

OCEAN NEWS

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**U.S. Coast Guard Regulations
Expand AIS Carriage, Create
New Opportunities to Improve
Maritime Operations**

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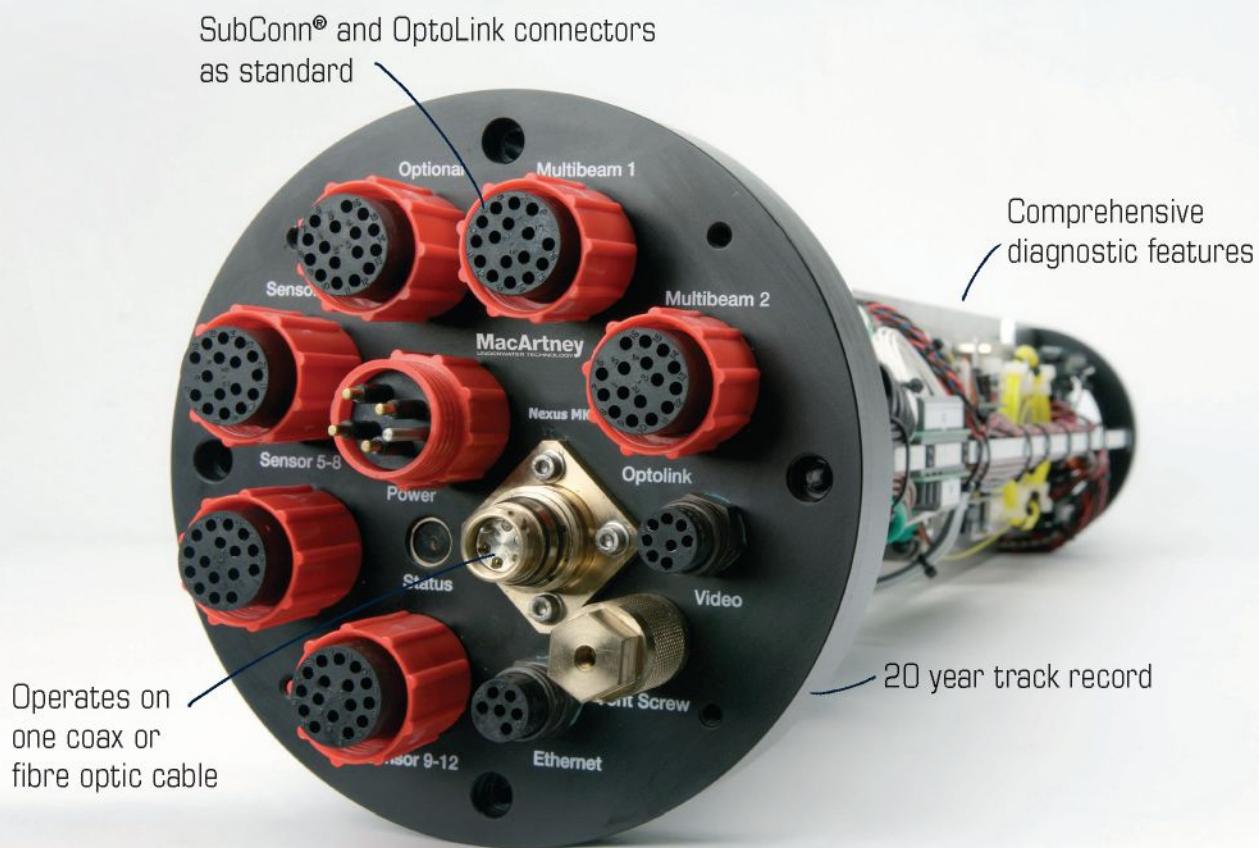
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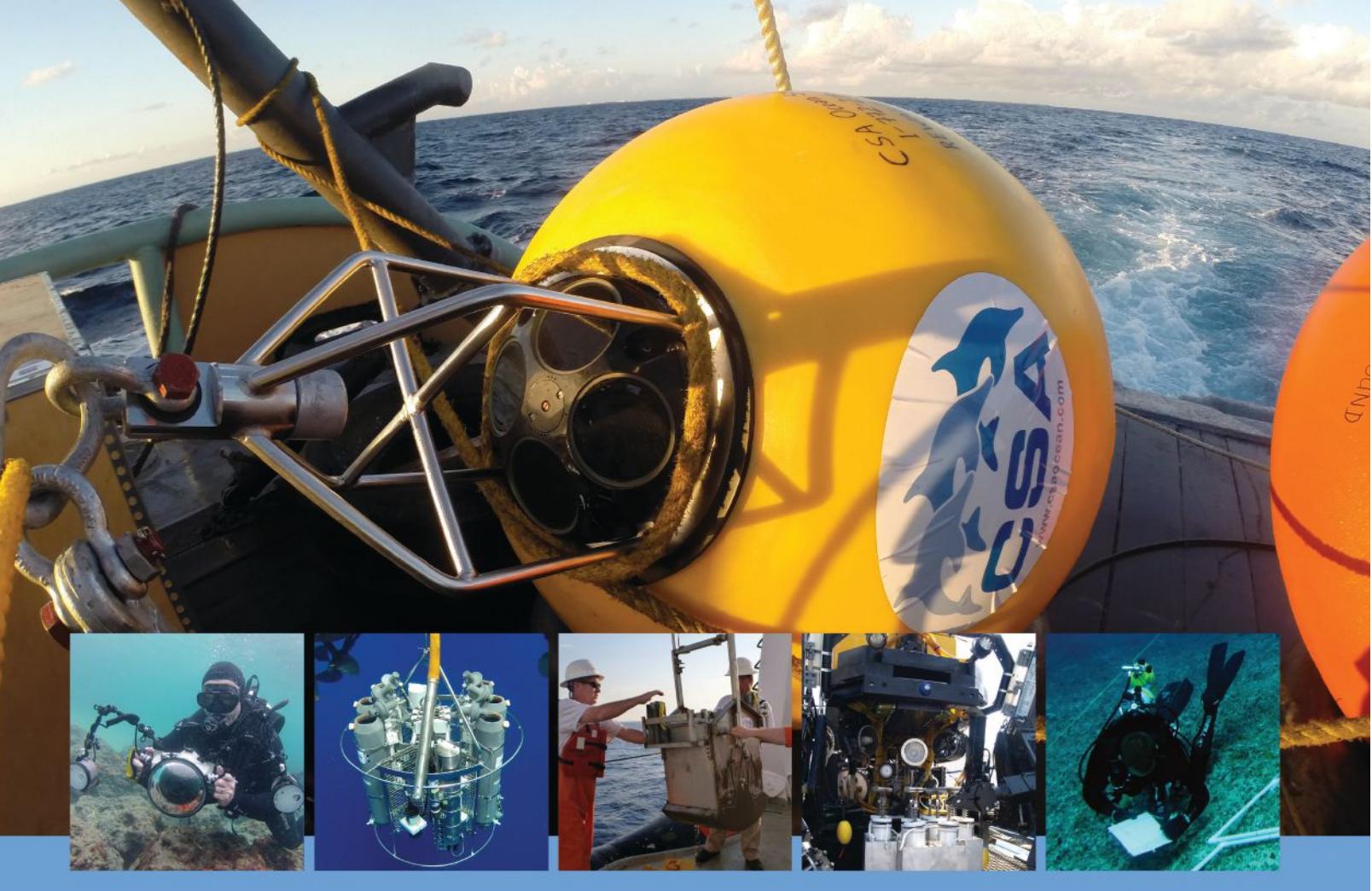
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Ocean News & Technology

Ocean Industry



Offshore Industry



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Deployment of a Kongsberg built, state of the art observatory offshore Svalbard, for the Centre for Arctic Gas Hydrate, Environmental and Climate (CAGE), UiT The Arctic University of Norway. See page 24 for story.
(Photo credit A. Silyakova/CAGE).

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The Offshore Internet of Things is Coming

"Not all that long ago...." I find myself using this simple expression over and over again. Specifically, it delineates an unspecified time between today and that hazy, vaguely remembered period known as "before the Internet."

We might recall that the Internet was fully commercialized 20 years ago. We might also remember the dotcom bust of 1999-2001 that led many to believe that the Internet would never amount to anything. In reality, it has only been the last decade or so that the Internet has fully become the tool that has changed our way of looking at almost everything. It has transformed the way virtually every industry on the planet operates and become the primary delivery method of entertainment to millions. In the United States, many cable television companies have more Internet subscribers than traditional cable subscribers.

Therefore, it should be no surprise that the Internet has altered our concept of offshore communications just as much. "Not all that long ago...." offshore communications involved a microwave or satellite link (or, very rarely, a fiber optic link) to offshore platforms for voice communications and rudimentary data transfers.

Now, I view offshore communications as having a much broader scope and the Internet is responsible. In the Internet era, offshore communications is, in reality, the extension of the Internet into the oceans of the world. Whether we are talking about communicating with oil & gas platforms, wind turbines, or ships at sea, our reliance on the Internet to keep us in touch provides entertainment and allows us to conduct business efficiently.

It is not just about having Internet access, but about having reliable, high-speed Internet access. This is entirely customer driven. Customers are demanding it, and service providers are working to satisfy their demands. Companies around the world are working on ways to increase the amount of bandwidth they can deliver offshore and extend that bandwidth as far into the oceans as possible using whatever technology they can—satellite, fiber optic, Wi-Fi, etc. (and don't forget airships and drones).

Those writing about the Internet have always been big on catch-phrases. The latest catch-phrase is the Internet-of-Things (IoT). Putting it in my own words, the IoT is the dream of a fully connected environment (roads, buildings, cars, planes, street-lights, etc.—you name it) maintained and managed over the Internet, thus reducing costs and increasing efficiency.

It is not difficult to take offshore communications one step further and envision an IoT extending into the oceans, providing communications for oil & gas platforms and other structures as well as sensors for studying the oceans, environmental monitoring, security, maritime archaeology, and anything else that we can think up.

So, here we are, entering the last quarter of 2015. Where do we stand in the offshore communications industry? There are several clear-cut developments.

First, it is clear that demand is growing. The trend is for more and more activities offshore that require greater degrees of data collection. Second, it is clear that the Internet will be the medium for the transfer of these data, which in turn means greater demand for bandwidth.

The next clear-cut point is that everyone is cost conscious. Providing reliable communications in an offshore environment is expensive. We certainly don't need to be reminded of the impact of the plunge in oil prices on energy industry spending, but other applications that need offshore communications (scientific research, environmental monitoring, etc.) are often poorly funded.

The final obvious development in the state of offshore communications is that the industry that provides such communications is well aware of the points mentioned above and is striving to meet growing demand as well as working to lower the costs of offshore communications products and services.

In this matter, technology is moving quickly, as it is in so many other industries. Satellite companies are introducing services that have fiber-like speeds. Fiber optic companies are working to find less expensive ways to serve the offshore market. Wi-fi is being extended into the offshore realm. Each month brings new promises of better and more affordable services.

So what does the future hold for offshore communications? Simply put, the Internet is coming to the offshore world in a big way. It already has made inroads and will become more important, even essential, as each year passes.

It is inevitable that over time offshore communications will evolve. There will be a day in the not-to-distant future when offshore communications will change completely to become the offshore Internet of Things. When that time comes, people like me will be noting a new reference point when we say, "Not all that long ago..."

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U.S. Coast Guard Regulations Expand AIS Carriage, Create New Opportunities to Improve Maritime Operations

By Jason Tieman, Oceaneering Director of Maritime Operations GDS

The U.S. Coast Guard recently completed the expansion of its Notice of Arrival (NOA) regulatory requirements, originally created in 2008. The goal was to help address threats to maritime transportation safety and security by improving navigation safety, enhancing the ability to identify and track vessels, and heightening overall Maritime Domain Awareness (MDA). Among other changes, the Final Rule (80 Fed. Reg. 5281), passed on 30 January 2015, expands the applicability of both NOA and 10 Automatic Identification System (AIS) requirements to include more commercial vessels. In addition to meeting the Coast Guard's safety and security objectives, these changes will also make it easier to realize the many additional benefits of AIS data for providing instant, continuous access to critical information about vessel activities at sea, in ports, and at busy marine terminals.

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Understanding the New Requirements

Written into the Federal Register, Volume 80, Number 20, the U.S. Coast Guard's Final Rule became effective 2 March 2015 (except for amendments to 33 CFR part 160 that became effective 30 April). In addition to improving security, safety, and environmental protection in U.S. ports, the Coast Guard believes that the Rule will enhance maritime and navigational safety through the synergistic effect of NOA and AIS as well as the ability to monitor vessel-specific movements in real time. AIS data will also enable the authorities to quickly locate, track, and intercept vessels, if necessary, due to security risks.

Among its provisions, the rule expands the requirement for NOA to include commercial vessels 300 gross tons or less that come to the U.S. from a foreign port (or place) and covers all U.S. navigable waters or deepwater ports. It also sets forth a mandatory method for electronic Notice of Arrival and Departure (NOAD) submission and modifies related reporting content, timeframes, and procedures. Five new data fields are required: a vessel's Maritime Mobile Service Identity (MMSI) number; whether a vessel is 300 gross tons or less; whether a voyage is less than 24 hrs; the last port of departure; and the arrival and departure date for the last port of departure.

