harbor and the U.S. Gulf Coast.

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

## Speedcast delivers cutting-edge communications solution

SpeedCast International Limited has been awarded a multi-year communications contract from Gearbulk, a specialist in high-quality shipping services. The new Ku-band satellite service will provide unrivaled, high-performance

broadband connectivity for mission-critical and social communications on 50 cargo vessels across the world, taking the fleets' communication capabilities into a new era of connectivity.

Gearbulk operates one of the world's largest fleet of open-hatch gantry craned vessels and open-hatch jib craned vessels, transporting unitized cargoes such as forest products, non-ferrous metals and steel. Following a detailed and thorough tender process, which included all of the key global maritime satellite service providers, SpeedCast was selected by Gearbulk for its ability to deliver a cutting-edge, globally accessible communications solution with a proven reliability and operational deployment record.

The SpeedCast satellite services will be used aboard 50 cargo vessels and several tankers to support Gearbulk's transition into the global broadband VSAT communications era. The vessels will benefit from enhanced operational and crew welfare communications, all delivered in a financially controllable package by SpeedCast. With over 40 satellites within its network providing reliable and secure, Ku, C and Ka-band capacity, SpeedCast's network delivers unparalleled global connectivity options.

"We required a comprehensive communications solution onboard our vessels to support our mission of delivering flawless, efficient and customer-focused operations," said Dan Rooney, Fleet Support Systems Manager at Gearbulk. "SpeedCast has the demonstrated expertise, and the global infrastructure and support to deliver a solution that will meet our needs today, and for many years to come."

"With thousands of port calls to over 70 countries, Gearbulk's business is complex, so an effective and reliable communications system will strengthen the operational efficiency of its vessels. Designing, installing, operating and maintaining a highly reliable and tailor-made communications solution is at the heart of our capabilities," said Pierre-Jean Beylier, CEO of SpeedCast. "Looking ahead, sustainability is a key priority for Gearbulk and with our satellite communications we can help the company concentrate on shipping for the future."

This announcement follows a number of recent customer wins for SpeedCast in the maritime sector, as SpeedCast further strengthens its growth momentum in this important industry segment.

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

## Coast Guard completes 2nd leg of cellular trials at sea

The Coast Guard collaborated with Palm Beach County, Florida, to complete the second leg of three in trials focused on ensuring mariners in distress have the ability to contact emergency dispatch in January.

The Coast Guard Research and Development Center (USCG-RDC) is exploring existing technologies, like maritime operated smart phones with Next Generation 9-1-1, to get faster and more accurate location data for Coast Guard search-and-rescue operations.

The USCG-RDC is examining these technologies with state and county NG 9-1-1 public safety answering point centers to securely share two-way maritime distress calls with Coast Guard's information technology system. After eight months, the five-organization collaboration led by USCG-RDC resulted in a highly successful demonstration.

Dozens of cellular test calls were sent from multiple wireless provider networks from the USCG, USCG Auxiliary and the Florida Fish and Wildlife Conservation Commission vessels. Tests evaluated integrating these calls into Coast Guard's Rescue 21 Coastal System for search-and-rescue response.

Although these tests were successful, mariners are highly encouraged not to depend on their cellular devices and to continue using VHF radios to communicate distresses to first responders.

The final leg of the project is scheduled to conclude with one final collaboration with the state of Maine in July 2015.

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

## Inmarsat announces enhanced maritime product roadmap

Inmarsat announced its enhanced maritime product roadmap consisting of two new services designed specifically for Inmarsat's Global Xpress network: Fleet Xpress and FleetBroadband Xtra.

Fleet Xpress is a hybrid solution, which will operate over the Global Xpress Ka-band network, and incorporate Inmarsat's L-band FleetBroadband service as back-up, providing a truly global and advanced connectivity service for maritime customers anywhere in the world. The solution will be available when Global Xpress (GX) commences global commercial services early in the second half of 2015. Fleet Xpress will be an Inmarsat managed service sold through the company's experienced GX Value Added Resellers (VARs).

To allow maritime customers to benefit from high-speed broadband connectivity between now and global commercial introduction of the Global Xpress network, Inmarsat has announced an additional service, FleetBroadband Xtra. This service will overlay capacity from the first Global Xpress satellite (Inmarsat-5 F1), which is already operational, in the Indian Ocean region, with the existing L-band connectivity. As the next two Global Xpress satellites are launched, covering the Atlantic Ocean and Pacific Ocean regions, FleetBroadband Xtra will expand to include the additional Ka-band capacity as each satellite enters commercial service.

"Our services are designed to provide seamless mobility and high-speed broadband for ship to shore communications," said Peter Broadhurst, Vice President Service Development, Inmarsat Maritime. "With the introduction of FleetBroadband Xtra and, when our GX constellation is complete, Fleet Xpress, we are providing customers with consistently higher bandwidth communications which will increase operational efficiency whilst also providing exclusive access to specialist maritime applications and content through our Inmarsat Gateway."

Once I-5 F2 and I-5 F3 are fully operational, expected to be early in the second half of 2015, FleetBroadband Xtra will be phased out. All customers will have a transitional period as they migrate onto the Fleet Xpress service.

Ronald Spithout, President of Inmarsat Maritime said: "We are proud to bring the benefits of Inmarsat's GX network to the maritime market. Based on great test results so far using Inmarsat-5 F1, our partners and customers have requested new maritime services to allow them to take advantage of the high-speed Ka-band alongside their existing L-band services. The FleetBroadband Xtra service will allow customers to do just that and, as coverage becomes available with the launch of our next two GX satellites, they will be able to take advantage until they ultimately progress to the full Fleet Xpress service when GX is commercially introduced on a global scale."

Both services support the type approved antennas from Inmarsat's manufacturer partners in both 60cm and 1m sizes.

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

## National Grid, Anbaric join forces on Green Line

National Grid and Anbaric Transmission announced they are joining forces as Green Line Infrastructure Alliance. The alliance reflects the companies' shared vision to help transform New England's energy landscape while driving a healthy regional local economy and environment. Together they will deliver a combination of two highly complementary sources of clean, abundant and affordable energy – onshore wind and hydropower – to the region. The alliance will work to develop large-scale, high-voltage direct-current (HVDC) transmission projects that combine wind and hydropower to address regional energy issues that are critical to policymakers and energy consumers such as rising prices, declining fuel diversity and the need for more renewable energy. Green Line Infrastructure Alliance initially will develop the Maine Green Line – a hybrid land-and-sea HVDC project that will initially transmit 1,000 MW (expandable to 2,000 MW) of wind from northern Maine, firmed up by imports of hydropower from eastern Canada, via a submarine cable to Massachusetts. Maine-based constructor Cianbro Development Corporation also will be part of this project. The companies are meeting with key stakeholders to discuss their commitment to combined wind and hydropower as a way to meet regional energy needs and to develop more detailed project plans.

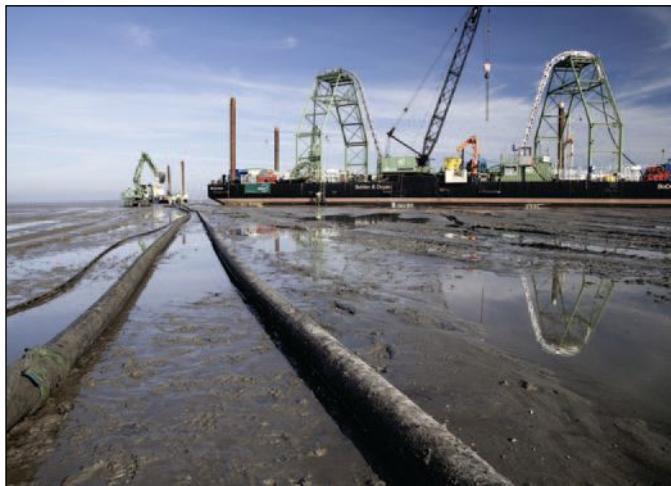
## Main One promotes ICT for O&G cost efficiency, announces new link

In light of the collapse in global crude prices, and attendant effects on Nigeria's economy, the Chief Executive Officer of MainOne, Ms. Funke Opeke, has advocated ICT for improved cost efficiency in Nigeria. She stated this in her presentation "Enabling Oil and Gas production with Advanced Connectivity Solutions" at the Lagos Oil Club Q & A Session for January, 2015. Speaking on the importance of ICT for the Oil and Gas industry, Opeke said, "The role of ICT is particularly critical in driving down costs and optimizing operational efficiency in this period of falling oil prices. Oil and Gas companies need to adopt ICT solutions to maintain profitability." The MainOne CEO added that global oil prices have expedited necessary fiscal belt-tightening measures. With the Nigerian Government reviewing 6000 ongoing projects and proposing doubling of Value Added Tax from 5% to 10%, she urged oil and gas companies to follow suit and leverage available ICT infrastructure in Nigeria. Opeke also disclosed plans to extend the MainOne subsea cable to Cameroon with a branch to the oil producing Delta Region. She emphasized how this will significantly improve connectivity services in the South-South region of Nigeria, enabling oil companies in this region to access the internet more effectively and also interconnect with their home offices. She specifically noted the importance of this project for enhanced connectivity of digital oil fields to MainOne's premier Tier III Data Center, MDX-i.

## Nexans' umbilicals installed in the Gulf of Mexico

At a water depth of 2,100 meters, the Chevron-operated Jack and St. Malo oil and gas fields are the deepest installation to date for Nexans' innovative power umbilicals that integrate HV power supply and umbilical functions within a single cable cross-section. The Jack and St. Malo fields are located within 25 miles (40 km) of each other approximately 280 miles (450 km) south of New Orleans, Louisiana. The project comprises of three subsea centers tied back to a hub production facility with a capacity of 170,000 barrels of oil and 42.5 million cubic feet of natural gas per day. Nexans' specialized cable and umbilical manufacturing facilities in Halden, Norway, have designed and manufactured the 42 km power umbilical for the two fields in two separate lengths. The power umbilical is an innovative design pioneered by Nexans that integrates the functions of power cables and umbilicals in a single cable, enabling a high-voltage (HV) supply to be provided for deepwater projects. A power umbilical includes a number of steel tubes as well as fiber optic elements and signal cables for control and monitoring purposes. By eliminating the need to transport and install a separate power cable, and a control umbilical, the power umbilical significantly reduces transportation and installation costs.

## Siemens hands over North Sea grid connection



Siemens has handed over the first North Sea grid connection, BorWin2, to its customer TenneT. The German-Dutch transmission grid operator has accepted the project following successful completion of test runs by Siemens. The grid connection is therefore now in commercial operation. The offshore platform of the BorWin2 grid connection is located around 100 km off the German coast – northwest of the island of Borkum, after which the project was named. With this grid connection it is now possible to transmit 800 MW of clean electricity from wind power, enough to supply around one million German households.

The BorWin2 offshore platform is 51 m wide, 72 m long, 25 m high and, with its baseframe, weighs around 16,000 metric tons. Siemens installed the platform at this 39-m deep North Sea location back in April 2014. The Global Tech 1 wind farm, with its 80 wind turbines, is linked to BorWin2. Fifty percent of the grid connection capacity of BorWin2 is available for connection of a second wind farm.

The network operator TenneT contracted the consortium consisting of Siemens and the Italian cable specialist Prysmian for the BorWin2 offshore grid connection in summer 2010. Siemens is now implementing five North Sea grid connection projects for TenneT: HelWin1 (576 MW) and HelWin2 (690 MW) off of Helgoland, BorWin2 (800 MW) and BorWin3 (900 MW) off of Borkum and SylWin1 (864 MW) off of Sylt.

The next three grid connections, Sylwin1, HelWin1 and HelWin2, are nearly completed and are scheduled to take up commercial operation in the first half of 2015. Siemens received its latest order for a grid connection in the North Sea, BorWin3, in a consortium with Petrofac in the spring of 2014. Commissioning of this fifth grid connection from Siemens is scheduled for 2019. The grid connections implemented by Siemens for TenneT will have a total transmission capacity of more than 3.8 GW, providing electricity from offshore wind power to supply around five million households.

Thanks to the Siemens high-voltage direct-current (HVDC) technology, transmission losses for each grid connection, including cable losses, are less than four percent. This Siemens HVDC technology is installed on the offshore platforms and in the land-based converter stations. The wind-based electricity is transmitted as alternating current to the converter platform, transformed into direct current and fed to the mainland via a

subsea cable. The land-based station converts the direct current back into alternating current and feeds the electricity into the extra-high voltage grid. HVDC is the only efficient transmission solution for cable lengths of more than 80 km.

The HVDC Plus technology used by Siemens is less complex and extremely compact, making it predestined for use in sea-based applications. In contrast to classic HVDC technology used in a vast majority of land links, systems equipped with HVDC Plus feature self-stabilization. As fluctuations in the grid must always be reckoned with for wind-based power generation, grid stability and reliability is enhanced considerably through the use of the Siemens HVDC Plus technology.

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

#### **ABB sets world record in HVDC Light voltage level**

ABB successfully commissioned a high-voltage direct current (HVDC) link between Norway and Denmark to increase availability of renewable hydroelectric and wind power in the region's electricity grid.

At 500 kV, the Skagerrak 4 link sets a new record in transmission voltage using Voltage Source Converters (VSC). The converters rely on semiconductors to convert electricity from high-voltage alternating current to direct current and back, while offering controllability and compact design.

VSC links are increasingly being deployed in underground and subsea applications such as integration of renewable energies from land-based and offshore wind farms, mainland power supply to islands and offshore oil and gas platforms, city center in-feeds and cross-border interconnections.

This HVDC Light link reinforces the grid owned by Norwegian transmission system operator Statnett and Denmark's Energinet.dk and helps balance loads between Norway's hydroelectric-based system and Denmark's wind- and thermal-based generation.

ABB has delivered all four of the Skagerrak system's links, with Skagerrak 1 and 2 in the 1970s, Skagerrak 3 in 1993 and now this latest project. The system spans 240 km and crosses the North Sea's Skagerrak Strait, providing 1,700 MW of transmission capacity.

For Skagerrak 4, ABB delivered two 700-MW Voltage Source Converter stations based on the company's HVDC

Light® technology. The new link operates in bipolar mode with the Skagerrak 3 link that uses classic Line Commutated Converter HVDC technology.

This is the first time the two technologies have been connected in such a bipole arrangement. ABB's advanced MACH control system was used to master the different ways power reversal is handled between the two technologies.

In the future, use of 500 kb VSC

converters opens up new possibilities, especially when combined with ABB's recently launched extruded 525 kV HVDC cable. The world record cable, which doubles power flow and extends range to enable greater integration of distant renewables, reflects ABB's commitment to leading the development and use of HVDC technology.

ABB pioneered HVDC transmission technology 60 years ago and has been

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awarded about 100 HVDC projects, representing a total installed capacity of more than 120,000 MW and accounting for about half of the global installed base. ABB developed the HVDC technology further in the 1990s and named it HVDC Light®.

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

## First Subsea provides connectors for floating wind farm

Subsea connector specialist, First Subsea, has supplied cable connectors for the second phase of the Fukushima Floating Offshore Wind Farm Demonstration, offshore Japan. Two First Subsea connectors have been used to connect 22 kV cables to the facility's floating 66 kV power substation, in preparation for the arrival of a 7 MW wind turbine in Phase 3, and another floating wind turbine in Phase 4 of the Fukushima project.