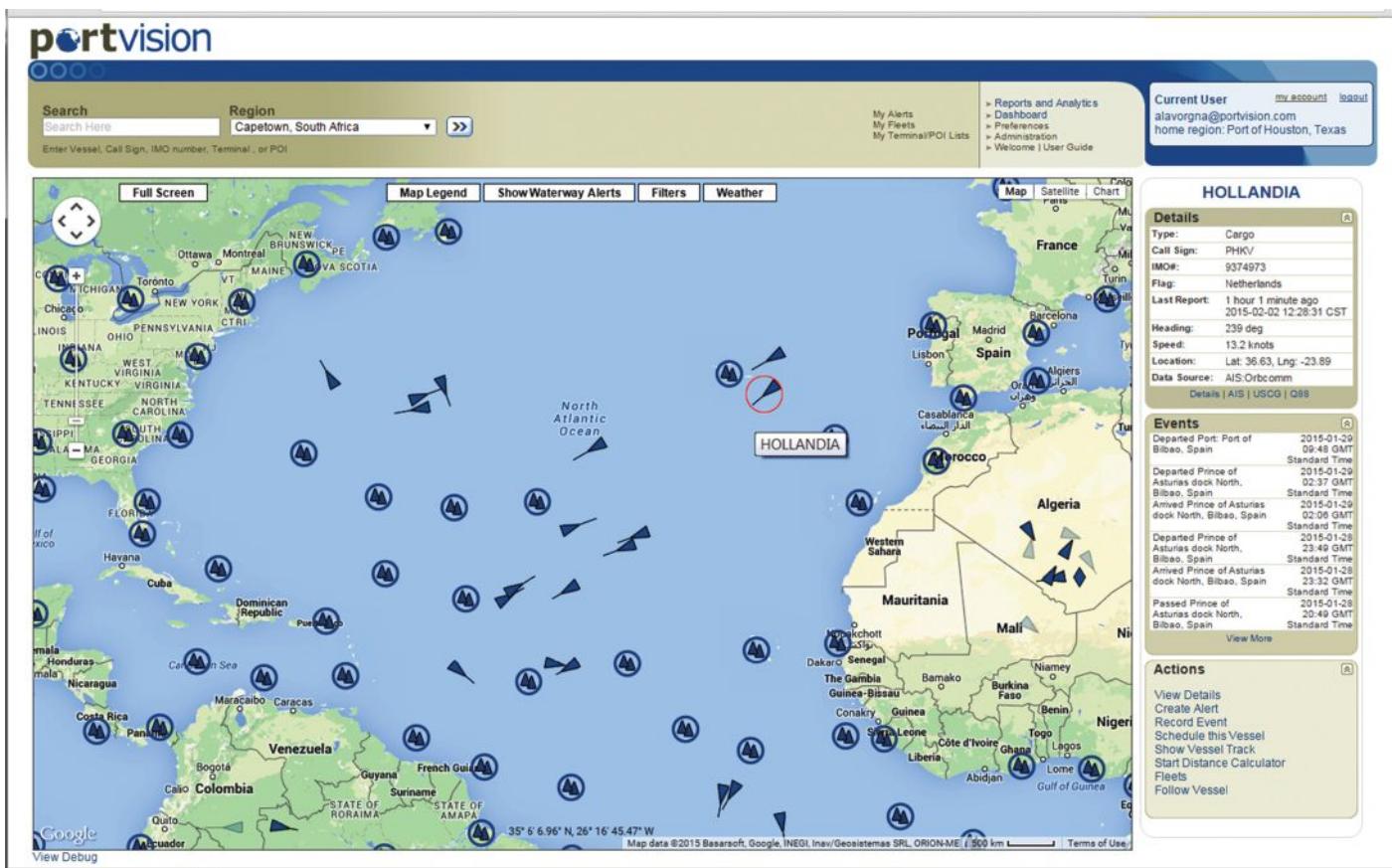
The Coast Guard estimates that 3,430 U.S.-flag and 14,947 foreign-flag vessels will be affected by the NOA requirement. Certain salvage vessels, submersible vessels, and ferries on fixed routes are exempted. The new vessels required to install AIS include self-propelled commercial passenger or fishing vessels (i.e., crew boats) that are 65 ft or more in length, a self-propelled vessel engaged in dredging operations, and a self-propelled vessel engaged in the movement of certain dangerous

cargo (CDC) such as that defined in subpart C of 46 CFR part 160 or flammable or combustible liquid cargo in bulk that is listed in 46 CFR 30.25-1, Table 30.25-1.

The Final Rule also requires electronic submissions to expedite processing of NOAD information, including data about a vessel, its voyage, cargo, and persons on board. The Coast Guard may also create regulations that require receipt of pre-arrival messages from vessels on their way to the U.S. in order to permit advanced vessel traffic planning (access the Electronic Notice of Arrival/Departure – eNOAD site at <https://enoad.nvmc.uscg.gov/>).

Additionally, AIS must now be installed and in operation on most commercial vessels when on the navigable waters of the U.S., and AIS installations must be completed within 18 months. Smaller vessels will not need to adhere to the additional AIS-related requirements, but all vessels moving dangerous cargo must be equipped with AIS, no matter their size. The rule extends AIS requirements beyond Vessel Traffic Service (VTS) areas and non-VTS users to include all U.S. navigable waters or deepwater ports. The Coast Guard estimates that the new AIS provisions will affect 5,848 U.S. vessels and 74 foreign-flag vessels.

Finally, the rule also allows for AIS to be installed on offshore fixed structures. Previously, AIS Aids to Navigation (ATON) systems were prohibited on certain fixed structures, such as bridges. This is now allowed. The reasoning is that the primary benefit of AIS is to provide near real-time dynamic information. Fixed and charted structures do not move; however, some are used by vessels as navigational aids based on their position and proximity to shipping lanes. This Final Rule recognizes that reality.



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Additional Value of Increased AIS Carriage

An added benefit of the new regulation is that it increases visibility of vessel movements within Electronic Chart Display and Information Systems (ECDIS), VTS, and shore-side systems such as Oceaneering's PortVision® Plus and PortVision® Advantage. While the Coast Guard has mandated AIS use since 2005 for safety and security purposes, these other systems have been using AIS data to help solve difficult operational challenges. Typical applications include scheduling of vessels at an oil refinery, supporting an incident response operation, providing post-mortem compliance, legal or training support, and supporting homeland security and law enforcement activities.

As an example, the PortVision® web-based enterprise software and services platform leverages instant, continuous access to critical real-time and historical AIS information about vessel and terminal activities in order to provide government users, marine terminal operators, fleet owners/operators, and other maritime users comprehensive tools for improving their business operations. The platform has become one of the most widely adopted enterprise-class marine terminal optimization solutions for oil companies who have been under growing pressure to streamline operations, reduce costs, increase visibility, and enhance business intelligence. It helps these organizations achieve their objectives by automating collaborative scheduling, reporting, analysis, and decision-making functions for managing terminal and fleet operations.

During the past year, AIS has also been adopted as a major weapon in the fight to protect pipeline infrastructure, greatly improving safety for mariners transiting and operating in close proximity to them. The Coastal and Marine Operators (CAMO) has launched a pipeline encroachment monitoring and vessel alerting program at Port Fouchon that uses AIS data for

this purpose. A broader initiative implemented by Kinetica LLC enables the company to better target public outreach efforts to connect with specific vessel operators while more efficiently allocating resources for pipeline integrity management across their entire pipeline infrastructure. For the latter effort, Kinetica uses AIS data to generate the necessary analytics about historical vessel traffic over its pipeline system so it can optimize decision-making around infrastructure inspections, permitting, and planning.

In another example, a top-3 oil company is combining AIS with radar, VHF communications, and other data sources into a single command-and-control platform with the necessary intelligence to predict, recognize, and issue alerts when there is imminent danger of a remote asset strike anywhere in the organization's extensive infrastructure. This program establishes a virtual "watch team" over multiple remote assets anywhere in the world.

The asset protection benefits of AIS do not stop with pipelines. The concept can also be extended to subsea cable and other remote un-manned assets. With the Final Rule's provisions for ATONs on certain fixed structures, such as bridges, it is not hard to imagine how AIS could be used to prevent damage to an even broader range of assets and infrastructure types while significantly improving their monitoring and maintenance.

Value-added AIS benefits are only possible if carriers transmit a persistent AIS signal with accurate data. By adding AIS carriage, the U.S. Coast Guard's Final Rule will not only increase security, safety, and environmental protection in U.S. ports, but also create new opportunities to promote AIS data's benefits across many types of operations.

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OCEAN INDUSTRY

WHOI takes delivery of new research vessel Neil Armstrong



Following completion of successful acceptance trials, the nation's newest research vessel, the Neil Armstrong, was officially turned over by the U.S. Navy on 23 September to the Woods Hole Oceanographic Institution (WHOI), which will operate the vessel as part of the national academic fleet.

In May 2010, the Office of Naval Research selected WHOI to operate the new vessel which is designed to meet the range, endurance, and technical requirements for advanced oceanographic research around the world. Named for the Apollo astronaut who first walked on the moon, the Neil Armstrong replaces the recently retired R/V Knorr, which had been in operation since 1970. The new ship will meet the academic community's need for a general-purpose research vessel based on the East Coast of the U.S.

"This occasion marks the beginning of a long association between the Armstrong and the Institution and the continuation of our heritage of operating research vessels in order to take science to sea," said Rob Munier, WHOI VP for Marine Operations. "Our partnership with the US Navy, in particular our mission sponsor, the Office of Naval Research, is also reinforced today. The Navy has supported basic oceanographic research for decades and, with the investment in the Armstrong, will continue to do so for decades to come. WHOI is proud to have been selected by ONR to be the vessel operator."

WHOI will operate the Neil Armstrong for the benefit of the U.S. ocean science community, coordinating its schedule through the University National Oceanographic Laboratory System (UNOLS). WHOI's experienced crew, many of whom served on the Knorr and have won high praise for their professionalism and service to ocean science, will serve on the Armstrong, with Captain Kent Sheasley in command.

Over the next month, the new ship, which is 238 ft long and can undertake missions of up to 40 days, will be outfitted with the essentials it needs for operation, spare parts, food stores, and other basic equipment and consumables. In November, the ship will begin the transit to the U.S. East Coast, with scheduled stops in San Francisco and the Panama Canal. The vessel is scheduled to arrive in the southeast U.S. in December at a port and shipyard to be determined, where the ship's science equipment will be installed and tested, in particular its sophisticated sonar systems and other sensors.

For more information, visit www.whoi.edu.

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Ocean scientist breaks freediving record in national competition

University of Miami Professor Claire Paris broke the USA Women's National Freediving record in the freediving discipline of Dynamic No Fins with a three minutes and seven seconds swim of 128 m (420 ft) on a single breath. She was competing with 12 other athletes in the first annual event.

"I am very happy and grateful with this National Record accomplishment. It is a reflection of my connection with water and the ocean," said Paris, director of the Physical-Biological Interactions Laboratory at the UM Rosenstiel School of Marine and Atmospheric Science. "I have dedicated my life to the study and conservation of the ocean and freediving makes me feel one with the water."

As an ocean scientist at the UM Rosenstiel School, Claire Paris' research focuses on dispersion at sea. She has developed numerical modeling tools used worldwide to track oceanic currents, pollutants, and the early life forms of marine organisms that dwell in the plankton, whether they are baby fish or coral larvae. To inform her virtual larvae with realistic behaviors, she has also developed a unique underwater drifting laboratory to track the movement of these tiny larvae and record the signals they might use in the open ocean to find their way to the reef and nursery grounds. Another powerful component to her scientific approach is how she interacts with her research subjects underwater. Paris uses her talent as a certified freediver to minimize any human disturbance to her research subjects.

The competition took place during the California Cup freediving competition at the Culver City Plunge Community Pool. Dynamic No Fins is performed by swimming underwater without fins in a pool, the athlete holding their breath and swimming as far as they can. Distance is measured where the athlete emerges with a metered tape. Paris added 3m (10 ft) to the record previously held by Shell Eisenberg, performance freediving instructor in Hawaii.



Monitor National Marine Sanctuary partners to survey World War I shipwreck

Teams from NOAA's Monitor National Marine Sanctuary, in partnership with the U.S. Coast Guard and the Bureau of Ocean Energy Management, began a survey of the historic wreck of Diamond Shoal Lightship No. 71, the only American lightship to be sunk by enemy action during World War I.

The archaeological survey expedition off the coast of Beaufort, North Carolina, will document the wreck site, which was added to the National Register of Historic Places. Information from the survey will be used to create educational exhibits and materials to help recreational divers better interpret the wreck site, which is managed by NOAA and the Coast Guard.

The sanctuary's research vessel SRVx Sand Tiger will provide the platform for at-sea operations. Other partners for the project include East Carolina University and University of North Carolina Coastal Studies Institute.

Built in Bath, Maine, in 1897, the lightship, also known as LV-71, served as a floating lighthouse, sound signal station, and navigational beacon. For 21 years, the lightship marked the treacherous waters of Diamond Shoals off of North Carolina to ensure other vessels could navigate safely.