In Phase 1, two First Subsea cable connectors were used to connect 22 kV cable to a 2 MW wind turbine and the substation, and a third cable connector for a 66 kV cable connection to the floating substation. The new 22 kV cable connections link the substation to pre-installed subsea cable joints close to the eventual positioning of the wind turbines in Phases 3 and 4.

The First Subsea cable connector has a self-activating, ball and taper mechanism allowing both diver-less and ROV-less deployment offshore. The male connectors are guided into receptacles on the wind turbine and substation and, once engaged, cannot be released until the load has been removed. A simple disengage mechanism allows the connector to be disconnected and recovered for re-use. The cable connection enables significant savings in vessel time, and greater installation flexibility to cope with changes in weather conditions offshore.

The Fukushima floating pilot wind

farm project, which is headed up by The Ministry of Economy, Trade and Industry in Japan, will lay the foundation for the world's largest offshore wind development off the coast of the Fukushima Prefecture.

The project, sponsored by the Ministry of Economy, Trade and Industry, is being developed by a consortium comprised of Marubeni (project integrator), the University of Tokyo (technical advisor), Mitsubishi, Mitsubishi Heavy Industries, Japan Marine United, Mitsui Engineering & Shipbuilding, Nippon Steel & Sumitomo Metal Corporation, Hitachi, Furukawa Electric, Shimizu, and Mizuho Information & Research.

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

## Prysmian wins contract for new Dardanelles link

Prysmian Group has been awarded a contract worth a total of around € 64 million by the Turkish utility TEIAS (Turkish Electricity Transmission Corporation, one of the largest among the ENTSO-E members) for the design, supply, installation and commissioning of the second high voltage submarine power cable link between Europe and Asia across the Dardanelles strait in Turkey.

This second link across the Dardanelles will complement the interconnection that Prysmian Group is currently executing along the same route in these days under the first contract awarded by TEIAS in September 2012, and will play a strategic role in order to complete Turkey's power transmission grid and to ensure reliable and cost-effective power flow from the Asian generation sites to the country's European main consumption centers including the congested Istanbul area and closing the ring around the Marmara Sea.

"This project reconfirms Prysmian's undisputed leadership in the submarine cable systems industry as a truly reliable and dedicated partner in the execution of turn-key complex projects" stated Massimo Battaini, Prysmian Group's Senior Vice President Energy Projects. "The first Dardanelles link, which is currently carried out successfully by the Group, represents a milestone in the cables industry as it is one of the first AC 380 kV submarine cable links using XLPE insulated cables, in the world. This second award by TEIAS is a tangible sign of the Group's strong and acknowledged reputation and of the trust of the market", he added.

The link comprises a double AC

power transmission circuit of approximately 4 km with a rating of 1000 MW for each circuit between the substations of Lapseki (Asian side) and Sütlüce (European side) across the Dardanelles strait. The 380 kV XLPE insulated cables will be manufactured in Prysmian's production unit based in Pikkala (Finland), one of the Group's excellence centers for the production of submarine cables and installation will be performed with available resources. Commissioning is scheduled for the first half of 2016.

Prysmian is worldwide leader in the sector of submarine power cables with leading position as supplier of high-voltage underground cables in Turkey. The Group can also rely on a long-standing track record in the development of submarine cable milestones projects in the entire Mediterranean region, such as Italy-Greece, Spain-Morocco I and II, Sardinia-Italian Peninsula (SA.PE.I.), Iberian Peninsula-Mallorca (Romulo) and, of course the first Dardanelles interconnection in Turkey.

With the goal of continuing to meet the needs of high potential growth markets for the development of new infrastructure, the Group is moving ahead with a major investment program to expand production capabilities in its plants based in Finland (Pikkala) and Italy (Arco Felice). Furthermore, the Group has strengthened its portfolio of connections to mainland grids and inter-array connections between turbines, also thanks to cables manufactured at the Drammen plant in Norway and to installation services provided by the cable laying ship Cable Enterprise, which will soon be leaving docks after extensive upgrade from dumb barge to self-propelled DP2 vessel.

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

## Damen delivers cable layer in only 15 months

The 22nd of December saw the delivery by Damen of an innovative new DOC 8500 cable laying vessel to international offshore contractor Van Oord. Named Nexus, the 126-meter vessel is intended for the installation of electricity cables for offshore wind farms. Van Oord is currently making preparations for the Gemini offshore wind farm which will be constructed 55 km to the north of Schiermonnikoog, one of the Dutch Wadden Islands, and the cable-laying vessel will be deployed initially at that site.

Despite encountering some challenges during the build process, the



DOC 8500 was delivered several days ahead of the specified completion date and the entire design, engineering and build took just 15 months. This was particularly satisfying as additional work was also added to the specification after the contract was signed, with additional cable-laying infrastructure being installed prior to handover.

The success of the project was down to a number of factors. The level of cooperation between Van Oord and Damen was highly intensive from the outset, with very short lines of communications between the decision makers on both sides.

An additional factor was the ability of Damen to draw on the expertise on a number of companies within the Damen Shipyards group. Six Damen companies in Romania, Ukraine and the Netherlands contributed engineering and project management expertise; the vessel itself was constructed at Damen Shipyards Galati. The ability to access and coordinate such a diverse range of resources gives Damen a significant advantage when it comes to complex projects such as the DOC 8500.

The Nexus is now at Damen Shiprepair Vlissingen, where Van Oord is building and installing the additional cable laying equipment.

The Damen Offshore Carrier (DOC) concept was first introduced by Damen in 2012 as a cost-effective smaller heavy transport, offshore installation and ro-ro platform suitable for multiple markets. With its spacious and flush open deck the design is highly adaptable and its modular construction means that it can switch quickly and economically between roles.

Jaap de Jong, Van Oord's Staff Director Ship Management Department, commented, "By working closely together, Damen and Van Oord managed to build a fit-for-purpose and economical vessel in a very short period of time. The Nexus is an asset to Van Oord's fleet and its offshore wind projects business unit."

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

## Åsgard station to be powered by Nexans umbilicals

The world's first subsea gas compression station will begin operation at the Åsgard gas field next year after Nexans delivered sophisticated power umbilicals to Statoil, which manages the field. The innovative umbilicals delivered by Nexans combine power, fiber-optic and hydraulic lines in a single cross-section and will be used to transmit power, signals and fluid to compressors and pumps, and for communication between Åsgard A, Åsgard B and the subsea compression station.

Midgard and Mikkeli, two seabed satellites tied back to Åsgard, are experiencing decreasing reservoir pressure that is needed to transport the well flows back to the semi-submersible platform Åsgard B. The compressor station will help to boost the well flow and increase recovery from these fields. Future deployment of subsea gas compression systems have large potential to improve the recovery rate and extend the lifetime of other subsea oil and gas fields, also.

The station represents a groundbreaking development in subsea technology and a major step towards a complete subsea factory. The development of this technology may also be an important factor in the future development of oil and gas fields in deep water and remote field areas.

For the Åsgard project as a whole, Nexans has designed, developed, qualified and delivered a total of over 180 km of static and dynamic power umbilicals, power cables and fiber-optic cables to Statoil. Nexans has also supplied essential peripheral equipment for the dynamic power umbilicals and one of the largest splicing modules ever installed offshore anywhere in the world.

Dirk Steinbrink, Senior Executive Vice President High Voltage & Underwater Cable Business Group said: "Nexans' technology and expertise will be crucial in ensuring that Statoil is able to maximize the full potential of the Åsgard gas field. The subsea compression station is an important first step on the road to a full subsea factory, and Nexans's contribution to the deployment of the technology will mean that the lives of oil and gas fields around the world are extended for many years to come."

The delivery was recently successfully installed and tested. Nexans' factories in Rognan, Namsos and Halden have all manufactured cables for the project. Other project partners at Åsgard include Petoro, Eni Norge, Total E&P Norge and ExxonMobil.

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

## New technique doubles the distance of optical fiber communications

A new way to process fiber optic signals has been demonstrated by University College London (UCL) researchers that could double the distance at which data travels error-free through transatlantic submarine cables.

The new method has the potential to reduce the costs of long-distance optical fiber communications as signals wouldn't need to be electronically boosted on their journey, which is important when the cables are buried underground or at the bottom of the ocean.

As the technique can correct the transmitted data if they are corrupted or distorted on the journey, it could also help to increase the useful capacity of fibers. This is done right at the end of the link, at the receiver, without having to introduce new components within the link itself. Increasing capacity in this way is important as optical fibers carry 99% of all data and demand is rising with increased use of the Internet, which can't be matched by the fibers' current capacity, and changing the receivers is far cheaper and easier than re-laying cables, UCL said in a statement.

To cope with this increased demand, more information is being sent using the existing fiber infrastructure with different frequencies of light creating the data signals. The large number of light signals being sent can interact with each other and distort, causing the data to be received with errors.

The study, published in Scientific Reports and sponsored by the EPSRC, reports a new way of improving the transmission distance, by undoing the interactions that occur between different optical channels as they travel side-by-side over an optical cable.

One of the biggest global challenges we face is how to maintain communications with demand for the Internet booming – overcoming the capacity limits of optical fibers cables is a large part of solving that problem.

Study author Dr. Robert Maher (UCL Electronic & Electrical Engineering), said, "By eliminating the interactions between the optical channels, we are able to double the distance signals can be transmitted error-free, from 3190km to 5890km, which is the largest increase ever reported for this system architecture. The challenge is to devise a technique to simultaneously capture a group of optical channels, known as a super-channel, with a single receiver. This allows us to undo the distortion by sending the data channels back on a virtual digital journey at the same time."

The researchers used a 16QAM super-channel made of a set of frequencies which could be coded using amplitude, phase and frequency to create a high-capacity optical signal. The super-channel was then detected using a high-speed super-receiver and new signal processing techniques developed by the team enabled the reception of all the channels together and without error. The researchers will now test their new method on denser super-channels commonly used in digital cable TV (64QAM), cable modems (256QAM) and Ethernet connections (1024QAM).

Study author Professor Polina Bayvel (Electronic & Electrical Engineering) who is Professor of Optical Communications and Networks and Director of UNLOC, said, "We're excited to report such an important finding that will improve fiber optic communications. Our method greatly improves the efficiency of transmission of data – almost doubling the transmission distances that can be achieved, with the potential to make significant savings over current state-of-the art commercial systems. One of the biggest global challenges we face is how to maintain communications with demand for the Internet booming – overcoming the capacity limits of optical fibers cables is a large part of solving that problem."

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

## GCX moves into final stage of vendor selection for ICX cable

Global Cloud Xchange (GCX) announced the company has shortlisted three vendors for the construction of its India Cloud Xchange (ICX) subsea cable, which will deliver a direct Mumbai-Singapore route to bypass current outage prone terrestrial routes between Mumbai and Chennai.

Last June the company announced plans for the cable as part of its strategy to provide a direct subsea route to bridge an important gap in the emerging markets corridor and to meet soaring bandwidth demands of new cloud based applications and services.

"In the coming month we will finalize the vendor selection process and initiate process to construct the ICX cable which will integrate with our GCX global network infrastructure for direct connectivity to major business centers in Asia, Middle East, North America and Europe," said Bill Barney, Chief Executive Officer, Global Cloud Xchange.

Based on state-of-the-art 100G technology, the ICX cable will be a four fiber pair system with initial design capacity per fiber pair at 80 x 100G using next generation Coherent

Submarine Fiber. This new segment will deliver termination into the Middle East, Europe and to the US East Coast through interconnection with GCX's Falcon, Hawk and FA-1 systems.

The new ICX fiber system will run approximately 5,060 kilometers between Mumbai and Singapore, will also have a branch landing in Trivandrum and/or Chennai. This will support creation of a next generation IP and Cloud environment held together with a single AS number and connecting into Tier III+ data center facilities on the ground.

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

## Global Marine celebrates 20-year anniversary of SBSS

Global Marine Systems Limited and China Communication Services Corporation Limited, mark the 20th anniversary of their joint venture partnership, S. B. Submarine Systems Co., Ltd (SBSS), which was originally formed in Shanghai in January 1995.

The partnership was created to support the growing demands of the telecommunications market in Asia. With this accomplished, SBSS went on to establish a strong footing in both the oil & gas and offshore energy sectors in the region. Today, SBSS is recognized as China's leading installer of submarine cables, having played a key role in more than 90 of Asia's major telecommunications, oil & gas and power utility infrastructure projects.

Since SBSS's inauguration, Global Marine has worked closely with it at all levels to ensure its success. Together they currently support the maintenance of nearly 380,000km of globally installed telecommunications cable and this shared commitment to provide innovative subsea solutions has led to numerous joint installation projects.

Ian Douglas, CEO, Global Marine, said, "The twentieth anniversary of SBSS is a significant milestone and everyone at Global Marine should be proud of the achievements that our partnership with China Telecom and its subsequent affiliates has achieved. The company was created to support the growth of submarine telecommunications on the Chinese coast and has since become the leading player in Asia, installing over 41,000km of cable, and being entrusted to provide maintenance services to the majority of telecoms cable owners in the Asia-Pacific region."

"Working closely with Global Marine, the team at SBSS has pioneered developments such as deep-burial to protect our customers' cable from intensive fishing activities in the region and

has led the way in applying their expertise, engineering capabilities and resources in both oil and gas and the offshore power industries throughout the world," Douglas continued.

"I would like to take this opportunity to thank our joint venture partners for their support over the last twenty years and to applaud the management team of SBSS for their achievements. I am honored to have spent part of my career at SBSS and look forward to watching their continued growth and success," he concluded.

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

## Natixis announces closing of Seabras-1 financing

Seaborn Networks and Natixis announced the closing of the debt financing for Seabras-1, a new subsea fiber optic cable system between the commercial and financial centers of Brazil and the United States. Natixis acted as sole Structuring Bank, Underwriter, and Mandated Lead Arranger for the senior debt facilities. Given the involvement of the French export credit agency Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE), Natixis also acted as COFACE Agent for the transaction.

Seabras-1 was developed by Seaborn, with equity being provided by Partners Group, the global private markets investment manager, as announced in January 2015. Natixis also acted as exclusive Equity Advisor for the equity-raising process. On the debt side, Seaborn was advised by Portland Advisers.

The global amount of debt of approximately US\$270 million was provided on a fully-underwritten basis by Natixis. In its capacity as Structuring Bank and Mandated Lead Arranger, Natixis was instrumental in creating a structured and bankable solution to address the intricacies of subsea telecom development. In its role as COFACE Agent, Natixis guided the structuring and negotiating processes of the transaction in order to lock in the benefit of COFACE coverage for the senior lenders.

Seabras-1 will use next-generation coherent technology to deliver high-capacity and low latency telecommunications for one of the fastest-growing transoceanic routes in the world, offering point-to-point bandwidth and connectivity services between New York and São Paulo. Alcatel-Lucent Submarine Networks previously announced it commenced construction of Seabras-1 in September 2014.

# The Ocean News & Technology 2015 Unmanned Vehicles Buyers' Guide Has Arrived!

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The Seabras-1 cable network should become operational within the next two years and has already sold substantial capacity, including to Microsoft Corporation, which contracted with Seaborn in September 2014 to be a foundational customer on the subsea network. In addition, Tata Communications announced in January 2015 its investment for purchase of significant capacity on Seabras-1.

Larry Schwartz, Chairman and CEO of Seaborn, stated, "We are extremely pleased to have accomplished this important project milestone with the guidance and support of Natixis. Seabras-1 has certainly benefited from the breadth and depth of experience that each of the Natixis teams has brought to this pioneering set of transactions."