On 6 August 1918, the German submarine U-140 attacked the vessel while it was anchored off Cape Hatteras. Before it was attacked, LV-71 had reported by radio the presence of a submarine that had torpedoed the unarmed American steamer Merak. The U-140 intercepted the warning and headed for the LV-71. The submarine fired its deck guns at the lightship and first took out the communications room. As the U-140's shelling continued, LV-71's 12 member crew escaped off the doomed vessel. According to A History of U.S. Lightships by Willard Flint, more than 25 friendly vessels were warned away from the area by the LV-71.



Subsea UK to support SMEs with apprenticeships

Subsea UK has launched a new support service to bring fresh, young talent into the subsea sector by making it easier for businesses to recruit apprentices.

Research conducted by the industry body that represents the UK's £9 billion subsea sector revealed the barriers for SMEs in setting up apprenticeships. These are broadly the time and cost involved in what is perceived as a complex process.

Subsea UK's scheme will provide financial support and specific help with making the process simpler so that small firms can benefit from apprentices and develop the next generation of subsea workers.

Subsea UK chief executive, Neil Gordon said: "The majority of our 320 members are smaller sized companies who are put off recruiting apprentices because they lack the HR knowledge and resources to deal with the overall recruitment and management process. Our findings revealed that they often turn to training providers or organisations but often this doesn't work for them. The research showed that the most effective approach to make it easier for these companies to take on apprentices would be practical, one-to-one consultancy to support them through the process rather than producing generic guidance which is already available through other skills organizations."

Subsea UK will offer tailored support to individual companies to help them with the overall recruitment process, development of training plans, setting clear roles and responsibilities for on-the-job training and conducting assessments. By working directly with companies, Subsea UK can make sure their needs are aligned to the apprenticeship program and help them access funding.

Mr. Gordon added: "By working with companies on a one-to-one basis, we will help lift the barriers that currently prevent them from launching apprenticeship schemes to secure a supply of people with the skills and competences they need, which are often not available on the external job market."

"We hope that this dedicated service will encourage more companies to invest in the next generation and help make them more effective, productive and competitive by addressing skills needs directly."

Those interested should email Subsea UK for further information at admin@subseauk.com.

OCEANS '15 adds workshops and special sessions

OCEANS '15 MTS/IEEE Washington, DC continues to add valuable content to the program designed to appeal to a wide variety of technical professionals, industry leaders, educators, policy makers and students. The annual fall conference and exposition, co-sponsored by the Marine Technology Society and the IEEE Oceanic Engineering Society, will be held 19-22 October at the Gaylord National Resort and Convention Center at National Harbor.

Workshops will be held on Monday, 19 October. There is no charge to attend a workshop; however, participants must sign up in advance via the conference registration page or at the registration desk to obtain an entrance badge.

Workshops include:

- **Catalyzing Ocean Services in a World of Abundant Ocean Data** – XPRIZE – speakers will include Dr. Rick Spinrad and Dr. Ralph Rayner.

- **Advancing Environmental Sensor Technology and Platform Integration for Improved Ocean Observations** – Jake Sabin.

- **Latest Advancements in Underwater Imaging Technology** – Fraser Dalgleish and Frank Caimi.

- **The Evolution of Subsea Vehicles** – Jim McFarlane.

Also, special sessions are integral parts of the conference and do not require separate registration. U.S. IOOS and the Maritime Alliance have partnered on two special sessions:

- **Ignite! A Lightning Round of Innovations, Discoveries, and Applications in Blue Tech!** – In this lively, fast-paced, 90-minute session on Tuesday afternoon, experts and hands-on users from federal, regional, and international agencies and associations will discuss the newest advances from the tech world, how they're working in real-world marine applications, and how they're propelling marine intelligence to the next level.

- **Town Hall Session on Marine Technology and Services in the Blue Economy.** On Wednesday morning, this Town Hall will offer public and private perspectives on new developments and technologies that are allowing us to work with the ocean in unprecedented ways, propelling the economic value of the seas forward, and making a huge impact on the global economy.

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Shipping companies cannot afford to relax their guard in SE Asia

Following a spate of six attacks in the Singapore Straight over one weekend, leading maritime security provider MAST is calling for shipping companies to strengthen their approach to maritime security in South East Asia.

Gerry Northwood OBE, COO of MAST, said: "Shipping companies need to look at Best Management Practices (BMP) 4 applied in the Indian Ocean and now adapt it to counter the threat posed by local criminals in SE Asia."

BMP4 has been effective in providing a framework for passive security measures, such as watch-keeping and enhanced vigilance, and hardening vessels transiting through the Indian Ocean so that even an unarmed merchant ship, while by no means impregnable to an attack by pirates, is now much harder to capture.

Northwood said, "Commercial shipping is highly vulnerable to acts of piracy in the waters of SE Asia and the fact that piracy is still prevalent, as borne out by the events off Singapore this last weekend, means that shipping companies, Masters and crews cannot afford to relax their guard."

After the attacks, local authorities announced that Malaysia and Indonesia would deploy rapid response teams to fight soaring piracy.

Northwood said, "The rapid response teams are welcomed but the onus is still on the ships and crews to take necessary precautions and ensure security measures remain effective while in transit, at anchor, in port and during cargo operations. There is no replacement for a good lookout, along with the appropriate BMP for the area. Incidents like the one over the weekend are entirely avoidable with the right training and forethought. Our advice is that shipping companies adapt the highly successful BMP measures adopted by the industry for the Indian Ocean high risk area to the prevailing situation off SE Asia. With the right measures in place, the incidence of piracy and trauma to crews will be radically reduced."

ABS drives game-changing technology through academic research

ABS, a leading provider of maritime and offshore classification services, revealed significant advances in technology at its recent University Partnership Symposium in Houston. The research ABS is funding through some of the top universities around the world will lead to disruptive technology that will impact the role of classification.

Academic leaders from the Massachusetts Institute of Technology, the University of California at Berkeley, the University of Michigan, George Washington University and the State University of New York Maritime College presented at the ABS-hosted event, which engaged participants from academia and industry.

"ABS is investing in research that will drive game-changing innovation and technology," says ABS chairman, president and CEO Christopher J. Wiernicki. "Our global innovation ecosystem includes ABS engineers and scientists at six technology centers around the world, partnerships with prestigious academic institutions, scholarship programs, and contributions to academic infrastructure and chair endowments."

Wiernicki added, "ABS believes the Class of the Future will be characterized as more condition-based, more continuous-based and more risk-based." Targeted research is being carried out in support of this. The University Partnership Symposium served as a forum for top U.S. universities to present the results of ABS-funded initiatives that will be the building blocks of Class of the Future, inviting input from industry participants that will be used to refine ABS research efforts.

The symposium featured three of ABS' core technology focus areas. According to ABS Chief Technology Officer Howard Fireman, "The programs highlighted at this forum emphasize some of the most critical technologies for Class of the Future, including sensors and autonomous inspection, materials innovation and nanotechnology and the application of analytical tools like computational fluid dynamics. ABS bridges the gap between research and application—partnering with academia and industry to develop and advance sustainable industry solutions that foster new ways of thinking and working that support our mission."

Tsakos group upgrades Athens training facility with new simulators



K-Sim Navigation and K-Sim DP, Kongsberg Maritime's latest generation ship-handling and Dynamic Positioning simulators have been chosen to further advance Tsakos Group's capabilities at its newly established training center, the Maria Tsakos TCM Academy in Athens, Greece.

Tsakos' existing K-Sim Polaris DNV Class A ship handling simulator will be upgraded to K-Sim Navigation in order to meet the latest DNV GL and Nautical Institute compliance requirements. Launched in November 2014, the all-new K-Sim Navigation simulator platform meets the requirements of the most demanding navigation training for merchant, offshore and naval vessels.

The migration from the Polaris system to K-Sim Navigation is enabled via a Long Term System Support Program (LTSSP) established in 2013 as part of a Kongsberg simulator delivery to Tsakos. The LTSSP facilitates early, easy access to the latest Kongsberg simulation software and technology. Jointly with the Maria Tsakos TCM training academy team, Kongsberg Maritime will also develop a brand new DP vessel model for use on the new K-Sim DP and K-Sim Navigation simulators.

For Tsakos Group, one of the leading shipping companies in Greece, and its technical managers, Tsakos Columbia Shipmanagement (TCM) S.A., education and training of crew is of the highest priority. To ensure that all human resources on board and ashore continually advance their training and competencies, Tsakos Group and TCM established the Maria Tsakos TCM Academy in 2014. The Academy is a latest generation Maritime Training Centre for the training of the Group's seafarers and shore staff.

K-Sim Navigation is based on a new cutting-edge technology platform enabling more realistic training scenarios and enhanced user benefits for both instructors and students. It features an advanced physical engine and state-of-the-art hydrodynamic modelling, allowing vessels, objects and equipment to behave and interact as in real life. To enhance the realism further, a sophisticated new visual system has been developed for K-Sim Navigation, ensuring vessels and objects are portrayed realistically in all possible weather conditions.

"When you are at sea, mistakes are not allowed. The protection of human life and the environment are non-negotiable matters. The simulator offers you an unprecedented opportunity to operate and react in a virtual, yet fully realistic environment where mistakes become lessons learnt," says Cpt P. Drosos, managing director of TCM.

For more information, visit www.km.kongsberg.com.

CTruk strengthens workboat credentials with latest WFSV

CTruk Boats has strengthened its credentials as a leading manufacturer of wind farm support vessels by handing over the second boat in a two-craft order from CWind.

The MPC22 WFSV CWindSpirit was officially named at a ceremony in Ipswich and is the latest addition to a stable of nearly 30 WFSVs built by CTruk.

Like her sister vessel CWindArtimus, which was handed over in June, the latest MPC22 will benefit from a Volvo Penta Integrated Propulsion System (IPS) that reduces fuel consumption; produces less CO₂ emissions; offers extra maneuverability and bollard pull; provides a longer cruising range; and enables a higher top speed. The IPS, controlled by joystick and driving twin propellers, also offers improved dynamic positioning.

IPS was initially introduced on a CTruk boat operating in the North Sea and has proved its value operating offshore in Continental Europe where



CWind Spirit is also expected to undertake her maiden deployment.

CTruk chief executive officer Andy White explained that the addition of IPS on the two latest craft further expands the range of options CWind can offer to its clients.

"The range of wind farms in planning, construction and operation demands a suitable range of transfer solutions. Given the alternative power and propulsion configurations, the fleet of CWind boats now in use has a wide range of equipment to meet require-

ments and operational needs," he added. "Versatility is an important factor as operators look for greater efficiency in their fleets and this will become even more important as offshore wind farms move further offshore."

Adding to the versatility of CWind craft is the patented moveable wheelhouse and flexible deck pod system that enables operators to reconfigure the boats in just 8 hours, allowing additional deck space to be created overnight.

The MPC22's versatility extends from transferring 12 technicians in ultimate comfort or removing its passenger pod to make use of 72 sq. m of deck space for equipment transfer, carrying cranes, transfer systems and amphibious rescue vehicles such as the CTruk Avenger.

CWind Spirit has a composite twin-hull with 7.6 m beam and 1.25 m draft. It has a 20-tonne flexible payload capability and the ability to carry 24,000 litres of fuel, an invaluable function in servicing round 3 zones.

For more information, visit www.ctruk.com.

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Crewtoo seafarers happiness index reveals mariners dread port calls

Crewtoo, the online social network for seafarers and a part of KVH Industries, Inc., has published the results of its second crewtoo seafarers happiness index report.

Designed to monitor and benchmark seafarer satisfaction levels via 10 key questions, this second quarterly report shows a seafarer satisfaction level of 6.44 on a scale of 1 to 10, up 0.02 from the inaugural survey published in May this year.

One surprising issue detailed in the second report is that seafarers sometimes dread port calls because of the increase in workload caused by the many audits and inspections when a ship is in dock. This increase in workload at port also caused a drop in satisfaction levels towards shore leave, as the amount of work often eats into the time available for relaxation. One respondent stated: "I am happy at sea but when our vessel enters port, it is a very hard time." In addition, a number of seafarers noted that getting ashore costs them at least \$100USD, which presents a major barrier to taking shore leave. Increased stress during port visits and either reduced or non-existent shore leave gives seafarers very few opportunities to relax and unwind away from their vessels.

This second report of the crewtoo seafarers happiness index shows several areas where satisfaction improved versus the first report. For example, there was an improvement in crew satisfaction with salary levels and an improvement in their feelings about the standard of food available on board. The availability of exercising onboard was also viewed more positively, as was the satisfaction derived from crew interaction and team building, which increased from 6.96 to 7.16 and became the highest score in the survey.

Answers to the survey are received from across all ranks and nationalities including seafarers from the Philippines, U.K., Poland, Croatia, Germany, U.S., Canada, India, and Turkey, as well as a number of African nations. The age of survey respondents ranged from 16 to the late 60s. Masters made up the largest proportion of responses by rank; some 11% of respondents stated that they were currently serving in the role of captain. The majority of responses were from seafarers working on bulk carriers and container vessels.

For more information, visit www.crewtoo.com.

First ship with Van der Velden® FLEX Tunnel commissioned

The first ship outfitted with the Van der Velden® FLEX Tunnel was named 14 August in Duisburg. The Rhenus Duisburg, the new barge combination from shipping company Rhenus PartnerShip, has been put through extensive tests and trials. Much data has been collected to establish the appropriate and ultimate efficiency of the Van der Velden® FLEX Tunnel. The system offers advantages for barges in terms of speed, capacity, propulsion, maneuverability and fuel economy.