Olivier Delay, Managing Director and Head of Global Infrastructure & Projects, Americas at Natixis, said, "We are delighted to work with Seaborn and Partners Group in the development of Seabras-1, which will be a key project aimed at improving communications between North and South America. Natixis is excited to have provided innovative and collaborative solutions to close the debt financing, complementing our already-strong relationship with Seaborn through our role as Equity Advisor. We look forward to continuing to work with these world-class partners as Seabras-1 moves from construction to operation."

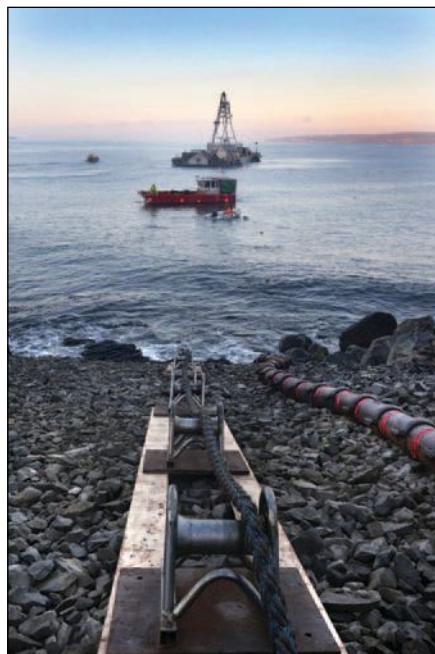
For more information, visit [www.seabornnetworks.com](http://www.seabornnetworks.com).

## Maritech International completes \$14.5 M turnkey subsea installation

Maritech International, a leading marine engineering support services company that provides subsea installations and marine works to the international oil and gas, telecommunications and power transmission industries, today announced that it has successfully completed a major subsea power cable installation in Newfoundland.

The USD\$14.5 million contract with Newfoundland Power Inc., which required Maritech to install 12km of subsea power cables spanning from Bell Island to Broad Cove, was delivered on time and within budget. Over four days, the two 6km cable segments were laid and secured on the rocky seabed in water depths of up to 135 metres, in just 22 hours.

To achieve this, Maritech provided a complete turnkey solution, featuring cable transportation, route survey and engineering, installation, post-lay protection and burial, as well as termination and jointing works.



"The new cable system, which has an expected service life in excess of 40 years, is set to completely eradicate the repeated power outages," said Byron Skaftouros, Projects & Development Director for Maritech. "With annual repairs to the previous power link to Bell Island hovering near USD\$1 million, thousands spent in repairs will be saved. We are extremely pleased to have made it possible for the aging cables to be replaced efficiently, without disrupting supply of electricity to Bell Island. By drawing upon our deep experience in every facet of subsea cable installation, from establishing an optimum subsea route for new cables through to installation and burial, we made certain that every step of the programme was executed properly and completed on schedule."

Replacing the submarine cable systems called for a multi-phase installation programme. To establish the best - and least costly - subsea cable route with the fewest obstacles across the rocky Newfoundland coastline, Maritech performed a turnkey marine route survey and route engineering. Once the route was established, data was forwarded to the cable manufacturer to produce the two 250ton, 25kV power cable segments and spares. Upon completion, they were transported from Greece to Newfoundland on Maritech's cable transportation vessel MV Trader.

In just two weeks, Maritech converted a "deck barge of opportunity" into a vessel with dynamic positioning and cable-laying capability by equipping it with a custom-designed modular cable-laying spread and portable azimuth DP-1 thrusters. With the MV

Trader transporting the cables, the team travelled on the installation barge to the site. After the barge passed a series of sea trials, the cables were loaded onto it, ready for installation.

Although Phase 1, involving shore-end landing operations at Broad Cove, was complicated by the rocky shallow waters that restricted vessel movements near the shoreline, this was quickly resolved. Maritech devised a pull-in operation using smaller support vessels to float the cable off the barge to shore at Broad Cove. Once landed, a tracked excavator pulled the cable along the shore-end route, using rollers and anchored diverters to ensure that the cable was accurately pulled along the design route. After landing and securing it, the cable was connected to a "dead man" anchor offshore to prepare for laying the north-south cable. Phase 2 began immediately thereafter, and was swiftly completed with the installation barge. While cable was laid on the surface, an ROV deployed from the barge monitored the cable's touchdown point on the seabed to make certain it was laid uniformly along the optimum route.

After cutting, sealing and abandoning the cable on floats near the Bell Island shore-end approach, smaller boats continued pulling in the cable in shallow water, while carefully managing the cable bight on floats. Eventually, the shore waiting line was connected to the waiting cable, putting the landfall support team in direct contact to begin the final pulling phase. Upon cable landing at the termination point onshore Bell Island, divers used GPS to rigorously check that the route was accurate and successfully aligned with RPL coordinates from the survey. They then removed the cable floats and commenced protection works. First, 1,000 m of protective articulated pipe cover was fitted on the cable, then the cable was clamped to the seabed and cement bags installed to stabilise it on the rocky seabed. Finally, divers used hand-jetting and air-lifting techniques to bury 150 m of cable to 1.5m top of cable.

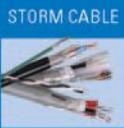
The operation in Newfoundland illustrates the type of comprehensive turnkey solutions offered by Maritech. Over time, Maritech has carried out numerous subsea installations for oil and gas operators, as well as for the telecommunications and power generating industries in over 92 countries. Recent operations associated with oil and gas facilities in Libya, Greece and Gabon were executed safely and efficiently, saving customers time and money.

For more information, visit [www.maritech.gr](http://www.maritech.gr).

# OFFSHORE STATS & DATA



**TELEDYNE**  
OIL & GAS



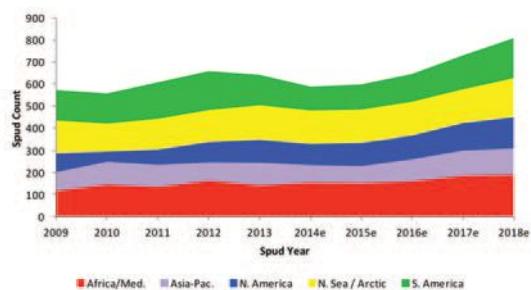
[www.teledyneoilandgas.com](http://www.teledyneoilandgas.com)

*Reliable power, communication, and sensing solutions for subsea environments.*

## Offshore At-A-Glance

### Quest Offshore Activity Report

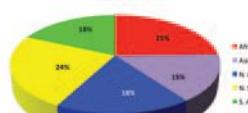
**Global Total Well Demand History and Forecast 2009-2018e**  
(Mean Case 6,421 spuds)



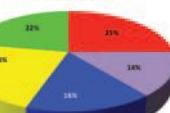
**Global Total Well Demand Forecast Only 2014e-2018e**  
(Mean Case 3,378 wells)

Total Well Demand	2014e	2015e	2016e	2017e	2018e	Total E&A	Total Dev
Africa/Med.	153	155	159	184	189	349	487
Asia-Pac.	81	78	101	116	131	219	278
N. America	96	106	106	123	140	211	318
N. Sea / Arctic	149	148	153	153	177	341	432
S. America	110	116	128	150	184	279	435
Other	589	599	627	732	811	1021	1057

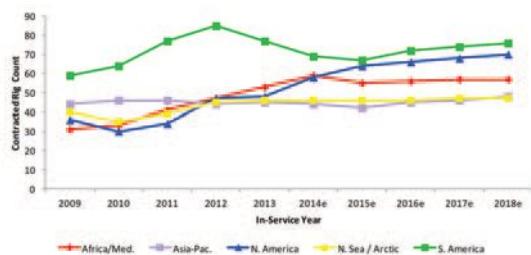
E&A Wells (1421)



Dev Wells (157)



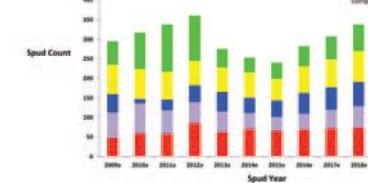
**Global Contracted Floating Rig Supply History and Forecast 2009-2018e**



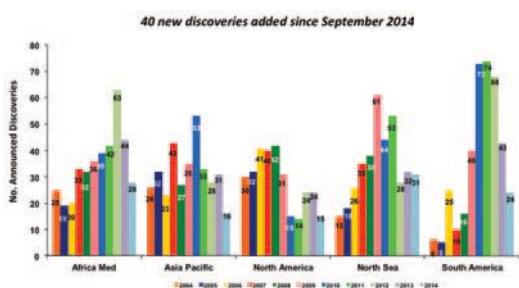
**Global Exploration & Appraisal Drilling 2009a-2018e (3,006 spuds)**

Region	2009a	2010a	2011a	2012a	2013a	2014a	2015a	2016a	2017a	2018e	2019-2020
Africa/Med.	20	20	42	40	62	60	60	60	60	60	60
Asia-Pac.	40	40	50	50	50	50	50	50	50	50	50
N. America	41	51	58	62	51	60	62	62	57	61	70
N. Sea / Arctic	76	76	71	62	63	63	64	66	72	79	84
S. America	60	60	127	118	87	78	61	51	60	65	72
Other	205	217	238	260	270	240	260	280	300	310	362

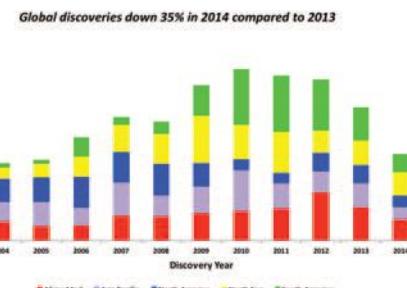
\*2014 decline in exploration drilling expected over the 5 year forecast period (2014-2018) compared to previous 5 year period (2009-2013).



**Discoveries by Hemisphere 2004-2014 (1801)**



**Discoveries by Year Announced 2004-2014 (1801)**



# Monthly Stock Figures & Composite Index

Industry Company Name	Symbol	Close(Mid) February	Close(Mid) January	Change	Change %	High 52 week	Low
<b>Diversified, Production Support and Equipment Companies</b>							
Baker Hughes, Inc.	BHI	64.59	55.40	9.19	16.6%	75.64	47.51
Cameron Intl. Corp.	CAM	47.59	43.03	4.56	10.6%	74.89	39.52
Drill-Quip, Inc.	DRQ	73.02	73.97	-0.95	-1.3%	116.53	68.09
Halliburton Company	HAL	44.42	38.61	5.81	15.0%	74.33	37.21
Tenaris SA	TS	30.23	27.46	2.77	10.1%	48.45	26.28
Newpark Resources, Inc.	NR	9.58	8.54	1.04	12.2%	13.60	8.07
Schlumberger Ltd.	SLB	88.10	79.76	8.34	10.5%	118.76	75.60
Superior Energy Services, Inc.	SPN	21.77	18.32	3.45	18.8%	37.05	16.70
Weatherford International, Inc.	WFT	12.38	10.12	2.26	22.3%	24.88	9.40
Deep Down, Inc.	DPDW	0.88	0.93	-0.05	-5.4%	2.10	0.61
FMC Technologies	FTI	42.03	39.42	2.61	6.6%	63.92	34.85
<b>Total Diversified, Production, Support and Equipment.....</b>	<b>434.59</b>	<b>395.56</b>	<b>39.03</b>	<b>9.9%</b>	<b>650.15</b>	<b>363.84</b>	
<b>Geophysical / Reservoir Management</b>							
Dawson Geophysical Company	DWSN	6.41	11.60	-5.19	-44.7%	22.14	5.70
Mitcham Industries, Inc.	MIND	6.89	5.63	1.26	22.4%	15.80	5.14
Compagnie Gnrale de Gophysique-Veritas	CGV	7.14	5.66	1.48	26.15%	17.55	5.31
<b>Total Geophysical / Reservoir Management.....</b>	<b>20.44</b>	<b>22.89</b>	<b>-2.45</b>	<b>-10.7%</b>	<b>55.49</b>	<b>16.15</b>	
<b>Offshore Drilling Companies</b>							
Atwood Oceanics, Inc.	ATW	34.15	28.38	5.77	20.3%	53.90	26.12
Diamond Offshore Drilling, Inc.	DO	35.86	31.34	4.52	14.4%	55.37	29.00
ENSCO International, Inc.	ESV	30.55	28.96	1.59	5.5%	55.89	25.88
Nabors Industries, Inc.	NBR	13.10	10.42	2.68	25.7%	30.24	9.91
Noble Drilling Corp.	NE	19.18	16.19	2.99	18.5%	30.29	14.47
Parker Drilling Company	PKD	3.53	2.64	0.89	33.7%	8.35	2.51
Rowan Companies, Inc.	RDC	24.22	21.57	2.65	12.3%	33.78	19.50
Transocean Offshore, Inc.	RIG	18.93	15.15	3.78	25.0%	46.12	14.50
<b>Total Offshore Drilling.....</b>	<b>179.52</b>	<b>154.65</b>	<b>24.87</b>	<b>16.1%</b>	<b>313.94</b>	<b>141.89</b>	
<b>Offshore Contractors, Services, and Support Companies</b>							
Helix Energy Solutions Group, Inc.	HLX	16.13	18.12	-1.99	-11.0%	28.00	15.51
Gulf Island Fabrication	GIFI	17.11	16.93	0.18	1.1%	24.01	15.47
McDermott International, Inc.	MDR	2.73	2.3	0.43	18.7%	8.82	2.10
Oceaneering International	OII	51.26	53.15	-1.89	-3.6%	79.05	49.15
Subsea 7 SA	SUBCY.PK	10.21	9.06	1.15	12.7%	21.10	8.23
Technip ADS	TKPPY.PK	16.6	13.98	2.62	18.7%	28.75	13.39
Tetra Technologies, Inc.	TTI	5.01	5.54	-0.53	-9.6%	13.43	4.90
<b>Total Offshore Contractors, Service, and Support.....</b>	<b>119.05</b>	<b>119.08</b>	<b>-0.03</b>	<b>0.0%</b>	<b>203.16</b>	<b>108.75</b>	
<b>Offshore Transportation and Boat Companies</b>							
Seacor Holdings, Inc.	CKH	73.40	70.64	2.76	3.9%	90.69	67.50
Gulfmark Offshore, Inc.	GLF	17.23	20.67	-3.44	-16.6%	50.70	16.71
Bristow Group	BRS	61.02	60.56	0.46	0.8%	81.60	54.72
PHI, Inc.	PHII	36.20	34.75	1.45	4.2%	52.98	32.79
Tidewater, Inc.	TDW	29.19	30.52	-1.33	-4.4%	56.98	27.87
Trico Marine Services, Inc.	TRMAQ.PK	13.61	13.28	0.33	2.5%	10.74	13.77
Hornbeck Offshore	HOS	20.43	21.19	-0.76	-3.6%	47.45	18.51
<b>Total Offshore Transportation and Boat .....</b>	<b>251.08</b>	<b>251.61</b>	<b>-0.53</b>	<b>-0.2%</b>	<b>391.14</b>	<b>231.87</b>	

March 2015

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# Monthly Stock Figures & Composite Index

Industry	Close(Mid) February	Close(Mid) January	Change January	Change %	High 52 week	Low
Diversified, Production Support & Equipment Companies						
Total Diversified, Production, Support and Equipment	434.59	395.56	39.03	9.9%	650.15	363.84
Total Geophysical / Reservoir Management	20.44	22.89	-2.45	-10.7%	55.49	16.15
Total Offshore Drilling	179.52	154.65	24.87	16.1%	313.94	141.89
Total Offshore Contractors, Service and Support	119.05	119.08	-0.03	0.0%	203.16	108.75
Total Offshore Transportation and Boat	251.08	251.61	-0.53	-0.2%	391.14	231.87
Total Offshore Source Index	1,004.68	943.79	60.89	6.5%	1,613.88	862.50

## 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.

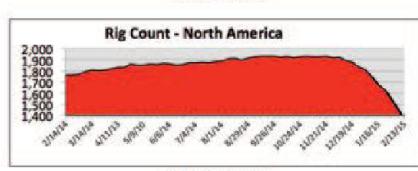
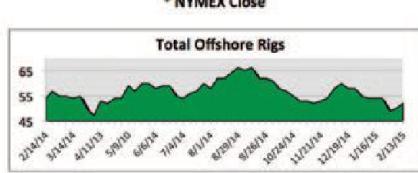
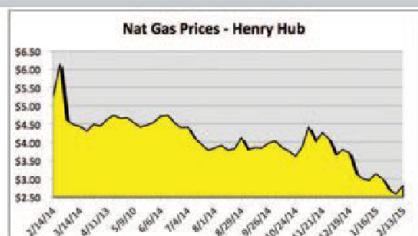
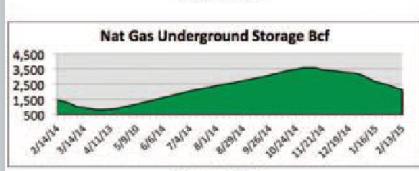
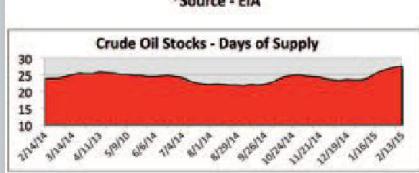
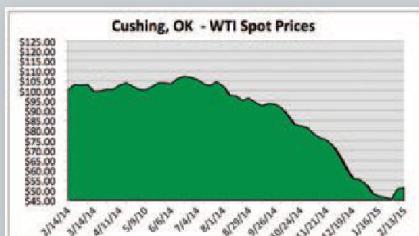
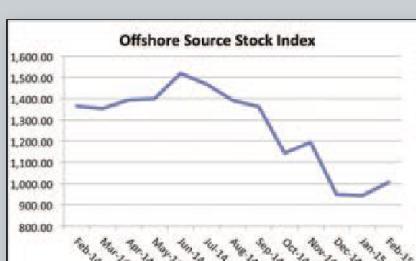
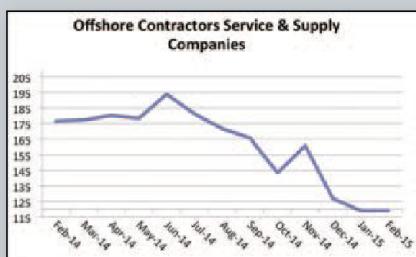
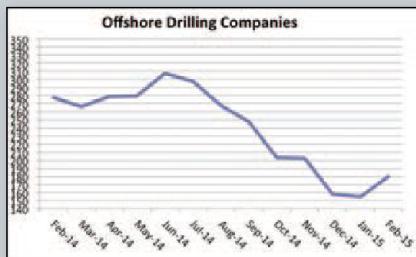
March 2015

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## Oil & Gas Industry Trends

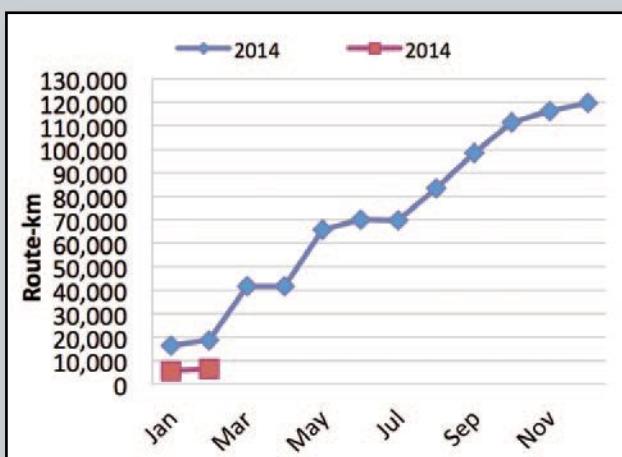
*Monitoring the Pulse of the U.S. Offshore Oil & Gas Industry*



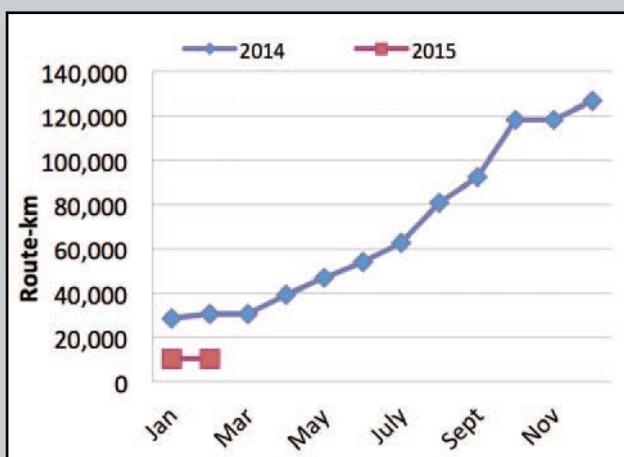
**Positive trend, at least 3 weeks**  
**Changing trend, less than 3 weeks**  
**Negative trend, at least 3 weeks**

# Subsea Telecom & Power Cable Data

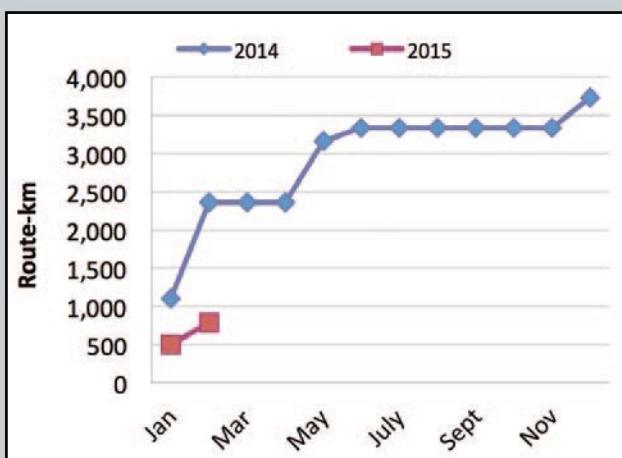
## FO Cable Awards by Month



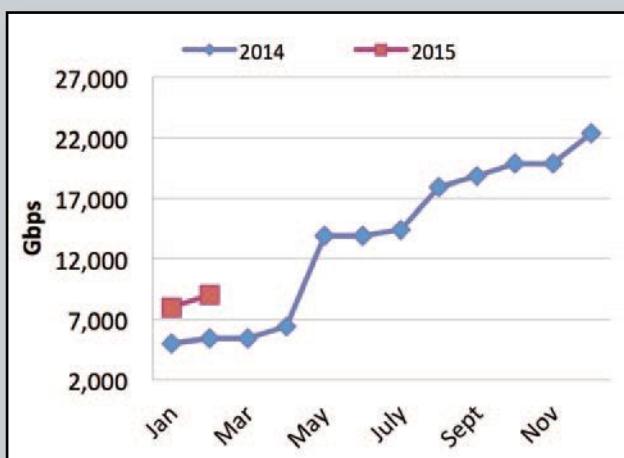
## FO Cable Announcements



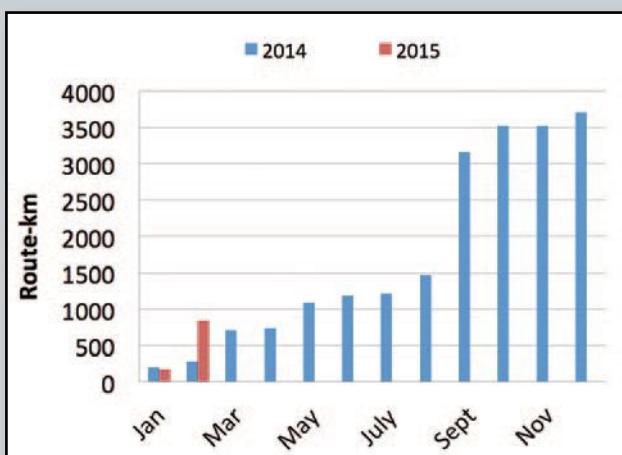
## Submarine FO Cables Entering Service in Route-km



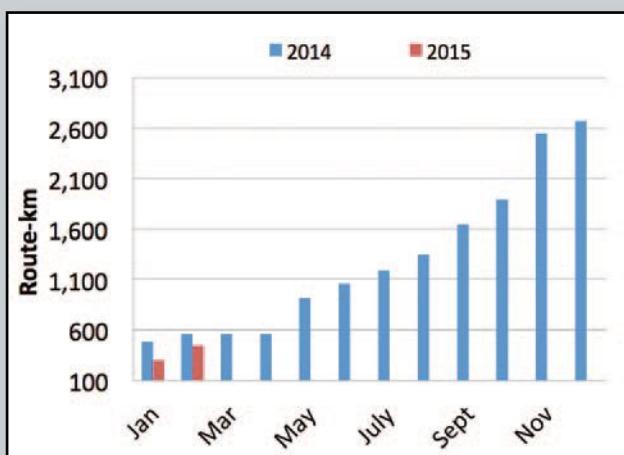
## Upgrades of Existing Cable Systems in Gbps



## Submarine Power Cable Awards in Route-km



## Submarine Power Cable Announcements in Route-km



# Gulf of Mexico Data

## Current Deepwater Activity

Operator	Area	Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
Shell Offshore Inc.	WR	508	G17001	NOBLE JIM DAY	Stones	9,560
Anadarko Petroleum Corp.	LL	399	G23480	CAL-DIVE Q-4000	Independence Hub	8,960
Anadarko Petroleum Corp.	LL	399	G23480	COIL TUBING UNIT (N.O. #2)	Independence Hub	8,960
Petrobras America Inc.	WR	469	G16997	VANTAGE TITANIUM EXPLORER	Chinook	8,835
Shell Offshore Inc.	AC	857	G17561	H&P 205	Great White	7,824
Murphy Exploration & Production Co.	MC	697	G34019	ENSCO DS-5	Blind Faith	7,164
ExxonMobil Corp.	WR	584	G20351	MAERSK VIKING	Julia	7,120
Union Oil Co. of California	WR	677	G21245	T.O. DISCOVERER CLEAR LEADER	Saint Malo	7,038
Anadarko Petroleum Corp.	KC	919	G21447	ENSCO 8500	Lucius	6,941
BP Exploration & Production, Inc.	MC	522	G08823	ENSCO DS-3	Fourier	6,932
BP Exploration & Production, Inc.	GC	743	G15607	SEADRILL WEST AURIGA	Atlantis	6,816
Union Oil Co. of California	WR	634	G18745	PACIFIC SHARAV	Saint Malo	6,803
Union Oil Co. of California	KC	814	G25810	PACIFIC SANTA ANA		6,758
Noble Energy, Inc.	MC	782	G33757	ATWOOD ADVANTAGE	Caterpillar	6,581
LLOG Exploration Offshore, LLC	MC	300	G24064	SEADRILL WEST NEPTUNE	Delta House	6,131
BP Exploration & Production, Inc.	MC	778	G09868	THUNDER HORSE PDQ	Thunder Horse North	6,031
Deep Gulf Energy II	MC	215	G24060	ENSCO 8505	Odd Job	5,996
Statoil Gulf of Mexico	WR	160	G34634	MAERSK DEVELOPER		5,895
LLOG Exploration & Production Co.	MC	300	G24064	SEADRILL WEST NEPTUNE	Delta House	5,746
BP Exploration & Production, Inc.	MC	776	G09866	T.O. DISCOVERER ENTERPRISE	Thunder Horse North	5,638
Eni U.S. Operating Co. Inc.	MC	773	G19996	COIL TUBING UNIT (N.O. DIST)	Devil's Tower	5,610
Chevron USA Inc.	KC	414	G26748	T.O. DISCOVERER INDIA		5,515
Shell Offshore, Inc.	MC	687	G05862	ATWOOD CONDOR	Mensa	5,377
Anadarko Petroleum Corp.	GC	859	G24194	ROWAN RESOLUTE	Heidelberg	5,346
Anadarko Petroleum Corp.	GC	903	G24194	ENSCO 8506	Heidelberg	5,254
Anadarko Petroleum Corp.	GC	903	G24194	WIRELINE UNIT (HOUma #5)	Heidelberg	5,254
Freeport-McMoRan Oil & Gas LLC	MC	85	G08484	NOBLE TOM MADDEN	King	5,190
Anadarko Petroleum Corp.	GC	680	G22987	BLAKE 1007	Constitution	4,972
LLOG Exploration Offshore, LLC	MC	253	G32303	ENSCO 8503	Delta House	4,924
Cobalt International Energy, LP	GB	958	G30876	ROWAN RELIANCE		4,878
BP Exploration & Production, Inc.	KC	93	G25780	ENSCO DS-4	Gila	4,860
Deep Gulf Energy II, LLC	MC	727	G24107	NOBLE DANNY ADKINS	Kodiak	4,829
ExxonMobil Corp.	AC	25	G10380	WIRELINE UNIT (L.J. #3)	Hoover	4,809
Hess Corp.	MC	726	G22898	STENA FORTH	Tubular Bells	4,570
Anadarko Petroleum Corp.	GC	683	G18421	WIRELINE UNIT (N.O. #2)	Caesar	4,487
BP Exploration & Production Inc.	GC	782	G15610	MAD DOG SPAR RIG	Mad Dog Phase 2	4,428
BP Exploration & Production Inc.	GC	627	G25174	SEADRILL WEST SIRIUS		4,416
Chevron USA, Inc.	GC	640	G16770	T.O. DISCOVERER INSPIRATION	Tahiti 2	4,298
BHP Billiton Petroleum (GOM) Inc.	GC	610	G20084	T.O. DISCOVERER INVICTUS	Shenzi development	4,275
BP Exploration & Production Inc.	KC	147	G30926	SEADRILL WEST VELA		4,248
Shell Offshore, Inc.	MC	943	G34467	STENA ICEMAX	Oasis	4,213
Anadarko Petroleum Corp.	EB	690	G22296	WIRELINE UNIT (L.J. DIST)	Navajo	4,202
Anadarko Petroleum Corp.	GC	562	G11075	DIAMOND OCEAN BLACKHAWK	K-2	4,017
Freeport-McMoRan Oil & Gas LLC	GC	643	G35001	NOBLE SAM CROFT		3,885
Freeport-McMoRan Oil & Gas LLC	VK	915	G06894	T.O. DEEPWATER CHAMPION	Dorado	3,867
Anadarko Petroleum Corp.	EB	602	G14205	NOBLE BOB DOUGLAS	Nansen	3,645
Shell Offshore, Inc.	MC	809	G12166	NOBLE DON TAYLOR	Princess	3,641
Shell Offshore, Inc.	GC	248	G15565	T.O. DEEPWATER NAUTILUS	Glider	3,233
Shell Offshore, Inc.	VK	956	G06896	NABORS 202	Ram-Powell	3,214
Shell Offshore, Inc.	MC	762	G07957	NOBLE BULLY 1	Deimos	3,144
Shell Offshore, Inc.	GC	158	G07995	H&P 202	Brutus	2,985
Shell Offshore, Inc.	MC	807	G07963	H&P 201	Mars (Ursa/Princess)	2,945
Apache Deepwater LLC	MC	718	G13687	DIAMOND OCEAN ONYX	Juno	2,799
Energy Resource Technology GoM, Inc.	GB	506	G26664	WIRELINE UNIT (LAF #2)	Geauxphur	2,715
Energy Resource Technology GoM, Inc.	GB	506	G26664	HELIX 534	Geauxphur	2,715
LLOG Exploration Offshore, LLC	MC	546	G25098	NOBLE AMOS RUNNER	Longhorn MC 502 546	2,570
Murphy Exploration & Production Co.	MC	582	G16623	T.O. DISCOVERER DEEP SEAS	Medusa	2,463
Energy Resource Technology GoM, Inc.	GC	237	G15563	ENSCO 8502	Phoenix	1,940
Chevron USA, Inc.	VK	786	G12119	NABORS 87	Petronius	1,751
EnVen Energy Ventures, LLC	EW	1003	G13091	NABORS S.D. XIV	Prince	1,490
Stone Energy Corp.	VK	989	G06898	NONE RIG PA OPERATION	Pompano	1,293
SandRidge Energy Offshore, LLC	GC	165	G06280	COIL TUBING UNIT (L.J. Dist)	East Breaks 164	863
Fieldwood SD Offshore LLC	EB	165	G06280	WIRELINE UNIT (L.J. DIST)	East Breaks 164	863
Marathon Oil Co.	EW	873	G12136	WIRELINE UNIT (HOUma #2)	Lobster	773
Whistler Energy 11, LLC	GC	18	G04940	NABORS MODS 201	Boxer	750
Ankor Energy LLC	MC	21	G22850	NABORS MODS 200		668
W&T Offshore, Inc.	EW	910	G13079	H&P 203		560