Van der Velden® FLEX Tunnel is an innovative fold-tunnel system designed specifically for inland waterways. Fitted with conventional tunnels, loaded barges sail in deep water for an average of 80% of the time. Then the use of a tunnel system is unnecessary and leads to additional resistance, with reduced propulsion and therefore higher fuel consumption. Van der Velden's Tunnel system offers a solution, because the system is only in action when the vessel is unloaded or in shallow water.

The difference between the Van der Velden® FLEX Tunnel and conventional tunnel systems lies in the fact that the FLEX Tunnel makes it possible to sail without tunnels in deep water, like the ARA area. In fixed tunnels, which are installed on most vessels, this is impossible. Navigating without tunnels vastly reduces the resistance, and this in turn provides better fuel economy.



The innovation of this system is not just the ability to sail without tunnels. Van der Velden has also focused their attention at improving the speed while using tunnels. The FLEX Tunnel ensures that enough water, without air bubbles is channelled towards the propeller. The tunnel has an airtight seal on the jet tubes, which allows larger propeller diameters to be used. The possibilities in the field of hull design are also increased, as fixed tunnels are no longer necessary. This allows further hydrodynamic optimization.

For more information, visit www.damen.com.

NYK receives delivery of Japan's first LNG-fueled vessel

On 31 August at the Oppama factory of Keihin Dock Co. Ltd., NYK received delivery of Japan's first LNG-fueled tugboat. The vessel has been named "Sakigake" and is expected to confirm the viability of LNG as a marine fuel and to help cultivate a new business field in the area of LNG as an environment-friendly marine fuel.



Sakigake has been chartered to Wing Maritime Service Corporation from NYK and will be operated mainly at the ports of Yokohama and Kawasaki. This vessel is the second environment-friendly tugboat operated by Wing Maritime Service Corporation, following the delivery of Tsubasa.

The new tug is equipped with dual-fuel engines that can use either LNG and diesel oil, depending on conditions. Compared with conventional tugboats that use marine diesel oil, Sakigake emits about 30% less carbon dioxide, 80% less nitrogen oxide, and absolutely no sulfur oxide when using LNG as fuel.

The small size of most tugboats, the limited amount of space, and the large variation in engine power make it difficult to create an LNG-fueled tugboat. Keihin Dock Co. Ltd. was able to achieve an excellent level of environmental performance while maintaining the same hull form and steering performance of existing tugboats. To do this, Keihin Dock made full use of its knowledge and technical strengths, and worked closely with Niigata Power Systems Co. Ltd. to design and manufacture the dual-fuel engine, and Air Water Plant & Engineering Inc. to develop equipment for supplying LNG.

Cosco orders 11 megaships

Chinese shipping giant Cosco Holdings has said it will order 11 container megaships for \$1.5 billion. This order comes as freight rates have dropped to levels that at times do not cover the fuel cost of moving containers due to an estimated 30% overcapacity in container shipping.

Cosco has placed an order for 11 19,000 TEU containerships with four

Chinese shipyards. Two orders were placed with Dalian Cosco Khi Ship Engineering, four at Nantong Cosco Khi Ship Engineering, three at CSSC Shipbuilding, and two at CSIC Shipbuilding. Each ship will cut costs by about 25% when fully loaded.

The Wall Street Journal quoted Lars Jensen, chief executive of SeaIntelligence Consulting, as saying that concerns about overcapacity were well-founded, but that such vessels were needed to keep up with Cosco's larger rivals, "Over the next couple of years, any ship carrying below 12,000 boxes won't be able to compete in terms of cost."

Cosco is the lead member of the CKYHE alliance, which also includes Taiwan's Evergreen Line and Yang Ming Marine Transport Corp., Japan's Kawasaki Kisen Kaisha Ltd. and South Korea's Hanjin Shipping Co. In January, Evergreen ordered 18,000 TEU ships.

Record vessel launched

An offshore construction vessel for Island Offshore/Edison Chouest Offshore was launched from the dock hall at Ulstein Verft recently. Measuring close to 160 m in length, and with a



beam of 30 m, she is the largest offshore vessel so far from Ulstein Verft.

The vessel is jointly owned by Norway-based Island Offshore and U.S.-based Edison Chouest Offshore, the latter will be managing the vessel. Thus, the vessel carries the Edison Chouest colors and logo.

The vessel was redesigned in the engineering phase, and thus, the final vessel increased both in length and beam, resulting in increased deck area and tank capacity.

"Ulstein Verft has a unique position by the in-house multidisciplinary know-how of ship designs and a large technical department. This give our customers

added value in which it enables us to take on such major change orders," says project manager in Ulstein Verft, Per Svein Brekke.

For more information, visit www.ulstein.com.

Crowley achieves major milestone with keel laying of second LNG-powered ship

The keel for the second Commitment Class LNG-powered, combination container-Roll-On/Roll-Off ship for Crowley Maritime Corp.'s liner services group—was laid during a ceremony at ship-builder VT Halter Marine, Inc.'s facility in Pascagoula, Mississippi. The keel laying ceremony marked the next step in the construction of Crowley's two Commitment Class ships, which will exclusively serve the U.S.-Puerto Rico trade lane.

VT Halter Marine and Crowley entered into a contract for the pair of Jones Act ships in November 2013 and construction of the second ship began with steel cutting in Pascagoula in May 2015. With the first section set in place, the ship will now begin to take shape as it is built around the keel.

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Ocean News & Technology

ROV, AUV buoyancy and umbilical flotation

1 Umbilical floats

A standard range of floats is available to suit most control umbilicals. Comprising symmetrical half shells Balmoral floats are designed to permit flexing within specified bend radii.

2 Flexlink™ articulated umbilical buoyancy

Designed to ensure umbilical lines remain out of the ROV work zone, Flexlink is installed onto lines of 25-75mm with uplifts of 6-12kg in operating depths to 6000msw.

3 ROV buoyancy

Offering a full in-house service Balmoral Offshore Engineering designs and creates intricate ROV/AUV buoyancy profiles with virtually no size limitation. Balmoral's unique composite and pure foam systems are designed to operate at depths of 1000-10,000msw.

The company's refurbished ROV plant incorporates an end-to-end process that includes temperature controlled curing facilities and a state-of-the-art buoyancy block boring and milling plant.



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CMRE listens to the sea to know it better

Scientists from the NATO STO Centre for Maritime Research and Experimentation (CMRE) and their partners from nine institutions of five NATO Nations (Canada, Italy, Norway, U.S. and UK) will collect acoustic, oceanographic and geophysical data using both traditional and novel observation methods, such as underwater gliders, the greenest unmanned underwater robotic platforms that are available to date. In particular, GLISTEN '15 aims to test the readiness and feasibility of the novel payloads and smart sensing methodologies, which CMRE has developed to enhance current capabilities for ocean environment characterization. GLISTEN is one of the sea going efforts of the CMRE EKOE (Environmental Knowledge and Operational Effectiveness) program that develops scientific and technical solutions to the ocean environment predictions for NATO Nations and Navies. "A deeper knowledge of this area could be also beneficial to the local communities for a more effective protection of the marine environment," underlines Yong-Min Jiang, CMRE GLISTEN '15 scientist in charge. "The final data will be made available to the scientific community under request."

CMRE fleet of seven gliders will be deployed to study the properties of the seabed, water column and sea surface. The research will also include seabed characterization using naturally occurring ambient noise that is generated by the sea surface waves. Thanks to the hydrophone and hydrophone array equipped gliders, which have no propulsion and are able to operate silently, scientists shall be able to obtain the seabed types and layer structures by listening and then analyzing the ambient noise in the ocean.



Visualizing ocean science through geospatial mapping

For BOEM, making informed decisions based on science relies on the ability to readily discover relevant scientific information and data analyses. Using the latest geospatial science and database technology, BOEM has reinvented the Environmental Studies Program Information System (ESPIS) to streamline the search, discovery and retrieval of more than 40 years of environmental science. We partnered with NOAA's Office for Coastal Management to design and host the new ESPIIS, building on the success of another BOEM/NOAA partnership, MarineCadastre.gov.

This innovation aligns BOEM with the federal government's move toward greater interoperability and openness of government research data and the building of a 21st Century digital government.

BOEM and others who are preparing environmental reviews to comply with NEPA will find study reports with more precision by searching expanded metadata of BOEM-funded ocean research. Regional Planning Bodies can geo-reference study data more easily. Industry, academia and the NGO community will find archived study results from past decades to compare with the latest BOEM research.

Enhanced search tools enable users to submit text and map-based queries to find relevant study information, including downloadable electronic documents of study profiles, technical summaries and final reports, and links to associated publications and digital data.

New systems architecture leverages MarineCadastre.gov's GIS infrastructure and BOEM/BSEE's Electronic Document Management System. This robust web service-based architecture exponentially multiplies access to the ESPIIS online database and its supporting data and information across the Internet. For more information, visit www.boem.gov.

Ghost Busters



'Ghost catching' is the term used to describe the indiscriminate netting of fish by derelict fishing nets that have snagged on bottom features or been torn off. They remain on the bottom harming fish and marine life as they never degrade.

The Northwest Straits Foundation, based in Bellingham, Washington, has already removed over 5,600 of these derelict fishing nets from the Puget Sound.

Normally their Derelict Fishing Gear Program employs skilled divers whose work is restricted to shallow areas of up to 105 ft in depth. Now nets lodged in deeper waters need to be removed.

A key consideration for the Foundation, explains programs director Joan Drinkwin, is that their protocol dictates that any method used to remove these nets should not damage the habitat.

This led to a pilot study to determine whether a Saab Seaeye Cougar XT ROV and supporting Falcon ROV could undertake the difficult and delicate task of removing the deeper nets without adversely affecting the habitat.

The project, run by the Foundation in conjunction with Global Diving & Salvage, Inc. who supplied and operated the ROVs, involved the design and fabrication of special tooling and the development of procedures and protocols to remove the nets.

Early in 2015, Global Diving and the Foundation's field operations manager, Natural Resource Consultants, conducted a series of trials where the Cougar, supported by the Falcon, tested various procedures and tools necessary for working in diverse habitat conditions. They found that recovery from the seabed was fully successful, whereas disentangling nets and gear from rocks is a challenging task.

In particular, it is difficult to work in a sediment-disturbed environment where visibility is poor and there is a risk of loose strands and segments of netting getting tangled with the Cougar—although using the Falcon to observe the task helps considerably. While it is possible to remove a whole net using the Cougar to secure lifting straps and winching it up to a vessel, this technique is not favored as the net could rip apart into multiple pieces and need extended recovery.

The best solution found was to replicate the technique successfully used by divers in shallow waters: cut or untangle the net into manageable pieces before removal to the sur-

face. The recovery procedure starts with topside pilots using the Cougar's navigational software and ultra-short baseline tracking to guide the ROV to a pre-determined derelict net site where a careful survey of the area is undertaken.

Then, using the various tools designed and fabricated by Global, the recovery team maneuvers the Cougar into a safe position to utilize the two manipulators mounted on the vehicle ready to cut or untangle the nets before attaching a surface retrieval line, one section at a time.

During the procedure the Falcon provides video coverage, giving the Cougar operator an additional vantage point and an awareness of the surroundings, and is ready to assist the Cougar during recovery as needed.

Together with Global Diving and Natural Resource Consultants, the Foundation plans more tests to evaluate the feasibility of this method and determine the best tools and method needed for the task.

For more information, visit www.seaeye.com.

University of Miami selects SPOT for oceanic flow study

Globalstar, Inc. announced that the University of Miami Rosenstiel School of Marine and Atmospheric Science (UM) will deploy SPOT Trace satellite trackers in its continued research expedition with the Consortium for Advanced Research on Transport of Hydrocarbon in the Environment (CARTHE). The project studies ocean flow as it relates to the dispersion of pollutants and the effects of hurricanes on the dissemination of environmental hazards over time. This is an extension of an ongoing project that launched in 2012 after the BP oil spill to monitor how pollutants behave in normal and emergency conditions, collecting over six million data points.

SPOT devices are cost-effective, rugged, and pocket-sized and use satellite messaging technology to allow users to communicate from remote locations around the globe. The SPOT product family uses the GPS satellite network to determine a customer or asset's location and transmit messages and GPS coordi-

nates to others, independent of cellular phone coverage or radio frequency range. As a result, SPOT devices fulfill a variety of purposes including emergency services, recreational/asset tracking and scientific studies.