Deepwater prospects with drilling and workover activity: 67

Current Deepwater Activity as of Monday, 9 February 2015

### Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,429	35,977	2,343
201 to 400	108	1,124	20
401 to 800	211	888	10
801 to 1,000	348	585	9
1,000 & above	3,216	1,999	26

### Rig Activity Report 13 February 2015

Location	of 02/13	Week +/-	Ago	Week +/-	Ago
Land	1298	-99	1397	-394	1692
Inland Waters	8	-1	9	-10	18
Offshore	52	2	50	-2	54
U.S. Total	1358	-98	1456	-406	1764
Gulf of Mexico	50	+2	48	-2	52
Canada	382	+1	381	-242	624
N. America	1740	-97	1837	-648	2388

Activity by Water Depth Information current as of Monday, 9 February 2015

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 and Baker Hughes

## Unique CCR Liberty rebreather now available

The rebreather is designed as a fault-tolerant. No single malfunction in the electronic system can cause a breakdown of the whole apparatus, even multiple malfunctions often do not lead to a complete breakdown.

In case both handset cables are cut, the HUD cable torn out, and a hole to one of computer compartments in rebreather head drilled, the system functions sufficiently. The remaining control computer continues to maintain the oxygen partial pressure at the last setpoint.

Even if you are at 100 m below the surface and all 4 oxygen cells get damaged, helium concentration sensors are used to indirectly measure oxygen.

The same level of sophistication is applied to the design and manufacture of all mechanical parts of CCR Liberty. For example, the work of breathing is only 1.58 J/l in 100 m depth. This WOB puts CCR Liberty among the world's best. It has been tested at the Ansti facility in the UK (tidal volume 2.5 l, breath rate 30/min, heliox 10/90).

CCR Liberty is the first rebreather in the world certified without any exceptions or exclusions according to EN 14143:2013. Training is available with the IANTD.

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



## AML's Data•Xchange brings WiFi & GPS to X-Series profilers

Streamline your SVP data collection with AML's WiFi device, Data•Xchange. Following successful Beta trials, Data•Xchange is set for a March 2015 release. Bringing the benefits of long-range WiFi to X-Series profilers, the device enables wireless data transfer and integrated GPS positioning.

Upon surfacing, Data•Xchange transfers collected data through an automated WiFi link between profiler and computer at a rate 40 times faster than via cable.



"When designing this product, we made backwards compatibility an absolute must. It was important to us to make sure existing customers could experience the benefits of Data•Xchange without having to purchase a brand new instrument," explained AML's President, Robert Haydock.

Also important was staying true to the modularity of X-Series and Xchange™ products – Data•Xchange can easily be moved among all X-Series profilers.

With new SeaCast 4 software, automatic, simultaneous exports to multiple formats further simplifies the process of data collection.

Available for delivery mid-March, Data•Xchange can be seen in action at Ocean Business (booth K8).

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

## Deep Trekker announces new vectored thruster model, DTX2

The Deep Trekker DTX2 is the first ever subsea vehicle to combine the patented pitch mechanism that Deep Trekker is known for with 4 powerful, vectored thrusters for maneuverability unmatched in this vehicle class.

Rated for depths of up to 1,000 ft and with speeds approaching 3.5 kts and over 28 lbs of thrust, the DTX2 is as powerful and strong as it is nimble and easy to use.

Integrating vectored thrusters allows for lateral movement in the horizontal plane, and by activating the pitch system, the DTX2 can achieve simultaneous vertical and lateral movement using only 4 thrusters. Staying true to the market need for a fully integrated system, the DTX2 is powered by on board rechargeable batteries, and takes advantage of the company's superbright screen hand-held control module. Standard sensors on all DTX2 packages include Heading, Depth, and Temperature.

Integrations available for increased intelligence include the Tritech Micron Sonar, the Teledyne Blueview Sonar, Cygnus Ultrasonic Thickness gauge, USBL navigation system and more. A continuous 360° rotating mechanical grabber arm is also available on the DTX2.

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



## EdgeTech releases tri-frequency side scan sonar system

EdgeTech, the leader in high resolution sonar imaging systems and underwater technology, recently released a new AUV-based sonar system that provides three side scan sonar frequencies as well as sub-bottom profiling capabilities in one compact and integrated system. The company also announced that a number of the systems have already been built and shipped.

The EdgeTech 2205 AUV / ROV-based sonar system was introduced to the market last year as a continuation to the successful 2200 series product group. EdgeTech sonars are deployed on hundreds of AUVs and ROVs around the world. Since its introduction, EdgeTech's 2205, a smaller and more versatile sonar system for hosted platforms, has been delivered to customers in a number of different configurations based on requests to address applications in the underwater oil and gas, research and military markets. System choices include side scan sonar functionality, sub-bottom profiler choices and multiphase bathymetry offerings.



One of the recently delivered EdgeTech 2205 tri-frequency systems was configured to operate at 230 kHz, 540 kHz and 1600 kHz. This configuration provides much more flexibility for the AUV operator and allows them to collect different sets of data for different missions without cumbersome reconfiguration. The lower frequency provides a 450 meter swath while the higher frequency is ideal for high resolution operations. The 1600 kHz frequency can provide across track resolution of less than one centimeter. In the middle, the third frequency can be used for the ideal combination of range and resolution. All this is available to the user without swapping systems, arrays or different components. The software switchable system allows complete flexibility to the operators.

Rounding out the versatile sonar package on the AUV, the EdgeTech 2205 system is also configured to support sub-bottom profiling at the frequency ranges of 2-16 kHz, 1-8 kHz or

4-24 kHz depending on the sub-bottom transducer selection by the operator.

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

## Ocean Sonics sells ten icListen Smart Hydrophones to Ocean Networks Canada

Ocean Sonics Ltd. is pleased to announce the sale of ten 3500m icListen Smart Hydrophones to Ocean Networks Canada for the Smart Oceans™ program, a new initiative of the University of Victoria that addresses the limitation of conventional technologies to allow continuous year-round, sub-second observations with dozens of measurement types, accessible through the Internet to any audience.

The flagship icListen HF Smart Hydrophone is recognized today as the new standard in broadband digital marine acoustics. Use it to stream data, log data, or both in the fields of marine mammal monitoring, ocean observatories, shipping noise and ocean noise measurements.

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



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## New Outland Technology HD camera

Outland Technology announced a new underwater HD 1080P Camera, model UWC-625. With uses ranging from ROVs, diver handheld, fixed installations and more, the UWC-625 provides HD 1080P resolution for live video and recording.



"Our customers have been asking us for years for HD and now the Technology has allowed us to bring a cost effective HD Camera," remarked Outland Vice President Jeff Mayfield. "We wanted to design a camera that allowed our customers who already have our equipment to make a simple transition to HD. They just need to buy the camera and a new DVR to go with their existing cable, console and light."

The UWC-625 comes standard with an XSK-5-BCL, which means it will run on all of our existing cables still out in the field. It transmits HD 1080P over our standard coax cable. Just 2.375 in. Dia. x 5 in. L, this unit has a depth rating of 500 m with an optional 2,000 m available. Housing materials include acetal (delrin®), options are aluminum and stainless with acrylic port.

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

## Valeport releases new software with bonus utilities

Valeport's latest operating software, Datalog X2 has just been released and is now available for free download via the website. This new version of software from Valeport is designed to interface, configure and download data from both legacy and new products and also includes bonus utilities.

The added benefit of this latest generation of software is that not only will Datalog X2 ensure Valeport products will work across new software platforms, but with an embedded Terminal X2 program it offers wider functionality to those not able to use other Terminal

packages such as Hyperterminal.

Terminal X2 will work with any Valeport instrument that communicates via serial RS232, although functionality maybe limited with some older instruments. Datalog X2 and Terminal X2 have been tested on Windows XP, Vista 7, 8 and 8.1. Datalog X2 is compatible with the following instruments and can replace Datalog, Datalog Express and Tidelog software packages.

- Model 106, 108, 308 and Midas ECM current meters
- miniSVS, IPS, TIDE, CTD and SVP
- Monitor CTD and SVP
- Monitor CTD & SVP
- Midas CTD, SVP, SVX2 & WLR
- Model 740 Tide Gauge

A further bonus utility is also included in the Datalog X2 bundle, a Seawater Calculation utility for manual checking of data. Users can simply input conductivity/salinity, pressure temperature (in IPT68 or IPT 90 scales) and latitude (if known), then click the Calculate button. The program will calculate and display the following parameters:

- Density Anomaly Gamma (Calculated Density – 1000kg/m<sup>3</sup>)
- Conductivity or Salinity (whichever the user did not enter)
- Sound Speed calculated using the chosen Speed of Sound Formula
- Depth in metres calculated using the UNESCO standard formula. This is an approximation, and will not account for variations in density distribution throughout the water column. Its accuracy has been estimated to better than 0.1m.

Kevin Edwards, Valeport sales and marketing manager commented, "The Datalog X2 release will impact on many of our customers – it should give them the peace of mind that their Valeport products are compatible with a variety of new technologies and I would urge them to download the software. It's free and easy to install and will ultimately help ensure the longevity of our products even when the customer may change other platforms. We've also wrapped in the bonus Seawater Calculation utility for manually checking data too, and we believe this Terminal Emulation utility will be a must for anyone not able to use other Terminal packages such as Hyperterminal."

Datalog X2 is available as a free download on [www.valeport.co.uk](http://www.valeport.co.uk) and will be issued with new products from

February 2015 and is largely used in conjunction with Valeport's Tide Gauge, Sound Velocity Profiler, CTD and Current Meter product ranges.

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

## Innovative new web and PC based navigational charts app launched at Ocean Business

A leading independent consultancy and software development company will launch a new web and PC based navigational charting app at Ocean Business 2015.

Norcom Technology Limited's eChart software combines up to date information from different sources including wreck, cable, tide and geographical data for navigational charts, making it ideal for use by companies carrying out desktop studies prior to installation of offshore structures, cables, pipelines and vessel monitoring.

Uniquely, for computational packages, the easy to use software will be made available on a 10.1 in. Windows 8 tablet, for the first time, at the show.

The software is a web (available April 2015) or PC based app which replaces the ARCS Skipper service, withdrawn by the UK Government Hydrographic Office (UKHO) in 2013.

Norcom is a UKHO data reseller and approved as a licenced developer of ARCS service. Norcom saw the opportunity to develop geo-referenced electronic navigational charts for Northern Europe, the Mediterranean and South America. Norcom also has agreement with SHOM (service hydrographique et océanographique de la marine), Bundesamt für Seeschiffahrt und Hydrographie (BSH, Federal Maritime and Hydrographic Agency of Germany) and Kartverket, the Norwegian Mapping Authority.

Chart data is supplied in chart packs, which can be downloaded from



[www.norcom-technology.co.uk](http://www.norcom-technology.co.uk) or the data can be supplied on CD or USB memory stick.

Once downloaded, the charts are updated, for free, every quarter in January, April, July and October, (while in subscription) and emails are automatically sent to subscribers when corrections and Chart Plotter updates are made.

Visitors to Ocean Business will be able to order a Windows 8 tablet and Chart Pack bundle. The tablet allows users to run Norcom's fully functional desktop Chart Plotter anywhere, from an office to at sea.

Also available on the Tablet will be the company's well known Geodetic survey computation software and Seatrack electronic charting software.

Norcom will also be demonstrating its Catenary Anchor Monitoring System (CAMS) for barge monitoring during pipe laying and Sirius, its new offshore navigation construction software, for positioning DP vessel during installation work and FPSO monitoring.

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

### Apogee Series, the most accurate MEMS inertial navigation system

SBG Systems takes another step forward with the release of the Apogee Series, the most accurate inertial navigation systems based on the robust and cost-effective MEMS technology. This state-of-the-art INS/GNSS integrates the very last generation of MEMS sensors and Tri-frequency GNSS receiver. Apogee achieves 0.008° in roll and pitch in real-time, and 0.005° in post-processing. With two antennas, it delivers a robust and accurate heading. "SBG Systems manufactures inertial systems from the concept to the production. The Apogee benefits from our high level of expertise in integrated design, IMU calibration, testing, and filtering" declares Alexis Guinamard, CTO of SBG Systems.

On the field of hydrography, the Apogee fits every technical need with simplicity. Lightweight and small, Apogee is easy to manipulate. In option, the SplitBox, a box with standard connectors, easily connect and synchronize all the equipment onboard of the vessel. To get the required positioning accuracy,

Apogee supports RTK and every Precise Point Positioning services (Marinestar, TerraStar, etc.). Already compatible with the main hydrographic software such as QINSy or Hypack, Apogee is ready to deliver its extreme precision.

The Apogee provides a real-time heave accurate to 5 cm. For more simplicity, the user doesn't have to enter the wave frequency; the Apogee automatically detects it and constantly adjusts to it. To allow surveying tasks when wave frequencies are very large or complex, Apogee comes with a delayed heave feature with no additional software nor user action. A specific algorithm allows a more extensive calculation, resulting a heave accurate to 2 cm displayed in real-time with a little delay.

Orientation and position raw data can be recorded in the Apogee data logger. When getting back to the office, the user imports data in the post-processing software. This tool gives access to several RTK networks and reference station offline data (VRS, CORS, etc.). Additionally, it enhances orientation and position accuracy by a complete "backward/forward" calculation.

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Four models compose the Apogee line. The Apogee-A provides only orientation and heave data. The Apogee-N additionally embeds a GNSS receiver for navigation. The Apogee-D comes with two antennas for accurate heading under low dynamics conditions. Completing the line, the Apogee-E delivers navigation data when connected to an external GNSS receiver or to the SplitBox with integrated GNSS.

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

#### **Monitoring HMS A7 using a Cygnus underwater thickness gauge**

A team of divers from the A7 Project purchased a Cygnus DIVE underwater ultrasonic thickness gauge so that they could measure the metal thickness of the HMS A7 submarine to determine the current condition of the submarine and to monitor its deterioration over time.

The A7 Project is part of The SHIPS Project (Shipwrecks and History in Plymouth Sound), which is being run by a local group of divers and shipwreck enthusiasts. The main aim of the project is to record the long maritime history of Plymouth and the nearby area and in doing so also raise awareness of their historic and varied maritime heritage. By documenting, recording, mapping and publishing this information it will help to ensure these archaeological sites are preserved and appropriately maintained.

The A7 Project is one of the varied array of projects that are currently ongoing. It is an investigation of the Royal Navy submarine HMS A7 which was lost in 1914 in Whitsand Bay, Cornwall sadly with all hands lost.

The submarine A7 is designated as a Controlled Site under the Protection of Military Remains Act 1986, this prohibits all diving operations without licence from the U.K. Ministry Of Defence. The A7 project team are the first to be granted a license.

As part of their study, the team of divers used the Cygnus DIVE underwater thickness gauge to measure the metal thickness of HMS A7. This helped to establish not only its current condition but over time can be used to monitor the rate of corrosion. Due to the pitting of the steel, the team used the gauge in sin-

gle echo mode with a twin crystal probe. As the gauge has data logging capability, readings were logged to be analysed later at the surface.

Peter Holt, SHIPS project manager and director, 3H Consulting Ltd., said "We used the 5 MHz dual crystal as it gave the best results on the pitted steel we found on the many corroded ships hulls where we tried the UT gauge. The DIVE was reliable, very easy to use, has simple menu system and displays. The logging function was essential as we only had 13 min on the wreck each day; I could make lots of measurements and figure out the answer back home in post processing, we also didn't have to write anything down or think too much as thinking isn't so easy in 40 m water with the effects of narcosis."

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

#### **New range of on-line & portable water quality monitoring systems from Chelsea Technologies**

CTG has launched an exciting new range of on-line & portable monitoring systems which provide significant advances in monitoring key parameters within the Water Industry.

Addressing the management of both water supply and water recovery plants, CTG has launched the Bacti-Station, Bacti-Wader, BOD-Station, BOD-Wader, Algae-Station, Algae-Wader, Oil-Station & Oil-Wader Systems. For monitoring misconnections within the network the new Cross-Check portable system is also now an option.

These systems are also of particular interest to the environmental monitoring sectors addressing the requirements of the Bathing Waters Directive, Water Framework Directive and Shellfish Waters Directive.

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

#### **M3 Bathy shallow water multibeam approved to IHO S-44 standard**

Kongsberg Mesotech's M3 Bath System, a powerful, entry-level survey system for shallow-water bathymetric applications is now officially designated compliant with IHO S-44, a reference standard for companies engaged in hydrographic surveying, marine engineering or nautical charting.

The IHO compliance consists of various criteria including vertical accuracy and target detection standards. In order to assess IHO-S44 compliance, these criteria were tested during an experiment performed by the Ocean Mapping Group at the University of New Brunswick.

During the testing, which took place in February, 2014, bathymetry data from the M3 was collected in depths ranging from 15-40 m. The test targets were a series of standard concrete 1m cubes laid along 20 m and 40 m contours. The results confirmed that the M3 Bath is capable of achieving bathymetric survey data that meets two orders of IHO standards. Specifically:

- Vertical Accuracy compliance can be met over the full +/-60° sector for Order 1 surveys and to at least +/-55° for Special Order.

- Special Order target detection (1m cube) is met to 20 m and Order 1A target detection (2 m cube) is maintained to 40 m.

"This is an important milestone for the M3 Bath as it continues to penetrate the market of low-cost multibeam echo sounders," says Aziah North, Sales Manager, Kongsberg Mesotech. "Already suitable for a wide range of applications including pipeline profiling survey and subsea inspection the M3 can now be used for high quality IHO S-44 standard shallow water survey, making it an even more diverse tool for the international hydrographic community."

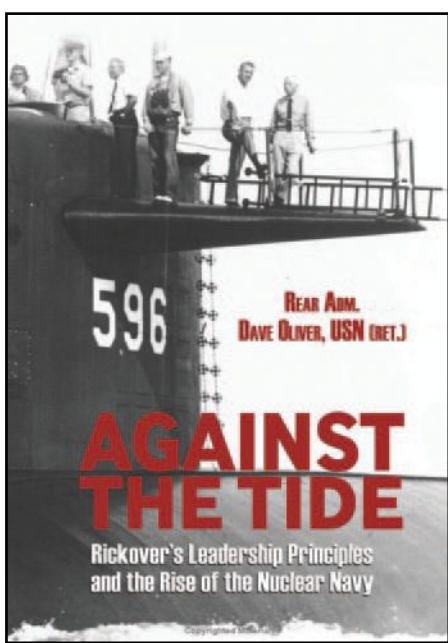
The core of the M3 Bath is Kongsberg Mesotech's M3 Series MultiMode Multibeam Sonar. The M3 Sonar is the only instrument in its price point that produces high-quality imaging records and 3D profiling point cloud data using the same sonar head. It provides high-resolution and easy-to-interpret images by combining the rapid refresh rate of conventional multibeam sonar with image quality comparable to that from a single-beam sonar system, making it a high quality, cost effective option for IHO S-44 compliant survey projects.

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



*Image courtesy of University of New Brunswick OMG.*

# MEDIA SHOWCASE



## Against the Tide: Rickover's Leadership Principles and the Rise of the Nuclear Navy

by Rear Admiral Dave Oliver USN (Ret.)

Against the Tide is a leadership book that illustrates how Adm. Hyman Rickover made a unique impact on American and Navy culture. Dave Oliver is the first former nuclear submarine commander who sailed for the venerable admiral to write about Rickover's management techniques. Oliver draws upon a wealth of untold stories to show how one man changed American and Navy culture while altering the course of history.

The driving force behind America's nuclear submarine navy, Rickover revolutionized naval warfare while concurrently proving to be a wellspring of innovation that drove American technology in the latter half of the twentieth-century. As a testament to his success, Rickover's single-minded focus on safety protected both American citizens and sailors from nuclear contamination, a record that is in stark contrast to the dozens of nuclear reactor accidents suffered by the Russians. While Rickover has been the subject of a number of biographies, little has been written about his unique management practices that changed the culture of a two-hundred-year-old institution and affected the outcome of the Cold War. Rickover's achievements have been obscured because they were largely conducted in secret and because he possessed a demanding and abrasive personality that alienated many potential supporters. Nevertheless he was an extraordinary manager with significant lessons for all those in decision-making positions.

The author had the good fortune to know and to serve under Rickover during much of his thirty-year career in the Navy and is singularly qualified to demonstrate the management and leadership principles behind Rickover's success.

Naval Institute Press; ISBN: 978-1612517971  
Hardcover, 192 pages, November 2014

March 2015

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Ocean News & Technology



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Cobalt International Energy, Inc. appointed **Shashank V. Karve** executive vice president of Cameia development. Karve joined Cobalt in December 2014, and is accountable for execution of the Cameia Development Project to production, ensuring safe, cost efficient and timely delivery of the project in Angola Block 21. Karve has vast experience in executive management and project delivery, having held the position of chairman and chief executive officer for MODEC International Inc. He was also the managing director and chief operating officer of the publicly traded parent company in Tokyo, MODEC Inc., where he held profit and loss responsibility for the corporation. His responsibilities included global project development, engineering, execution, installation and operations of floating systems and he has led a multi-disciplinary global organization.

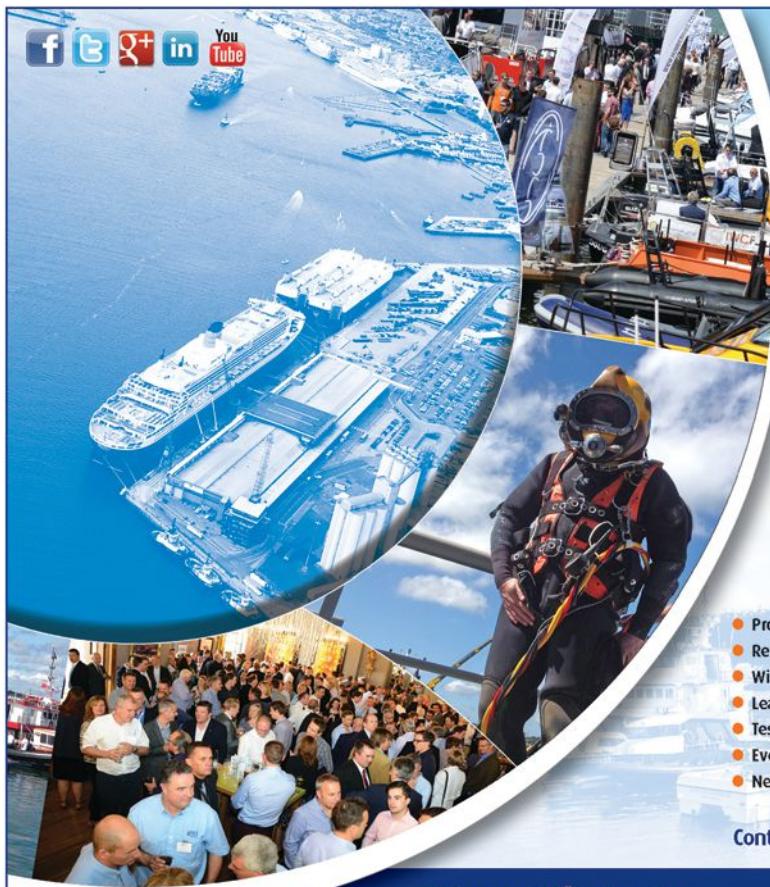
Norway's energy giant Statoil appointed acting chief executive officer **Eldar Saetre** to permanently succeed **Helge Lund**. Saetre, who has run the state-controlled company since Lund left in October to lead the UK's BG Group Plc, initially said he wasn't a candidate for the job on a permanent basis. The 58-year-old has worked for Statoil for 35

years and served as both chief financial officer and head of the company's marketing, processing and renewable energy unit. Saetre changed his mind during Christmas break after being asked by the board to reconsider whether he was a candidate for the CEO post, he said at a news conference in Oslo. Saetre takes charge as Statoil and the rest of the oil industry are suffering from the biggest fall in crude prices since 2008. One of his main challenges will be to advance a sweeping efficiency program initiated by Lund, 52, who ran the company for 10 years and oversaw the transformation of Statoil from a mainly domestic-focused company to one of the biggest international oil and gas producers.

Chevron Corp. named **Jeanette L. Ourada** corporate vice president and comptroller effective April 1. Ourada succeeds **Matthew J. Foehr**, who will retire from the company 31 March after 33 years of service. In her new role Ourada will lead corporatewide accounting, financial reporting and analysis, and internal controls. Additionally she will

oversee finance shared services, the organization she has led since July 2013. Since joining Chevron as part of the Unocal acquisition in 2005, Ourada, 49, has held a series of leadership roles within the finance organization. Before assuming her current role, Ourada served as assistant treasurer, operating company support and intercompany financing. From 2009 to 2012 she was general manager of investor relations. From 2007 to 2009 Ourada was general manager of finance for Chevron's Asia South Business Unit in Bangkok, Thailand. From 2005 to 2007 she was responsible for Chevron International Exploration and Production Co.'s forecasting and reporting group. Earlier Ourada held positions at Atlantic Richfield, Universal Studios and Weyerhaeuser.

Paragon Offshore said **Julie A. Ferro** was appointed vice president of human resources with responsibilities that include human resources, administration, learning and development, performance management, employee relations, recruiting and retention. Ferro has more than 18 years of human resources experience working for both public and private companies in the energy and commercial real estate industries.



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BIRNS, Inc. proudly announces the expansion of its sales and marketing force with the addition of **Laura Powell** as sales associate and **Penny Nuntavong** as sales and marketing associate. Powell brings more than 25 years of sales expertise to her new role at BIRNS, having held top-level management positions in telecommunications, manufacturing and retail. She served as consumer sales manager at Verizon Telecommunications, where she oversaw customer service, sales and quality performance. Powell also held positions as customer service manager with Technicolor Optical Media Services and marketing/customer service manager with Mark IV Industries, a manufacturer of Aerospace pressure transducers and Industrial pressure transmitters. In her new role at BIRNS she will be working with existing customers in the company's key industries, as well as providing business development support to identify new opportunities for growth.



Powell

Nuntavong has more than nine years of in-depth business sales and marketing experience and will be supporting sales efforts for the company's global dealer network, in addition to handling a wide range of marketing responsibilities, ranging from public relations, advertising and social media. Prior to joining BIRNS, Nuntavong held lead marketing positions in manufacturing and technology, working closely with companies including BASF, BF Goodrich, Microsoft and Hewlett-Packard. Her prior roles included serving as marketing project and events manager at Cal Net Technology Group and marketing coordinator at Chemtec Chemical Company.



Nuntavong

2H Offshore, an Acteon company, has appointed **Phil Ward** as a director in its Aberdeen office. This new role reflects Ward's experience, knowledge and commitment to 2H, and is a promotion from his current role as principal engineer. Ward will work alongside the existing management team to jointly lead the company's growing Aberdeen business. Ward holds a master's degree in engineering from the University of Cambridge. He is also a Chartered Engineer and a member of the Institute of Mechanical Engineers. Having worked for 2H Offshore in its Aberdeen office for

more than four years, he offers extensive understanding of drilling, completion and intervention riser systems, both for sub-sea well and fixed platform operations, and in-depth knowledge of wellhead fatigue assessment, mitigation and structural monitoring.

Greensea Systems, Inc. announces that **Marybeth Gilliam** has joined the firm as chief marketing officer to commercialize the company's products. Marybeth comes with over 25 years of experience in market research, marketing, branding, and sales, including 14 years managing her own company.



Gilliam

Marybeth received her BA from the University of Vermont in Burlington, Vermont. She worked for New York advertising firms Lord Dentsu & Partners and TBWA Chiat Day before helping to grow a small creative shop called Hampel Stefanides to national acclaim. Marybeth was chosen to open the west coast office of Hampel Stefanides and served as their VP, Director of Client services. During her career Marybeth worked with several of George Lucas's businesses including Lucas Arts, Lucas Learning and the George Lucas Education Foundation where she was instrumental in developing an award-winning media kit.

Hydraulic bolting equipment manufacturer HTL Worldwide has spread its wings to officially become **HTL Worldwide Ltd.** The newly announced limited company was previously a global extension of Hire Torque Ltd, however due to impressive growth rates, the once supporting brand of Hire Torque has shaped into its own unique company to pursue continued growth.

**Ocean Sonics** is pleased to announce their newest distributor **SUBSEA 20/20**. SUBSEA 20/20 is in charge of the west coast of the U.S. including California, Oregon, Washington & Alaska. SUBSEA 20/20 is a full-service company providing on-water demonstrations, technical support and product training. Ocean Sonics manufactures the iCListen Smart Hydrophone, an innovative passive acoustic monitoring system. As the world leader in gathering ocean sound, Ocean Sonics combines smart electronics with very high signal performance to give customers the best digital hydrophone technology available. This enables users to collect, record, measure and process sounds.