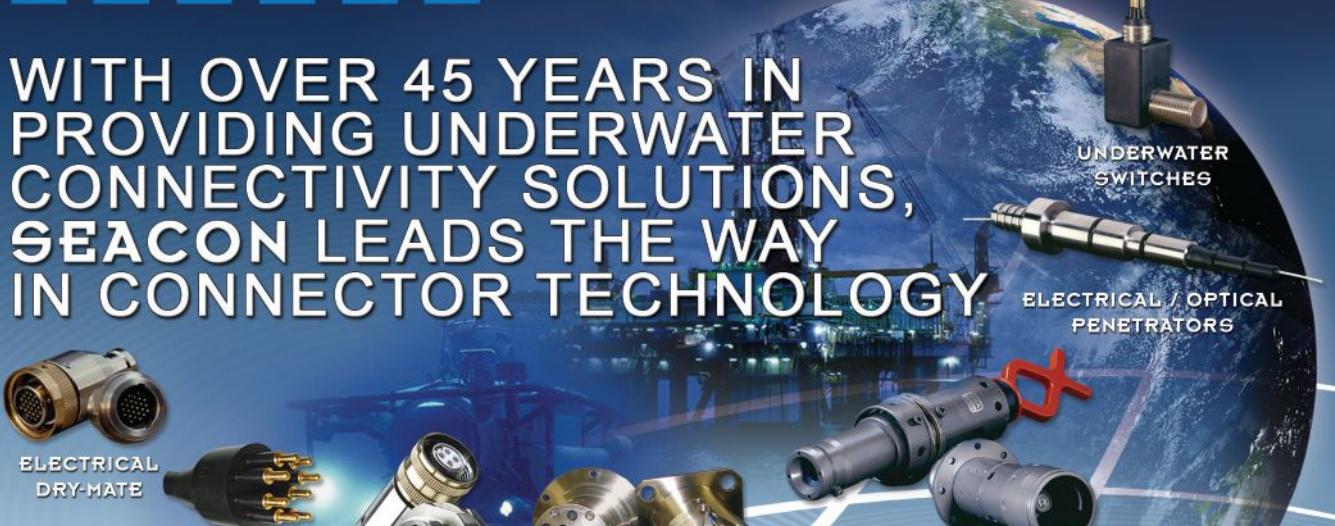
For the first time, CARTHE's field work at sea, combined with laboratory experiments and development of interconnected modeling systems, will produce a comprehensive modeling hierarchy that provides a four-dimensional description of oil/dispersant fate and transport in the Gulf of Mexico and coastal environments across all relevant time and space scales. CARTHE was also able to provide useful data and coastal models to emergency responders after the 2013 explosion of the Hercules 265 drilling rig and the Santa Barbara oil spill earlier this year.

"SPOT is at the very heart of our upcoming expedition in the northern Gulf of Mexico, just like in our 2012 study. Almost every aspect of the experiment is tailored around these devices. Such massive simultaneous information has never been obtained before, and we



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expect that SPOT will provide unprecedented scientific information about ocean currents so we know what to anticipate in the event of future oil spills," said Tamay Özgökmen, professor of ocean sciences and CARTHE director.

"The CARTHE group, based at the UM Rosenstiel School of Marine and Atmospheric Science, continues to produce cutting-edge science and pushes the boundaries of physical oceanography. This will be the largest oceanographic experiment of its kind and to be successful, the quality of the equipment must be exceptional," said Roni Avissar, professor and dean of the Rosenstiel School of Marine and Atmospheric Science. "Our scientists have spent years perfecting the drifters and planning the execution of their release, and now we need the SPOT GPS units to do the work."

"We are thrilled to continue to be a part of such an innovative research project that has such an enormous impact on the communities in which we and many of our customers are a part of," said Jake Rembert, vice president at Globalstar. "The University of Miami's Rosenstiel School and CARTHE are making groundbreaking discoveries with our SPOT devices and we look forward to finding more ways to leverage our satellite technology in this arena."

For more information, visit FindMeSPOT.com.

NOAA RESTORE Act Science Program awards \$2.7 million for Gulf research

NOAA's RESTORE Act Science Program has completed its first funding competition and is awarding approximately \$2.7 million to seven research teams. Each of the teams will address one or more of the Science Program's short-term priorities for the Gulf of Mexico, which focus on assessing ecosystem modeling, evaluating indicators for Gulf conditions, and assessing and developing recommendations for monitoring and observing in the Gulf.

These projects will aid current scientific understanding and management needs and inform the future direction of the NOAA RESTORE Act Science Program, as well as other science and restoration initiatives in the region. The results from these projects will also help in the development of management strategies to support the sustainability of the Gulf of Mexico ecosystem, including its fisheries.

"These awards put funds in the hands of researchers who can work with

us to make a difference in the Gulf of Mexico," said Julien Lartigue, Ph.D., director of the NOAA RESTORE Act Science Program. "These teams of researchers will be working closely with resource managers and others who can use the results of their work to advance our understanding and management of the Gulf."

The seven teams receiving funding draw researchers from 17 institutions including universities, federal and state agencies, non-governmental organizations and the private sector. In total, 31 researchers will be involved, with 28 of them located in the Gulf of Mexico region. Of the seven projects, six are being led by institutions located in the region (three in Texas, one in Florida, one in Mississippi, and one in Louisiana). The awards range in size from \$309,000 to \$400,000 and the projects will run for up to 2 years. These projects were selected following a rigorous and highly competitive process that included a review by a panel of independent experts.

For more information, visit www.restoreactscienceprogram.noaa.gov.

Methane observatories deployed in the Arctic

It is not only the space agencies that launch landers to far away places. Marine science institutions have a lot of unknown ground to cover in their quest for knowledge. Also they are depending on groundbreaking lander and sensor technology to lead them to that knowledge. Centre for Arctic Gas Hydrate, Environment and Climate (CAGE) recently deployed two observatories on the site of the methane seeps in the Arctic Ocean. Kongsberg Maritime built the observatories that are now comfortably placed on the ocean floor in two locations offshore Svalbard. These are the sites where flares of gas bubbles have been observed, indicating release of methane gas to the water column. The observatories are placed at the depth of 90 and 240 m, respectively.



"The launch went perfectly," says chief scientist on the cruise, Dr. Anna Silyakova. Methane is a potent climate gas that can amplify the global warming if released into the atmosphere. However, there is still a lot to be learned about the release of methane from the ocean floor and what happens to it in the water column. Does it get dispersed with the currents? Do bacteria consume it? Or is it released in the atmosphere?

The observatories include several instruments that will monitor methane release from the seabed to the water column as well as CO₂, ocean acidification and circulation. The data from these observatories will provide knowledge that will help understand processes related to climate change. The observatories will stay put in their locations, collecting crucial data for a full year.

For more information, visit www.cage.uit.no.

Ocean acidification shakes the foundation of cold-water coral reefs

The longest-ever simulation of future ocean conditions shows that the skeletons of deep-sea corals change shape and become 20% to 30% weaker, putting oases of deep-sea biodiversity at risk.

Because the ocean absorbs much of the extra carbon dioxide produced by human activities, the chemistry of seawater is changing, a process known as ocean acidification. Scientists at Heriot-Watt University, publishing in Proceedings of the Royal Society B, have simulated this process in the laboratory: while corals appear to feed and grow well, this hides fundamental changes in the structure of their skeletons. These changes put the whole reef structure at risk.

Few people are aware that more than half the coral species known to science are found in deep-waters growing in chilly temperatures, and that spectacular reefs supporting a wealth of other marine life grow in the cold waters of the North Atlantic Ocean.

Scientists at Heriot-Watt University painstakingly kept Scottish deep-water corals for a year in purpose-built aquaria. Carefully designed experiments, of the highest international standard, made it possible to simulate precisely a range of future ocean conditions with higher carbon dioxide and warmer temperatures. They discovered that the coral skeleton changed in structure and shape, and that the dead coral became much more easily snapped and damaged.

"The very foundation of the reefs is

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where the biggest impacts may be seen. Live corals are standing on the shoulders of their dead parents and grandparents, and we see that ocean acidification can start to dissolve dead coral skeleton," explains Dr. Sebastian Hennige, lead author of the new study. "This makes them weaker and more brittle, like bones with osteoporosis, and means that they may not be able to support the large reefs above them in the future."

"This is bad news for deep-coral reefs," says Professor Murray Roberts, who led the project team. "There is no scope for dead coral to adapt to ocean acidification. Our results strongly suggest that deep coral reef structures as we know them may be at serious risk of disappearance within our children's lifetimes—and the role these structures play in the ecosystem, providing habitat for thousands of other species, including places for sharks to lay their eggs, will be lost."

"We know that ocean acidification can impact marine biodiversity in a variety of ways," explains Dr. Phillip Williamson, coordinator of the UK Ocean Acidification research programme (UKOA) that funded this work and editor of the UN's Convention on Biological Diversity recent report on ocean acidification, "but this study highlights just how much we still need to understand about important deep-sea habitats and how important our efforts are to reduce carbon dioxide emissions now."

For more information, visit www.pml.ac.uk.

Ocean's wildlife populations down by half, says new WWF report

A new WWF report reveals an alarming decline in marine biodiversity over the last few decades. According to WWF's Living Blue Planet Report, populations of marine vertebrates have declined by 49% between 1970 and 2012, with some fish species declining by almost 75%.

In addition to fish, the report shows steep declines in coral reefs, mangroves and seagrasses that support marine food webs and provide valuable services to people. With over 25% of all marine species living in coral reefs and about 850 million people directly benefiting from their economic, social and cultural services, the loss of coral reefs would be a catastrophic extinction with dramatic consequences on communities.

According to the report, the biggest drivers of these declining trends are from human actions—mainly overfishing, habitat destruction, and climate change.

Although the report paints a dim picture of ocean health, it also provides solutions and opportunities to turn the tide. It highlights the need to protect critical marine habitats, manage fish stocks more sustainably, improve fishing practices, and redirect financial flows to support these needed initiatives.

"The good news is there are abundant opportunities to reverse these trends," said Brad Ack, senior vice president for oceans at WWF. "Stopping black market fishing; protecting coral reefs, mangroves and other critical ocean habitats; and striking a deal in Paris to slash carbon pollution are all good for the ocean, the economy, and people. Now is the time for the U.S. and other world players to lead on these important opportunities."

One immediate opportunity for international action happens later this month when world leaders meet in New York to discuss the UN's Sustainable Development Goals. At the meeting, it's essential that political leaders support the goals with significant investment and meaningful implementation plans to address the habitat destruction, illegal fishing, overharvest, and marine pollution driving the degradation of our oceans.

"The ocean is a renewable resource that can provide for all future generations if the pressures are dealt with effectively," said Marco Lambertini, director general of WWF International. "If we live within sustainable limits, the ocean will contribute to food security, livelihoods, economies and our natural systems."

The report is available for download at www.worldwildlife.org/publications/living-blue-planet-report-2015.

The Southern Ocean is breathing in carbon dioxide at a healthy rate

The oceans absorb nearly a third of the carbon dioxide humans put into the air, almost certainly slowing the pace of global warming. The Southern Ocean plays an outsize role; the waters ringing Antarctica comprise a quarter of the marine surface, but account for some 40% of oceanic CO₂ uptake. However, scientists have noticed an alarming trend; since the late 1980s, the Southern Ocean's rate of uptake appears to have stagnated, failing to grow in proportion to rising CO₂ levels in the air. Is the ocean approaching a saturation point, where it will no longer help buffer the effects of carbon emissions?

A new study says no: newly updated ship and satellite data show that uptake

started growing again in 2002, and that the Southern Ocean is now absorbing proportionately as much CO₂ as ever. Changes in wind patterns probably caused the reinvigoration, say the authors. The study suggests that large-scale weather variations may play a big role in the oceans' ability to absorb carbon, but these are not well understood, and thus the future is hard to predict. The study appears this week in the leading journal *Science*.

"In the last 10 years, we were afraid that the Southern Ocean was going to quit giving us a break from climate change," said coauthor Taro Takahashi of Columbia University's Lamont-Doherty Earth Observatory. "This study shows that it's recovered its ability to take up carbon dioxide, and that's good news." Takahashi has been working for decades to understand the cycling of CO₂ between air and oceans and is regarded as one of the world's leading authorities on the subject.

Many researchers had previously assumed that more CO₂ in the air would mean correspondingly more absorption by the ocean, moving in a straight line. But by the early 2000s, scientists showed that the Southern Ocean was taking up about the same amount of carbon as it was in the late 1980s, despite fast-rising levels in the air. Some thought that this could indicate the waters were slowly becoming saturated.

The new study finds that the ocean has been catching up. The researchers combined measurements taken by research and commercial vessels, and satellite observations of seawater temperature, salinity and chlorophyll. They then used powerful new computing methods to fill in gaps in the data. This demonstrated that carbon uptake started regrowing around 2002. By 2012, it had moved up to match to the increased CO₂ in the atmosphere.

What caused the decline, and renewal? The study says that during the 1990s, chronically strong, unidirectional winds stirred the much of the Southern Ocean, causing deeper waters to well up and release large amounts of carbon dioxide. Since then, those winds have abated, allowing the waters to retain more of the gas, say the authors. At the same time, wind patterns have shifted to drive more extremely cold air from the Antarctic continent to parts of the Southern Ocean. Colder water holds more carbon dioxide, so this also would boost uptake and retention.

For more information, visit www.ldeo.columbia.edu.

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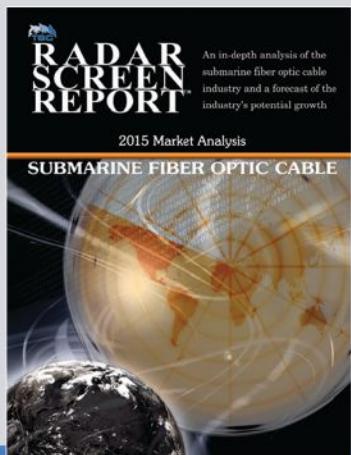
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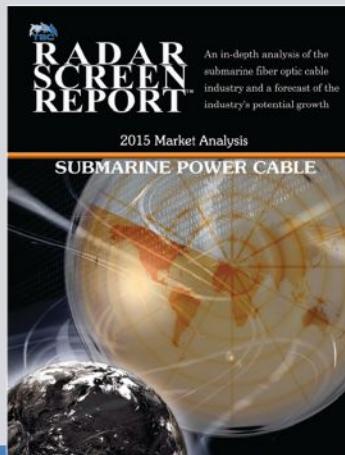
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Carnegie signs MOU with Seychelles government

Carnegie Wave Energy Limited has signed a Memorandum of Understanding (MoU) with the Republic of Seychelles to investigate commercial wave and microgrid opportunities.