**Seanic Ocean Systems Inc.** announces that construction of a new, state-of-the-art facility will soon be underway in west Houston. The company's relocation and expansion, a result of evolving customer needs and expectations, will provide extensive space for manufacturing of subsea hardware and tooling, equipment storage and client collaboration. The new campus, slated for occupancy in late summer, will also be home to a state-of-the-art in-ground test tank large enough for on-site System Integration testing of ROV tooling and other related hardware. Located on 10.5 acres, Seanic's new facility will include a 55,000 sq. ft shop and operations building, 18,000 sq. ft of which will be dedicated to manufacturing, testing and assembly. An additional 6,000 sq. ft area devoted to welding operations will enhance Seanic's ability to design and build custom subsea hardware for seamless interface with its line of tooling and equipment.

**SeaRobotics Corporation** is pleased to announce its acquisition of FP Tool Inc., a Stuart-based machine shop. The merging of capabilities will enable SeaRobotics to offer expanded and efficient manufacturing services to the marine robotics, subsea components and theme park markets, filling the need for a high-specification fabrication capability in the southeast region that can serve a broad range of industries. As a result of incorporating the expertise and capabilities of FP Tool, and the inclusion of an AWS/ASME certified welding program, SeaRobotics will be able to offer in-house solutions for high-specification, close-tolerance machined parts, weldments and assemblies for a variety of industries.

**BMT Asia Pacific (BMT)**, a subsidiary of BMT Group, the leading international maritime design, engineering and risk management consultancy, has opened its first ever environmental testing facility in Jakarta, Indonesia. Certified to ISO17025 by Komite Akreditasi Nasional (KAN), Indonesia's national accreditation body, the new laboratory provides high-quality technical testing services for BMT's Oil and Gas clients including: Noise, ambient air quality, water quality, toxicity and emissions. Previously outsourced, these technical testing services have been brought in-house to better support BMT's world-class environmental assessment and consenting offering which includes statutory compliance, environmental impact assessments and decommissioning studies.

# CALENDAR & EVENTS

March 15-19, 2015 <b>NACE Corrosion</b> Dallas, TX www.nace.org	May 18-21, 2015 <b>Oceans MTS IEE Geonva</b> Genova, Itlay www.oceans15mtsieeegenova.org	June 16-18, 2015 <b>Clean Pacific</b> Vancouver, BC www.cleanpacific.org
March 16-19, 2015 <b>U.S. Hydro</b> National Harbor, MD www.hypack.com/ushydro/2015	May 31 - June 5, 2015 <b>OMAE</b> St. John's, Newfoundland www.asmeconferences.org/omae2015	September 8-11, 2015 <b>Offshore Europe O&amp;G</b> Aberdeen, UK www.offshore-europe.co.uk
March 17-19, 2015 <b>DECOM Summit</b> Houston, TX www.decomworld.com	June 2-4, 2015 <b>Energy Ocean</b> Portland, ME www.energyocean.com	September 28-29, 2015 <b>AWEA Offshore Windpower</b> Baltimore, MD www.offshorewindexpo.org
April 14-16, 2015 <b>Ocean Business</b> Southampton, UK www.oceanbusiness.com	June 3-5, 2015 <b>UDT</b> Rotterdam, Netherlands www.udt-global.com	October 13-14, 2015 <b>MTS Dynamic Positioning</b> Houston, TX www.dynamic-positioning.com
May 4-7, 2015 <b>AUVSI</b> Atlanta, GA www.auvshow.org	June 9-11, 2015 <b>Capitol Hill Ocean Week</b> Washington, DC http://nmsfocean.org/CHOW-2014	October 13-15, 2015 <b>Deep Offshore Technology</b> Houston, TX www.deepoffshoretechnology.com
May 4-7, 2015 <b>Offshore Technology Conference</b> Houston, TX www.otcnet.org	June 16-18, 2015 <b>Seawork International</b> Southampton, UK www.seawork.com	October 18-23, 2015 <b>SEG Annual Meeting</b> New Orleans, LA www.seg.org

March 2015

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Ocean News & Technology

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**2 Describe your job function (circle 1):**

1. OWNER      5. BUYER  
 2. MANAGER/PROF      6. SALES  
 3. ENG'R/SCIENTIST      7. OTHER (Specify) \_\_\_\_\_  
 4. TECH'N/OPERATOR

**3**

**Describe your organization (circle 1):**

- |                                  |                                  |
|----------------------------------|----------------------------------|
| A. SHIPS, CONSTRUCTION, SALVAGE  | O. DIVING EQUIPMENT/SERVICES     |
| B. U/W VEHICLES/COMPONENTS       | P. CONSULTING, DATA SERVICES     |
| C. NAVIGATION/POSITIONING        | Q. MARINE ELECTRICAL/ELECTRONICS |
| D. RESEARCH & DEVELOPMENT        | R. COMPUTER SERVICES/SOFTWARE    |
| E. OCEAN INSTRUMENTATION         | S. OCEAN RENEWABLES              |
| F. OFFSHORE OIL & GAS            | T. SUBSEA IRM                    |
| G. COMMUNICATIONS/UTILITIES      | U. OCEAN OBSERVING               |
| H. SCIENCE, ENVIRONMENTAL        | V. SHIPPING/TRANSPORTATION       |
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| J. GOVERNMENT MILITARY           | X. EQUIPMENT RENTAL              |
| K. GOVERNEMENT CIVILIAN          | Y. MANUFACTURERS' REPRESENTATIVE |
| L. MARINE HARDWARE/DECK EQUIP.   | Z. OTHER (specify) _____         |
| M. FISHING INDUSTRY, AQUACULTURE |                                  |
| N. SURVEY, MAPPING, EXPLORATION  |                                  |

Signature \_\_\_\_\_

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**Editorial:** Subsea Fiber Optic Networks; Decom & Abandonment  
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## MARCH

**Editorial:** Oceanology & Meteorology; Maritime Security  
**Distribution:** Ocean Business; Offshore Well Intervention Conf. North Sea; Product & Services Focus: Buoys & Monitoring Instrumentation; Environmental Monitoring/Testing Services

## APRIL

**Editorial:** Offshore Technology; Ocean Mapping & Survey  
**Distribution:** OTC; AUVSI; Oceans '15 MTS/IEEE Genova, Italy  
**Product & Services Focus:** Subsea Tools & Manipulators; Offshore Risk Assessment; Training/Safety

## MAY

**Editorial:** UW Imaging & Processing; Marine Salvage/UW Archeology  
**Distribution:** OMAE – Ocean/Offsh/Arctic Eng; Seawork Intl; UDT; Well Integrity and Lifecycle Digitalization Conference  
**Product & Services Focus:** Magnetometers; Water Dredges & Airlifts; Diving Services

## JUNE

**Editorial:** Autonomous Unmanned Vehicles; Defense & Naval Systems;  
**Distribution:** Clean Pacific  
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## JULY

**Editorial:** Ocean Engineering; Marine Construction; Special Focus Section: Products & Services Case Studies  
**Distribution:** TBA  
**Product & Services Focus:** Navigation, Mapping & Signal Processing; Data Processing Services

## AUGUST

**Editorial:** Workclass ROVs; Deepwater Pipeline/Repair/Maintenance  
**Distribution:** Offshore Europe  
**Product & Services Focus:** Cameras, Lights & Imaging Sonars; Oil Spill Clean-Up Services

## SEPTEMBER

**Editorial:** Ocean Observing Systems; Subsea Telecom; Offshore Wind Installation & Maintenance  
**Distribution:** SPE ATCE; AWEA Offshore Windpower; Oceans '15 MTS/IEEE Washington DC; Offshore Well Intervention Conf., GOM  
**Product & Services Focus:** Water Sampling Equipment; Cable Installation Services

## OCTOBER

**Editorial:** Offshore Communications; Subsea Inspection, Monitoring, Repair and Maintenance  
**Distribution:** LAGCOE; OilComm; Clean Gulf; Offshore Asset Retirement Conference  
**Product & Services Focus:** Acoustic Modems, Releases & Transponders; Marine Communications; Survey & Exploration Services

## NOVEMBER

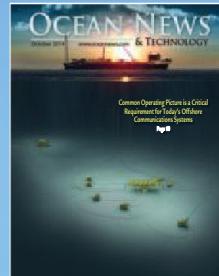
**Editorial:** Offshore Support, Supply & Emergency Vessels; Deep Sea Mining  
**Distribution:** International Workboat  
**Product & Services Focus:** Ship Protection Systems; Cranes, Winches & Control Systems; Vessel Charter/Leasing Services

## DECEMBER

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**Distribution:** TBA  
**Product & Services Focus:** Diving Equipment & Services; Buoyancy Materials; Construction & Repair Services

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Website: [www.birnsaquamate.com](http://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) and Holland (Seascape) as well as dealers in Canada, Norway, Russia, China, Belgium and Brazil.*

#### [SEA CON®](#)

1700 Gillespie Way  
El Cajon, CA 92020 USA  
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E-mail: [seacon@seaconworldwide.com](mailto:seacon@seaconworldwide.com)  
Website: [www.seaconworldwide.com](http://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 and Texas, 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.*

#### [MacArtney A/S \(Headquarters\)](#)

Esbjerg, Denmark  
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#### [North America](#)

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[mac-us@macartney.com](mailto:mac-us@macartney.com)  
[www.macartney.com](http://www.macartney.com)

*For more than 35 years, SubConn® wet mateable connectors have been the number one connector supplier for 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.*

#### [Teledyne ODI - A Teledyne Technologies Company](#)

1026 North Williamson Blvd.  
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Tel: +1 386 236 0780  
Fax: +1 386 236 0906  
Toll Free: (888) 506 2326  
E-mail: [ODI\\_marketing@teledyne.com](mailto:ODI_marketing@teledyne.com)  
Website: [www.odi.com](http://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](#)

1026 North Williamson Blvd.  
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Tel: +1 386 236 0780  
Fax: +1 386 236 0906  
Toll Free: +1 888 506 2326  
E-mail: [oilandgas@teledyne.com](mailto:oilandgas@teledyne.com)  
Website: [www.teledyneoilandgas.com](http://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 Cormorant & Teledyne DG O'Brien.*

### DATA ACQUISITION

#### [Geometrics, Inc.](#)

2190 Fortune Drive  
San Jose, CA 95131  
Tel: +1 408 954 0522  
Fax: +1 408 954 0902  
E-mail: [sales@geometrics.com](mailto:sales@geometrics.com)  
Website: [www.geometrics.com](http://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.*

## DESALINATION SYSTEMS

### Lifestream Watersystems Inc

16611 Gemini Lane  
Huntington Beach, CA 92647  
Tel: 714-375-6583  
Fax: 714-375-6586  
E-mail: lifestream22@aol.com  
Website: www.lifestreamwater.com  
Contact: Julie Kimmel



Since 1991, reverse osmosis desalination systems supplying potable and high purity water for: marine use; Navy, Coast Guard and other military; offshore platforms; onshore oil and gas. Customized systems available for hazardous area locations, wastewater treatment and to customer provided specifications. Skid mounted and containerized. Output 500-500,000 gallons/day.

## 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, JDSA, NPD, MCA 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 PRODUCT/SERVICES

### BGB Technology Inc.

1060 Port Walthall Drive  
Colonial Heights, VA 23834  
Tel: +1 804 451 5211  
E-mail: sales@bgbtechnology.com  
Website: www.bgbtechnology.com  
and www.bgbengineering.com



BGB is a manufacturer of fiber optic rotary joints (FORJ), media converters and wave division multiplexers used in the transmission of high speed data and video signals. The Optilinc FORJ is available with either ST or Deutsch RSC TM connectors. BGB can also supply integrated slip ring/FORJ assemblies if required.

### Focal Technologies Corporation, Moog Inc.

77 Frazee Avenue  
Dartmouth, Nova Scotia  
Canada B3B 1Z4  
Tel: +1 902 468 2263  
Fax: +1 902 468 2249  
Email: focal@moog.com  
Website: www.moog.com/marine  
Contact: Shawn Taylor



Focal, A Moog Inc. Company, specializes in providing electrical slip rings, fiber optic rotary joints, hydraulic utility swivels and fiber optic multiplexer solutions for the worldwide marine industry including ROV, seismic, FPSO, turret and oceanographic applications. Product features include hybrid packages that combine fiber, electrical and fluid rotary joints for harsh environments.

### Ocean Specialists Inc.

8502 SW Kansas Ave  
Stuart, FL 34997  
Tel: +1 772 219 3033  
Fax: +1 772 219 3010  
Email: jbyous@oceanspecialists.com  
Website: www.oceanspecialists.com  
Contact: Jim Byous



Ocean Specialists, Inc (OSI) is a submarine fiber optic network development company with global project capabilities. OSI works with clients during all project phases of subsea network development, from planning and design to procurement and implementation. Our customers, primarily representing Oil and Gas, Telecommunications and Ocean Observing, recognize the value of fiber optic networks to their field and services solutions, and look to OSI to deliver the skills and experience that developing these networks require.

## SeaView Systems

7275 Joy Road., Suite A  
Dexter, MI 48130, USA  
Tel/Fax: +1 734 426 8978  
E-mail: info@seaviewsystems.com  
Website: www.seaviewsystems.com  
Contact: Matthew Cook



SeaView Systems produces optical fiber data transmission devices designed for subsea equipment. Products include the SVS-109 Video/Data mux, SVS-209 Gbit Ethernet Converter, SVS-309 2 channel HD-SDI converter and the SVS-509 OmniData stack. SeaView also offers a wide selection of supporting OEM components and custom ROV design, integration and refurbishment services.

## GYRO COMPASSES

### iXBlue

Tel: +33 (0) 1 30 08 88 88  
Fax: +33 (0) 1 30 08 88 00  
Website: www.ixblue.com



- QUADRANS compact surface gyrocompass
- OCTANS surface gyrocompass and motion sensor
- OCTANS NANO compact subsea gyrocompass and motion sensor
- OCTANS 3000 subsea gyrocompass and motion sensor

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

### 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  
Contact: Carolyn Jones



USA Office: 7701 West Little York, Suite 300  
Houston, TX 77040, Contact: Keith Pope  
Tel: +1 713 461 3030, Fax: +1 713 461 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, NJ 07446 USA  
Tel: +1 201 825 1400  
Fax: +1 201 825 1962  
E-mail: atl@atlinc.com  
Website: www.atlinc.com  
Contact: David Dack



ATL specializes in the design/manufacture of custom bladder-type fluid containment systems, including tanks, inflatables, pillows and bellows for surface and subsea. ATL's flexible fluid containers boast unparalleled chemical tolerance, abrasion resistance, and remarkable durability - used with methanol, diesel fuel, gases, ethylene glycol, hydraulic fluids and chemical cleaning cocktails. Expedited deliveries are also available.

# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory

## MAGNETOMETERS

### Geometrics, Inc.

2190 Fortune Drive  
San Jose, CA 95131  
Tel: +1 408 954 0522  
Fax: +1 408 954 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.

## MANUFACTURERS' REPRESENTATIVE

### ROMOR Ocean Solutions

51 Raddall Ave, Unit 10  
Dartmouth, Nova Scotia  
Canada B3B 1T6  
Tel. +1 (902) 466-7000  
Fax. +1 (902) 466-4880  
Email: Sales@romor.ca  
Website: www.romoroceansolutions.com  
Contact: Darrin Verge, President & CEO



ROMOR Ocean Solutions provides instrumentation solutions for the geophysical, oceanographic, defense, security, oil & gas, and renewable energy industries. By partnering with world renowned manufacturers, ROMOR is able to offer technical knowledge, value added services, logistics expertise, and the most reliable instrumentation on the market.

## MARINE ENVIRONMENTAL CONSULTING SERVICES

### CSA Ocean Sciences Inc.

8502 SW Kansas Avenue  
Stuart, FL 34997  
Tel: +1 772-219 3000  
Fax: +1 772-219 3010  
E-mail: tmartin@conshelf.com  
Website: www.csaocean.com  
Contact: Tony Martin



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, and freshwater environments.

## MOTION SENSING EQUIPMENT

### iXBlue

Tel: +33 (0) 1 30 08 88 88  
Fax: +33 (0) 1 30 08 88 00  
Website: www.ixblue.com



- PHINS surface and AUV INS
- PHINS 6000 deep water subsea INS
- HYDRINS hydrographic survey INS
- MARINS M-Series first rank and submersible ships INS
- ROVINS subsea INS

iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.

### Kongsberg Seatex AS

Pirsentertet  
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Tel: +47 73 54 55 00  
Fax: +47 73 51 50 20  
E-mail: km.seatex@kongsberg.com  
Website: www.km.kongsberg.com/seatex  
Contact: Finn Otto Sanne at finn.otto.sanne@kongsberg.com



KONGSBERG

Kongsberg Seatex 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 Ltd.

UK Office: 1 Blackmoor Lane  
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Watford, Hertfordshire WD18 8GA  
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Fax: +44 (0) 1923 216061  
E-mail: tsssales@teledyne.com  
Website: www.teledyne-tss.com  
Contact: Carolyn Jones



TELEDYNE TSS  
Everywhereyoulook™

USA Office: 7701 West Little York, Suite 300  
Houston, TX 77040, Contact: Keith Pope  
Tel: +1 713 461 3030, Fax: +1 713 461 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.

## OCEANOGRAPHIC INSTRUMENTS/SERVICES

### ASL Environmental Sciences, Inc.

#1-6703 Rajpur Place, Victoria  
BC, Canada V8M 1Z5  
Phone: +1 250 656 0177  
Fax: +1 250 656 2162  
E-mail: 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.

### CONTROS Systems & Solutions GmbH

Wischhofstraße 1-3, Bld. 2  
24148 Kiel, Germany  
Tel: +49 (0) 431 260 959 00  
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CONTROS  
Systems & Solutions GmbH

CONTROS Systems & Solutions GmbH develops, produces and markets in-situ underwater sensor systems to detect hydrocarbons, pCO<sub>2</sub>, dissolved oxygen, Total Alkalinity, and fully integrated systems down to full ocean depth to gather the most efficient and reliable data in any condition and in combination with data logging and software solutions.

### Falmouth Scientific, Inc.

1400 Route 28A, PO Box 315  
Cataumet, MA 02534-0315 USA  
Tel: +1 508 564 7640  
E-mail: fsi@falmouth.com  
Website: www.falmouth.com



### Sensors – Systems – Service

Falmouth Scientific, Inc. designs and manufactures precision oceanographic instrumentation and systems. Product areas include:

- Ultra-Portable Seismic Systems • Current, Wave, and Tide meters • Structural Stress Monitoring Systems • SideScan Sonar Imaging Systems • Acoustic Transducers, Systems, and Support • Acoustic Positioning and Relocation Beacons

### nke Instrumentation

rue Gutenberg  
56700 Hennebont, France  
Tel: +33 2 97 36 41 31  
Fax: +33 2 97 36 10 12  
E-mail: info.instrumentation@nke.fr  
Website: www.nke-instrumentation.com



• Fresh and marine waters multiparameter probes: CTD, dissolved oxygen, turbidity, fluorescence, pH • Monitoring data loggers for atmospheric and marine corrosion, and cathodic protection • Dedicated and customized measurement and monitoring equipment for: sediment transport, underwater systems behaviour, fishing efforts and environmental parameters, intelligent networks...

Contact : Valérie Le Pen - vlepen@nke.fr or Goulyen Prud'homme - gprudhomme@nke.fr  
• 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.  
Contact: Patrice Brault - pbrault@nke.fr

### Nortek AS

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1351 Rud, Norway  
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E-mail: inquiry@nortek.no

### Nortek USA

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Website: www.nortek-as.com



Nortek's products span from single point turbulence sensors to long range current profilers. Our customers are scientists, consulting engineers and professionals working in the offshore oil and gas industry. Nortek provides solutions measuring surface waves to currents 6,000 m deep. Nortek is global, positioned to help you wherever your solution is needed.

### RBR

95 Hines Road, Ottawa  
Ontario Canada K2K 2M5  
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Fax: +1 613 599 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.

### [Sea and Land Technologies Pte Ltd](#)

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A leading solutions provider in South East Asia and Australia for Oceanography, Meteorology, Hydrography, Hi Resolution Geophysical studies, Coastal Monitoring, Hydrology and Environmental surveys. Our proficiency is in providing the latest sensing technology and software solutions to meet the specific needs of the industry. Representing top manufacturers for over 20 years, SALT seamlessly blends value added services like calibration, system integration, training, repairs, cable moulding services with the technology products to offer a diverse range of innovative solutions for the user community in the region. Headquartered in Singapore, SALT has offices in Malaysia, Indonesia, Thailand, Philippines and Australia. Rental systems are available.

### [Sea-Bird Scientific](#)

13431 NE 20th St.  
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Contact: Calvin Lwin, Sales



Sea-Bird Scientific, comprised of Sea-Bird Electronics, WET Labs, and Satlantic, provides integrated solutions to customers' measurement needs. Sea-Bird Scientific is the leader in accurate, stable ocean instruments for measuring conductivity (salinity), temperature, pressure, oxygen, pH, chlorophyll, CDOM, turbidity, beam attenuation, irradiance, radiance, PAR, nitrate, and phosphate. Our CTD profilers, water samplers, moored CT recorders, wave/tide recorders, DO sensors, and optical sensors are used by research institutes, ocean observing programs, government agencies, and navies globally.

### [Star Oddi](#)

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Tel: +354 533 6060  
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Website: www.star-oddi.com  
Contact: Baldur 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.

### [SubTech GmbH](#)

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24145, Kiel, Germany  
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SubTech GmbH develops, produces and sells professional environmental and conditional monitoring equipment as well as Li-Ion based power solutions. Core products are pCO<sub>2</sub> analyzer, Li-Ion rechargeable batteries, subsea data logger and control equipment for different platforms. We provide reliable customized solutions for ships, buoys and ROVs/AUVs for full ocean depth.

### [Turner Designs](#)

845 W Maude Avenue  
Sunnyvale, CA 94085  
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Toll Free: +1 877 316 8049 x149  
Fax: +1 408 749 0998  
Contact: Tom Brumett, Sales Engineer  
E-mail: sales@turnerdesigns.com  
Website: www.turnerdesigns.com



Providing fluorescence-based solutions for research, water quality, and pollution control for over 40 years. Known for reliable and stable submersible, field, handheld, laboratory, and online fluorometers and turbidimeters. Customers rate us an average of 9, on a scale of 1-10, when asked how likely they would be to recommend us.

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### [L-3 Klein Associates, Inc.](#)

11 Klein Drive  
Salem, NH 03079  
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Fax: +1 603 893 8807  
Email: Klein.Mail@L-3com.com  
Contact: Deborah Durgin, Supervisor, Marketing & Sales



Klein Associates, Inc.

L-3 Klein is the world's leading sensor technology provider that manufactures and designs high-resolution side scan and multi-beam sonar equipment, and radar-based security and surveillance systems. L-3 Klein has developed a worldwide reputation of excellence in the industry by providing quality products and excellent customer service. Please feel free to check out our product offerings at [www.L-3Klein.com](http://www.L-3Klein.com).



**Marine Sonic Technology**  
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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 AUVs which occupy minimal space in the vessel and operate with minimal power consumption.

### **SOUND VELOCITY PROBES/CTDS**

#### [SAIV A/S](#)

Nygardsviken 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 profiling, installation on ROV's and towed systems, etc. Robust and compact designs are combined with accuracy and "plug and 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 00  
Website: www.ixblue.com



- **ECHOES 3500 T3 and T7** high penetration sub-bottom profilers
- **ECHOES 5000** full ocean depth sub-bottom profiler
- **ECHOES 10000** shallow water sub-bottom profiler

*iXBlue is a leading global provider of innovative solutions and services for navigation, positioning, and imaging.*

### **SUBSEA FABRICATION**

#### [New Industries](#)

6032 Railroad Avenue  
Morgan City, LA 70380  
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Website: www.newindustries.com  
Contact: Bill New



New Industries provides quality fabrication services to the offshore oil & gas and marine industries focusing on large diameter pressure vessels, suction piles, DNV buildings and deepwater subsea production equipment such as jumpers, PLETs, PLEMs and manifolds.

### **SUBSEA TOOLING**

#### [Seanic Ocean Systems](#)

8860 Fallbrook Drive  
Houston, TX 77064  
Tel: +1 713 934 3100  
E-mail: info@seanicusa.com  
Website: www.seanicusa.com  
Contact: Karen North



Seanic was formed to address the growing demand for simple, rugged and reliable subsea tooling for remote intervention. Along with engineered solutions, Seanic also offers experience in the design, manufacturing, storage, repair & maintenance of subsea products. Seanic provides a worldwide standard product line of ROV tooling such as torque tools, FLOT's, hot stabs, manifolds, buckets and ROV interface panels.

March 2015

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Ocean News & Technology

# OCEAN INDUSTRY DIRECTORY

ON&T's Product & Service Directory

## Subsea Americas

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Berwick, LA 70342  
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E-mail: charles@subseaamerica.com  
Website: www.subseaamericas.com  
Contact: Charles Mayea



Subsea Americas (SSA) is a leading provider of rental ROV tooling equipment on a worldwide basis. SSA is a 24 hr. / 7 days a week service provider of a comprehensive range of standard subsea tooling equipment. From torque tools and flying lead orientation tools to 15k isolated hydraulic intensifiers and wire rope cable cutters - SSA can fully support the client's needs with quality service, and reliable equipment at a most competitive cost.

## SWITCHES

### SEACON Advanced Products, LLC.

1321 Nefius Road  
P.O. Box 767  
Bellville, TX 77418 USA.  
Tel: +1 979 865 8846  
Fax: +1 979 865 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 VEHICLES/AUVS

### Hydroid, Inc.

a subsidiary of Kongsberg Maritime  
6 Benjamin Nye Circle  
Pocasset, MA 02559-4900 USA  
Tel: +1 508 563 6565  
Fax: +1 508 563 3445  
E-mail: glester@hydroid.com  
Website: www.hydroid.com  
Contact: Graham Lester



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E-mail: sales@ocean-server.com  
Website: www.iver-auv.com  
Contact: Jim Kirk



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Contact: Bill Charbonneau



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Contact: Peter MacInnes  
E-mail: peter.macinnes@fmcti.com  
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Contact: Alasdair Murrie  
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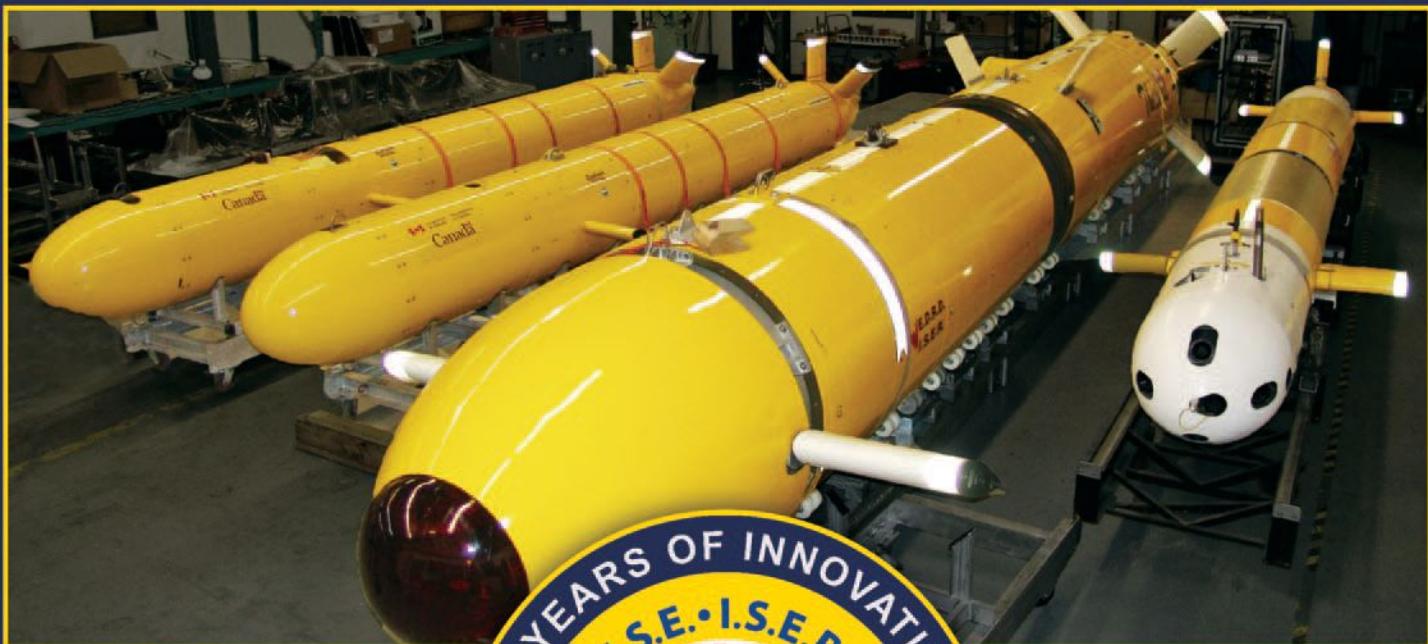
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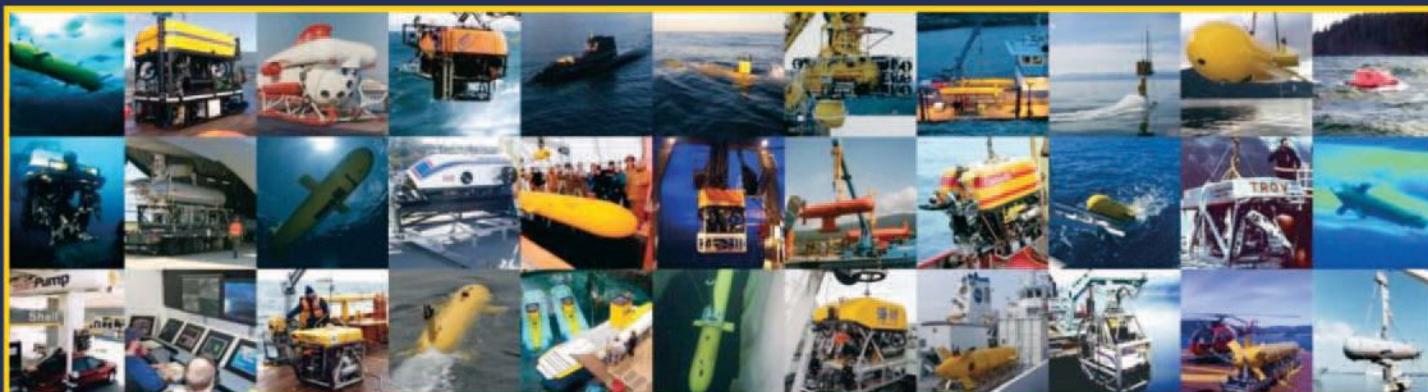
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