The agreement focuses on identifying the opportunities and development pathways for commercial wave energy plants on the Seychelles, as well as potential microgrid opportunities that would enable CETO wave farms to be integrated into the existing power infrastructure to supply clean power and freshwater.

The MOU was announced at the inaugural Indian Ocean Rim Association Ministerial Blue Economy Conference in Mauritius. The conference theme was "Enhancing Blue Economy Cooperation for Sustainable Development in the IORA Region."

Carnegie's chief operating officer, Mr. Greg Allen, said, "Carnegie has identified remote islands as an attractive early market for the CETO technology. CETO, along with enabling micro grid solutions, can enable high penetration of renewable energy, displacing imported diesel. The signing of this MoU progresses the commercialization of CETO in remote islands in parallel to mainland markets including the UK and Europe."

Australia's High Commissioner to Seychelles and Mauritius, H.E. Susan Coles, welcomed the signing and noted, "This MoU consolidates the leading role of Australia as an innovator in marine renewable energy technologies for the Indian Ocean."

The inaugural IORA Blue Economy Conference was an opportunity for Ministers and Senior Officials of Indian Ocean rim nations to focus on a number of development opportunities, including renewable ocean energy.

For more information, visit www.carnegiewave.com.

GIP to acquire a 50% stake in Gode Wind 1

DONG Energy signed an agreement to divest 50% of the 330-MW German offshore wind construction project, Gode Wind 1, to Global Infrastructure Partners (GIP), a leading global, independent private equity infrastructure investment fund. The total sales price amounts to approximately €780 million that will be paid in the period 2015 to 2016.

As a part of the transaction, GIP will issue a rated project bond to a consortium of renowned German insurance companies with Talanx, one of the largest German insurance groups, as cornerstone lender. The development of a rated bond structure that facilitates the provision of institutional debt to offshore wind construction projects was initiated and led by DONG Energy and implemented with the strong support from GIP and Talanx. This transaction marks the issuance of the first non-recourse, investment grade, certified green bond dedicated to part finance an offshore wind farm asset under construction.

The transaction is subject to approval by the competition authorities and is expected to be completed in the second half of 2015.

Samuel Leupold, executive vice president in DONG Energy Wind Power, said, "I'm delighted about this partnership and it is a great pleasure to welcome GIP as a partner of DONG Energy. I am also very excited about the evolution of DONG Energy's market leading partnership model to facilitate this innovative long-term investment by German institutional investors into the offshore wind sector for the first time."

The parties have agreed that DONG Energy will finalize the construction of the Gode Wind 1 offshore wind farm project and will provide operation and maintenance services to Gode Wind 1 from its O&M base in Norddeich in Germany. Furthermore, the parties have agreed that DONG Energy will provide a route to market for the power production from Gode Wind 1.

For more information, visit www.dongenergy.com.

DNV GL issues statement of feasibility for Alstom's Oceade™ tidal turbine



DNV GL, the world's largest resource of independent energy experts and certification body, is supporting leading energy solutions and transport company Alstom through the process of achieving Prototype Certification of its innovative tidal turbine Oceade™ 18 – 1.4 MW. Alstom has been selected to supply four Oceade™ 18 – 1.4 MW tidal turbines to one of the world's first tidal stream arrays in the Raz Blanchard, France. In the first milestone in the process, DNV GL has issued a 'Statement of Feasibility.'

The turbine design is at the leading edge of advanced tidal technology, being an evolution of the 500-kW and 1-MW demonstrators tested at the European Marine Energy Centre, Scotland. Both the 500-kW and 1-MW demonstrators completed DNV GL Design Assessment. DNV GL is using the industry recognized DNV-OSS-312 to certify the Oceade™ 18 – 1.4 MW tidal turbine, with the first stage in the process involving a full risk assessment of the turbine and agreeing actions to mitigate the risk of failure.

DNV GL will now work with Alstom to review and approve design documents before heading towards the fabrication stage, including manufacturing quality and equipment testing and surveillance of the installation and commissioning. Final Prototype Certification of the turbine will follow the successful close out of the actions agreed during the Statement of Feasibility stage.

The UK and France are continuing to lead the way in terms of the wave and tidal industry, with the initiation of this project demonstrating clear European market confidence in the Alstom design.

Rob Stevenson, vice-president, ocean energy, Alstom commented: "The Statement of Feasibility is the first milestone in delivering a high-performing safe and reliable tidal turbine for our customers. We look forward to continuing our journey with DNV GL to gain full Certification for the Oceade™ 18 – 1.4MW."

DNV GL has been at the forefront of the risk-based certification processes for the marine and other renewable energies for over 30 years. The organization has been assessing new technologies and publishing standards and guidelines to ensure components, technologies and projects are reliable, safe and commercially profitable, with all risks mitigated. The risk-based focus is also invaluable for offshore wind and wave and tidal projects, which are pushing the boundaries of technical and engineering knowledge and capabilities. As well as those, that require reliable operation and effective risk management at all times.

Gemini awards long-term maintenance contract

Offshore maintenance contractors Offshore & Wind Assistance (OWA) and EWE Offshore Service & Solutions GmbH (EWE-OSS) will use their expertise in the coming years to ensure that the Gemini offshore wind park operates smoothly.

The Gemini offshore wind park in the Dutch North Sea, located 85 km north of the Dutch coast, is to be one of the world's largest wind farms, both in terms of size as well as production (total capacity of 600 MW). Gemini is being built on two locations close to each other, 'Buitengaats' and 'ZeeEnergie.'

OWA, the offshore maintenance specialist of offshore solutions provider GeoSea (DEME Group) will operate and maintain the Balance of Plant for both windfarms. Next to providing marine logistics, the scope of works includes the maintenance of all foundations above and below water (2 x 75 WTG foundations + 2 OHVS foundations) as well as the maintenance of the cable & scour protection (2 export cables, infield cables, export connector cable, scour protection at WTG and OHVS foundations).

EWE-OSS, the offshore subsidiary of the Oldenburg-based energy provider, will be in charge of operating, maintaining and monitoring two transformer stations at sea and one transformer station in Eemshaven. It will also be responsible for the network management of the two 220-kV export cables that will transport the electricity to land and a 380-kV stretch of cable on land that will connect the electricity to the transmission network.

"OWA has quite some experience in offshore maintenance activities on the North Sea and can count on the long-standing expertise of parent company GeoSea and other offshore companies within the DEME Group. It allows us to export our maintenance know-how on a long-term basis on the entire European energy market," confirmed Stijn Delauré, general manager Offshore & Wind Assistance NV.

"We are very pleased that the operators of this fascinating project have placed their confidence in us," said Ines Kolmsee, chief technical officer of EWE AG. "It is also a positive affirmation of our strategy not just to implement our own projects but also to operate as a service provider in the offshore sector."

EWE OSS will be supported with this contract by EWE NETZ and BTC—two other companies in the EWE Group.

The contract covers a period of 5 years, starting in 2016.

For more information, visit www.deme-group.com.

Largest OTEC plant launched in Hawaii

Makai Ocean Engineering celebrates the completion of the world's largest operational Ocean Thermal Energy Conversion (OTEC) power plant with a dedication ceremony at the Natural Energy Laboratory of Hawaii Authority (NELHA).

Makai's OTEC power plant uses the temperature difference between the ocean's cold deep water and warm surface water to generate clean, renewable electricity that is available 24 hours a day, 365 days a year. The NELHA-sited plant will generate 100 kW of sustainable, continuous electricity—enough to power 120 Hawaii homes annually.

The breakthrough marks the first true closed-cycle OTEC plant to be connected to a U.S. electrical grid, and represents a major achievement for Hawaii, the U.S., and marine renewable energy.

Distinguished officials gathered at NELHA to commemorate the occasion by "flipping the switch" to deliver OTEC power for the first time.

"Today marks the launch of the world's largest operational ocean thermal power plant," said Hawaii Governor David Ige. "This plant provides a much-needed test bed to commercialize ocean thermal energy conversion technology and bolster innovation, and it serves as a stepping stone to larger plants that will provide meaningful amounts of stable, clean power to Hawaii and other locations."



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tions in Asia Pacific such as Okinawa in the near future."

The research and development at the plant was funded by the Office of Naval Research (ONR) through the Hawaii Natural Energy Institute (HNEI), and the infrastructure was funded by Naval Facilities Engineering Command (NAVFAC). Accrued electricity revenues from this power plant will sustain further research and development of OTEC technology. A potential next phase for OTEC development at NELHA is being considered by an international consortium under the recently signed Okinawa-Hawaii clean energy agreement.

For more information, visit www.makai.com.

SeaPlanner is awarded O&M contract

SeaRoc Group's industry leading marine management and monitoring tool has been selected by E.ON to help manage the operations and maintenance (O&M) phase of the Humber Gateway offshore wind farm through its software system.

The SeaPlanner software has been used on the project since April 2013, providing personnel and operations management during the construction phase. This first-hand experience of the Humber Gateway project, combined with SeaPlanner's extensive industry knowledge that has built up over 8 years in offshore renewables, provided E.ON with the ideal solution for managing the operations and maintenance of the project located off the Holderness coast.

SeaPlanner will be providing E.ON's O&M team with a complete management and monitoring solution, which includes personnel and vessel tracking, certification management and also the latest feature of the software, Induction Manager—which helps minimize cost and administration time for inducting personnel and contractors.

For more information, visit www.searoc.com.

DONG Energy acquires the Hornsea Zone

DONG Energy acquired the Hornsea Zone and the project rights to Hornsea Project Two and Three, which have the potential of 3 GW offshore wind capacity. This follows DONG Energy's acquisition of Hornsea Project One, a 1,200-MW offshore wind project in the Round 3, which was announced in February 2015.

The Hornsea Zone projects form one of the world's biggest offshore development zones. The acquired Hornsea Zone Projects Two and Three are expected to form an important part of DONG Energy's post-2020 project pipeline.

DONG Energy is acquiring the Hornsea Zone from Mainstream Renewable Power and Siemens Financial Services. Following the takeover, DONG Energy will, as the sole owner, assume responsibility as lead developer of the whole Hornsea Zone.

The Hornsea Zone is located between 31 and 190 km off the Yorkshire coast and covers more than 4,000 sq. km.

For more information, visit www.dongenergy.com.

ORPC Ireland selected to conduct tidal energy assessment

The Sustainable Energy Authority of Ireland (SEAI) has awarded ORPC Ireland, Ltd. funding to conduct a feasibility assessment to identify tidal energy opportunities suitable for development in the coastal waters of County Donegal, Ireland. Through its Ocean Energy Prototype Development Fund, SEAI seeks to stimulate the development and deployment of ocean energy devices and systems.

Commenting on ORPC's project, SEAI's CEO Brian Motherway said, "SEAI is committed to facilitating the development of new technologies and projects that will harness Ireland's rich ocean energy resource. County Donegal has been identified as a region of high potential for tidal energy in Ireland's Offshore Renewable Energy Development Plan. We are delighted to support ORPC Ireland in conducting this feasibility study in partnership with Donegal County Council to identify development opportunities and

form a critical first step in realizing this potential."

ORPC Ireland, Ltd. will use the same phased approach to project development that ORPC has successfully demonstrated with its Maine Tidal Energy Project and its RivGen® Power System Project in Igiugig, Alaska, U.S. The project will review existing resource data, evaluate grid accessibility, identify existing marine users and sensitive environmental areas, assess supply chain viability, and conduct community engagement activities.

"County Donegal's strong maritime heritage, ocean energy resources, and the Port of Killybegs draw striking similarities to Washington County, Maine, home to ORPC's Maine operations," said ORPC president & CEO, Chris Sauer. "We appreciate SEAI's commitment to advancing the ocean energy industry in Ireland and the dedication of our partners in County Donegal to make positive impacts in the region."

Commented Donegal County Council's Michael Heaney, director of community, culture & development planning services, "Donegal County Council welcomes this initiative and very much looks forward to continued partnership with ORPC in advancing the ocean renewable energy sector in the North West of Ireland."

Located in the north west region of Ireland, County Donegal is home to Killybegs, the largest fishing port in Ireland, and boasts more mainland coastline than any other county in the country (1,134 km/705 mi). ORPC Ireland's home is the Letterkenny Institute's business development center, known as "CoLab," located in Letterkenny, the primary economic axis for North West Ireland.

For more information, visit www.seai.ie.





Hi-tech collaborative project to cut costs and boost confidence in tidal energy projects

A new type of sensor could soon be installed on the blades of subsea tidal turbines to monitor the interaction between marine life and renewable energy installations as a result of a new collaborative project involving the Offshore Renewable Energy (ORE) Catapult and CENSIS.

The organizations' research will aim to improve the monitoring of activity around subsea tidal installations and provide a warning when there is a risk of a collision with a tidal device. The project partners will assess whether sensor technology from other industries can be employed to detect, monitor and forewarn of potential collisions with tidal energy devices or if a new sensor technology is needed.

Current monitoring processes can be very expensive, involving teams of watchers on the seashore and a mixture of subsea listening devices. Subsequently, the cost of subsea environmental monitoring can be substantial and inconclusive when it is difficult to confirm surface sightings with events beneath the waves.

Regulations stipulate that developers must analyze the environment around a proposed site for 2 years prior to installation as well as during the construction phase and throughout the plant's operation.

Gavin Burrows, project manager at CENSIS, said, "We're working with a number of organizations to articulate the needs for a sensor system with the appropriate sensitivities – one that can provide evidence of how marine mammals behave near tidal turbines and also determine what exactly has impacted on a particular asset, should a collision occur. It's most likely that sensors, whether these are brought in from another industry or developed specifically for this purpose, will be built into the blades of subsea turbines."

"There is significant potential for us to export the skills and expertise we'll be developing as part of this project – particularly as we move into the demonstration and commercialization phases. Likewise, researchers will have access to new and hitherto untapped data, giving them the opportunity to accelerate the industry. The potential is there for our academic and business communities to take further leaps forward in the tidal energy market – our aim is to make this happen and create economic value out of the research for Scotland."

For more information, visit www.ore.catapult.org.uk.

SMD to contribute to offshore wind foundations research project

SMD are pleased to announce that they are set to contribute to a major offshore wind research project led by The University of Dundee. The project will look to determine whether cheaper, more environmentally friendly and more effective foundations can be developed for the offshore renewables industry.

The project, funded by a £1 million grant from the Engineering and Physical Sciences Research Council, will look at the use of screw piles for offshore installations. These are foundations that are screwed into the ground and currently widely used onshore, for example, to support motorway signs and gantries.

Currently, the main foundation solutions being considered for offshore wind installations are driven piles, large monopiles or concrete gravity-based structures (GBS). Driving of piles in large numbers offshore causes concerns over plant availability and impact on marine mammals. There are also concerns over the limit of practical monopile development and the high material demands of GBS. Screw piles have the potential to overcome these issues and are scalable for future development from current onshore systems, which have relatively low noise installation and are efficient in terms of both tensile and compressive capacity.

The research has the potential to make it easier to deploy screw pile foundations for offshore renewables. This project will develop foundations able to deal with current water depths and will provide understanding of the behavior of piles as water depths and the demands on the foundations increase.

"The UK has challenging targets for expansion of energy from renewables with the potential for over 5,000 offshore wind turbines by 2020," said Dr. Mike Brown, senior lecturer in civil engineering at the University of Dundee who is leading the project.

"The necessary move to deeper water will increase cost and put greater demands on subsea structures and foundations. There is already cost pressure on the offshore sector as people wait to see if it can be made more affordable, so we really need to find better solutions for how we develop capacity."

"Screw piles are potentially very attractive as a lower cost and more environmentally friendly option. However, there are significant challenges to be addressed. If we are to develop them for offshore use they will likely be larger than those used onshore and face different pressures, so our work will look at

whether they can meet the performance and efficiency issues. By harnessing the installation and performance benefits of screw pile/anchor technology, the results of the project will hopefully contribute to an overall cost reduction in electricity generated by renewable means and increase the public's confidence in the future viability of this energy source," continued Dr. Brown.

The project will also include contributions from the Universities of Durham and Southampton and also private sector partners Cathie Associates Ltd, Screwfast Foundations Ltd, and SeaRoc Group.

For more information, visit www.smd.co.uk.

SgurrEnergy conducts wind research for Chinese company

SgurrEnergy has been appointed by Huaneng Renewables Corp Ltd, a Chinese-based renewable energy company and one of the top utility companies in China, to undertake technical offshore wind energy research assessing the general site conditions of offshore wind projects in China.

The new research will be conducted in partnership with Beijing-based Tsinghua University. The study will explore wake model parameters aiming to improve wake model performance during the pre-construction assessment phase of wind farm projects and examine site conditions and their impact on wind turbine performance and availability. The results of the research will allow developers to choose more suitable site locations and, as a result, improve overall wind farm performance.

SgurrEnergy, a Wood Group company, was appointed to Huaneng's offshore wind research program in December 2014. The program came as a result of a Chinese government drive to build technical knowledge in a number of key areas for the fast growing offshore wind market. These areas include assessment of submarine topography and geological conditions, wind farm generator capacity and site accessibility issues.

SgurrEnergy's James Wu, director of technical services in China, said, "We are delighted to be part of this important offshore wind research project with two highly respected organizations. Our work with Tsinghua University and Huaneng Renewables will offer new insight into an important area for offshore wind and we look forward to sharing the results of this study."

For more information, visit www.sgurrenergy.com.

HII awarded \$109M for submarine support

Huntington Ingalls Industries, Newport News, Virginia, is being awarded a \$109,436,020 modification to previously awarded contract N00024-15-C-2105 to exercise options for engineering, technical, design, configuration management, integrated logistics support, database management, research and development, modernization, and industrial support for nuclear submarines.

This contract provides support for Los Angeles-, Seawolf-, Virginia-, and Ohio-class submarines; special mission submersible interfaces; submarine support facilities; as well as potential foreign military sales programs.

Work will be performed in Newport News, Virginia, and is expected to be completed by September 2017. Fiscal 2015 other procurement (Navy) funding in the amount of \$8,555,061 will be obligated at the time of award and will not expire at the end of the current fiscal year. The Naval Sea Systems Command, Washington, District of Columbia, is the contracting activity.

Northrop to integrate mission packages for LCS

Northrop Grumman Systems Corp., Bethpage, New York, is being awarded a \$38,541,198 cost-plus-fixed-fee, sole-source contract to provide integration services for mission packages that will deploy from and integrate with littoral combat ships.

Mission package capabilities are currently focused on primary mission areas of mine warfare emphasizing mine countermeasures, littoral anti-submarine warfare, and littoral surface warfare operations, including prosecution of small boats. This contract includes options that, if exercised, would bring the cumulative value of this contract to \$78,329,142.

LGS Innovations to support DARPA's TUNA program

LGS Innovations has secured a contract to support the Defense Advanced Research Projects Agency's (DARPA) tactical undersea network architectures (TUNA) program.

Under the \$1.9 million contract, LGS will be responsible for the delivery of model simulations, design, and analysis, as well as scaled development and technology demonstration over a period of 15 months.

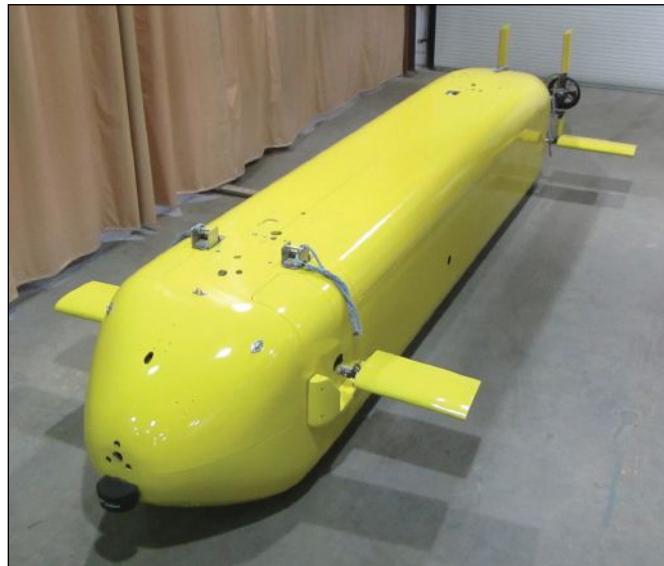
LGS Innovations CEO Kevin Kelly said, "The goal of the program is to ensure that our armed forces retain an information advantage even in contested environments where potential adversaries may attempt to disrupt other communication channels. LGS' advanced R&D capabilities will be leveraged to support of our national defence through extreme cutting edge network technology and science."

LGS Innovations collaborates with Linden Photonics and Tethers to develop the neutrally-buoyant undersea cable for an undersea fiber optic based network.

The DARPA TUNA program is aimed to temporarily restore tactical data network connectivity in contested environments through the use of novel optical-fiber-based technology. The program, currently in the initial phase, focuses on concept and technology development in three technical areas, such as system design, small fiber optic cable systems, and buoy nodes. In its second phase, the program will focus on the implementation of an integrated end-to-end network prototype.

In March, DARPA issued a request for information (RFI) for new technologies that will help augment the sensing and classifying capabilities of its anti-submarine warfare (ASW) continuous trail unmanned vessel (ACTUV).

The RFI aims to look for sensor systems and image-processing hardware and software that could help ACTUV and other unmanned surface vessels to detect nearby ships and other objects, and decrease dependence on radar as primary sensor.

LDUUV program achieves acquisition milestone

The Naval Sea Systems Command received a risk-reduction decision approval 17 August, known as a Milestone A decision, for the Large Displacement Unmanned Underwater Vehicle (LDUUV) program.

Milestone A approval grants the program the authority to move into the next phase of development, which will allow the Navy to commit resources to mature technology and reduce risks prior to production and fielding.

The LDUUV is a new class of large-displacement unmanned undersea vehicles that will provide increased endurance, range and payload capabilities. The system is being designed for intelligence, surveillance and mine countermeasure missions and is based on a modular, open architecture that will allow the Navy to incrementally develop new mission sets for the craft.

LDUUV will be capable of being stowed, launched and recovered by multiple-host platforms, including littoral combat ships, Virginia-class submarines and Ohio-class guided-missile submarines. The craft is being developed by the Unmanned Maritime Systems Program Office, which is part of the Program Executive Office Littoral Combat Ships (PEO LCS).

Following the successful Milestone A decision, a draft LDUUV request-for-proposals was released on the Federal Business Opportunities website. An industry day is scheduled for 14 September in Washington, D.C., at which the Unmanned Maritime Systems Program Office will host a presentation and discussion for the industry community on LDUUV requirements.

PEO LCS is affiliated with Naval Sea Systems Command and provides a single program executive responsible for acquiring and sustaining mission capabilities of the littoral combat ship class, beginning with procurement and ending with fleet employment and sustainment. The combined capability of LCS and LCS mission systems is designed to dominate the littoral battle space and provide U.S. forces with assured access to coastal areas.

For more information, visit www.navy.mil.

Underwater energy transfer to expand UUV capability

The U.S. Navy is developing ways to recharge UUVs using undersea wireless technology.

The Navy uses UUVs for many types of missions, including the location and identification of underwater threats such as mines, ocean floor mapping, and optimizing remote sensing platforms. The ability to use wireless technology to charge UUV batteries while underwater may significantly decrease time between missions, improving overall utility.

Naval Surface Warfare Center, Carderock Division (NSWCCD) supported Naval Undersea Warfare Center, Division Newport (NUWC DIVNPT) in demonstrating this capability during the first-ever Naval Technology Exercise (ANTX), 10-14 August at the Stillwater Basin Test facility in Newport, Rhode Island. ANTX is a weeklong showcase of Undersea Constellation technology from NUWC DIVNPT, and Space and Naval Warfare Systems Command SPAWAR Systems Center Pacific (SSC PAC).

NSWCCD previously executed a

successful underwater wireless energy transfer demonstration in a 6,000 gallon tank at its West Bethesda, Maryland facility, 29 June - 3 July.

These concepts of wireless underwater energy transfer, such as Forward Deployed Energy and Forward Deployed Energy and Communications Outpost (FDECO), were born in NSWCCD's Disruptive Technologies Lab.

"We want to recharge a battery underwater through wireless technology, and we want to know the batteries charge to the highest fidelity," Mayer Nelson, NSWCCD technical project manager said. The NSWCCD demonstration was a collaborative effort as Carderock hosted teams from NUWC DIVNPT and SSC PAC.

"The NUWC team was on-hand to simulate the full capabilities of the NUWC-developed Mid-sized Autonomous Research Vehicle (MARV) UUV, as well as to provide assistance with testing," Joseph Curran, NSWCCD integration lead said.

The MARV is 16.5 ft long and slightly more than 1 ft in diameter for testing different UUV programs and technologies.

Carderock Division's developed technology enables power transmission between underwater systems, such as UUVs. During the main demonstration on 3 July, the team was successful in transferring power wirelessly from an underwater docking station to a MARV UUV section, and ultimately to the UUV's battery, which was charged at 2 kW while submerged.

A battery State of Charge (SOC) program developed by Dr. Michael Knauff, a Naval Ship Systems Engineering Station (NAVSSES) in Philadelphia electrical engineer was integrated by Crystal Lutkenhouse, a NSWCCD mechanical engineer.

"We tested a Carderock-developed algorithm and pulled in data from the actual battery; then ran voltage, current and temperature data through the data acquisition system," Knauff said.

During underwater energy transfer, this program was run using data that had been transferred wirelessly underwater using SSC PAC's underwater optical communications system and allowed an enhanced estimation of the charge on the battery through the SOC program.



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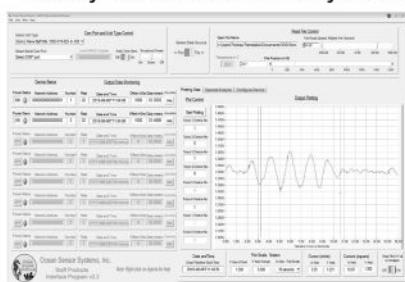
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Newport News Shipbuilding achieves construction milestone on new submarine

Huntington Ingalls Industries (HII) announced that the Virginia-class submarine Washington (SSN 787) is “pressure hull complete,” signifying that all of the submarine’s hull sections have been joined to form a single, watertight unit. Washington will be the U.S. Navy’s 14th Virginia-class submarine and the seventh to be delivered by HII’s Newport News Shipbuilding division.

“Pressure hull complete is an exciting step toward the boat’s completion because it’s the point when the submarine really starts to take its final shape and is the last major construction milestone before christening and delivery next year,” said Jim Hughes, Newport News’ vice president of submarines and fleet support. “As with all of our Virginia-class submarines, Washington represents a true team effort that involves our partners at General Dynamics Electric Boat, the Navy, our suppliers and the Washington crew.”

Washington’s construction, which began in September 2011 under a teaming arrangement between Newport News and Electric Boat, marked the beginning of the VCS program’s two-submarines-per-year build plan. The ship is currently 83% complete.

“Over the last year and a half, I have enjoyed watching the many parts that make up a submarine come together,”



said Cmdr. Jason Schneider, Washington’s commanding officer. “I can truly say Washington now looks like a submarine on the outside. I look forward to seeing the systems that make up the internals of the submarine continue to come together as we approach launch and delivery.”

For more information, visit www.huntingtoningalls.com.

USS Essex supports operation Inherent Resolve

AV-8B Harriers assigned to the “Greyhawks” of Marine Medium Tiltrotor Squadron (VMM) 161 (Reinforced), which launched from the amphibious assault ship USS Essex (LHD 2), the Essex Amphibious Ready Group’s flag ship, conducted strike missions in Iraq in support of Operation Inherent Resolve (OIR) 17 August.

The Harriers executed strike missions to dismantle and ultimately defeat the Islamic State of Iraq and the Levant (ISIL) as part of the multinational coalition participating in OIR in the U.S. Central Command’s area of responsibility.

VMM-161 is the aviation combat element of the 15th Marine Expeditionary Unit (MEU) currently embarked with the Essex Amphibious Ready Group and deployed to maintain regional security in the U.S. 5th Fleet area of operations.

In addition to supporting sorties in support of OIR, the MEU’s Marines and Sailors are deployed to several other locations throughout the 5th Fleet AOR executing sustainment training and engaging regional partners.

For more information, visit www.navy.mil.

NATO tests its Anti-Submarine skills with Exercise Dynamic Manta in Italy

NATO’s Submarine Warfare Exercise DYNAMIC MANTA 2015 (DYMA 15) began recently off the Sicilian coast, with ships, submarines, and aircraft and personnel from 9 Allied nations converging on the Central Mediterranean Sea for anti-submarine warfare (ASW) and anti-surface warfare training.

Submarines from France, Greece, Italy, Spain, Turkey, the UK, and the U.S., under the control of NATO Submarine Command (COMSUBNA-TTO), will join five surface ships from France, Germany, Italy, Turkey and the U.S. under the command of Standing NATO Maritime Group TWO (SNMG

2) Rear Admiral Jörg Klein (German Navy). Host nation Italy is providing support from both the Augusta Naval Base and the Sigonella Air Base in Catania.

“DYNAMIC MANTA 15 is one of the most challenging exercises dedicated to training in the anti-submarine warfare area. It is especially valuable for the ships of SNMG-2,” said Rear Admiral Jörg Klein (German Navy), Commander of SNMG2. “Intensive real world scenarios can be executed, providing unique training opportunities for the participants. DYNAMIC MANTA offers exceptional conditions to enhance the war fighting skills of all participating units in a multi-national operations environment.”

To support the simulated multi-threat environment, seven maritime patrol aircraft and helicopters from Canada, France, Italy, Turkey and the U.S. will operate from Sigonella Air Base under the control of personnel from NATO Maritime Air Command (COMMARAIRNATO).

The aim of this exercise is to provide all participants with complex and challenging warfare training to enhance their interoperability and proficiency in anti-submarine and anti-surface warfare skills, with due regard to safety. During the exercise, an analysis team of ASW experts (In-stride Debrief Team) will be located in Sigonella Air Base. The team will analyze anti-submarine warfare events in real time and provide debriefs to ships, submarines and aircrews. It allows crew to accelerate their process, make adjustments, improve the performance and boost the anti-submarine warfare readiness.

Each surface ship under the tactical command of SNMG2 will have the opportunity to conduct a variety of submarine warfare operations. The submarines will take turns hunting and being hunted, closely coordinating their efforts with the air and surface participants.

“This is an excellent opportunity for NATO maritime forces to practice and evaluate their Anti-Submarine skillset in a challenging environment. The large number of participating units in this year’s exercise is a clear demonstration to NATO’s commitment to the maritime domain and Anti-Submarine Warfare capabilities,” said Commander Submarines NATO, Rear Admiral Matthew A. Zirkle (U.S. Navy). “We appreciate the outstanding host nation support of the Italian Navy that was required to make this challenging and effective exercise happen.”

Northrop Grumman's mine hunting system sets new standard for synthetic aperture sonar

In a U.S. Navy field test, Northrop Grumman Corporation's AQS-24B mine hunting system successfully demonstrated the ability to perform synthetic aperture sonar processing at 18 kts in real time.

The AQS-24B was developed at Northrop Grumman's Undersea Systems campus in Annapolis. The field testing took place at the U.S. Navy Central Command in Bahrain. The AQS-24B finished 12 for 12 in successfully executing missions during the test exercise. During separate Tactics Development trials in Panama City, Florida, the AQS-24B achieved a record long single sortie tow duration of 16.25 hours from a surface ship.

Northrop Grumman has three decades of in-fleet airborne mine countermeasure experience with 27 systems fielded. The company was the first to field electro-optic mine identification and developed the first long-range synthetic aperture sonar for mine warfare, the first mine warfare unmanned surface

vessel (jointly with the Naval Undersea Warfare Center) and the first mine warfare unmanned underwater vehicle. The AQS-24B has significantly improved image resolution, as well as the speed of real-time sonar processing.

The U.S. Navy can detect, classify and localize modern-day mine threats through the AQS-24B's enhanced mine hunting sonar.

For more information, visit www.northropgrumman.com.

Secretary of the Navy Mabus names Virginia-Class submarine

Secretary of the Navy Ray Mabus hosted a ship-naming ceremony to announce SSN 794, a Virginia-class attack submarine, will bear the name USS Montana. The submarine will be named to honor the history its namesake state has with the Navy.

The future USS Montana will be the second commissioned naval vessel to bear the name. The first, commissioned in 1908, was a cruiser that operated largely off the east coast of the U.S. and the Caribbean until the beginning of World

War I when it transported supplies and men. After the war, the cruiser made six round trips from Europe, returning 8,800 American troops.

Montana was the only state among the 48 in the union when America was building battleships to never have one named after it. Montana (BB 51) had her keel laid in 1918, but construction was cancelled after the Washington Naval Treaty limited the amount of warship tonnage the United States could have after World War I.

Each Virginia-class submarine is 7,800-tons and 377 ft in length, has a beam of 34 ft, and can operate at more than 25 kts submerged. They are designed with a reactor plant that will not require refueling during the planned life of the ship, reducing lifecycle costs while increasing underway time.

The submarine will be built under a unique teaming agreement between General Dynamics Electric Boat and Huntington Ingalls Industries' Newport News Shipbuilding division.

For more information, visit www.navy.mil.

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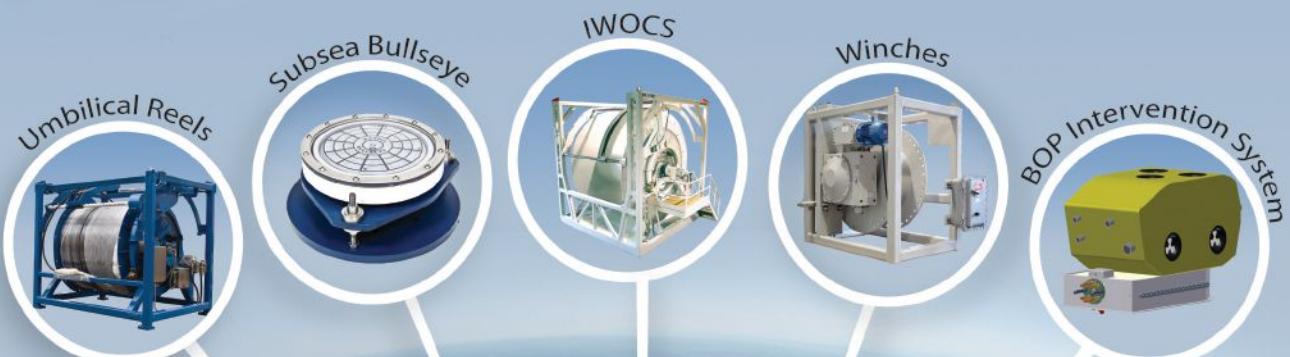
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OFFSHORE INDUSTRY

Gallup poll: Low gasoline prices boost opinion of energy industry

A Gallup poll found that most Americans surveyed are warming up to the oil and gas sector, in large part because of lower gasoline prices. Gallup asked adult Americans by telephone which industries they supported most. Of the 1,011 people surveyed, 34% said they had a positive view of the industry.

That's up 12 percentage points since 2012 and is one point lower than the 15-year high of 35% from 2003, Gallup found in the August poll. Ratings improved as the average price of gas in August declined more than \$1 per gallon since 2012.

Gallup found a correlation between gas prices and public perception about the oil and gas industry. In 2008, when the national average price was around \$4.09 per gallon, perception of the industry fell to an all-time low of 15%.

Nevertheless, the industry ranked only one notch above the federal government, which had the lowest approval rating in the latest survey from Gallup. The computer industry ranked highest with a 69% approval rating.

"Even with the improved ratings in recent years, the oil and gas industry's net rating in 2015 is minus 13, based on 34% positive ratings and 47% negative ratings, and oil and gas remained the second-lowest business or industry sector tested," Gallup said. "Eighteen percent of Americans are neutral toward it."

IEA sees 2015 oil demand growth at 5-year high on weak prices

The International Energy Agency (IEA) raised its forecast of world oil demand growth in 2015 by 200,000 bbl per day to 1.6 mmbbl per day, highlighting a "drastic uptick" largely as a result of low prices. It also predicted a supply overhang would persist through 2016.

In a recent monthly oil market report, the IEA said it saw "no backing down" by OPEC in its drive to defend its market share by maintaining output. Since last November, output from the 12-member group has soared by 1.4 mmbbl per day. And surging global demand prompted the IEA to raise its estimate of the "call" on OPEC in 2016 by 500,000 bbl per day to 30.8 mmbbl per day.

The world is now expected to use 1.6 mmbbl per day more fuel in 2015 than

the previous year as economic growth consolidates and consumers burn more oil, the report said, adding that was the biggest growth spurt in 5 years and a dramatic uptick on a demand increase of just 700,000 bbl per day in 2014.

Demand had been quicker to react to the oil glut than the production side of the industry, with low prices and "solidified" economic growth both playing a role, the report said. Upgrades to Chinese second-quarter data contributed to the IEA's revised forecast, as did strong demand in Argentina, Brazil, and Russia.

Americas will take brunt of any oil cuts when Iran returns: report

The Americas will take the brunt of any cuts in oil production as Iran increases output once international sanctions are lifted, according to a study by A.T. Kearney Inc.'s oil and gas consulting practice in Dubai, Bloomberg reported.

North, South and Central American oil production could fall 1.1 mmbbl per day by 2020 because of higher costs as Iran's output climbs, starting with an increase of 800,000 bbl per day next year, Chicago-based A.T. Kearney said in the report. Brent crude prices will range from \$45 to \$65 a barrel next year, according to the report.

The projected drop in production in the Americas is equivalent to a 4% decline from 27.5 mmbbl a day now, according to A.T. Kearney.

Iran is preparing to double output after international sanctions end, bringing as much as 1 mmbbl per day of new supply into the market. In the United States, oil prices have dropped almost 50% in the past year on a glut.

A.T. Kearney assumes Iran can boost output by an average of 6% a year from now until 2020 as long as it attracts foreign investment to help develop its fields. That pace would put Iran's output of crude and condensate at 4.955 mmbbl per day in 2020, or an increase of about 1.5 mmbbl from today, according to the A.T. Kearney report.

Iran and six global powers reached an agreement in July that would limit the Persian Gulf country's nuclear program in return for removing sanctions on its energy and financial industries. The restrictions cut its oil output from 3.1 mmbbl per day in July 2012 to as low as 2.5 mmbbl in May 2013, according to Bloomberg.

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Gulf of Mexico is better equipped to withstand dangerous hurricanes

Ten years after Katrina and Rita ripped through the Gulf of Mexico, regulators and industry agree tougher design standards and better meteorological data have vastly improved hurricane safety offshore. And efforts to remove risky older, unused offshore structures are moving forward, though slowly.

Federal regulators estimate more than 3,000 of the 4,000 platforms in the Gulf in 2005 were in the direct paths of hurricanes Katrina and Rita, each of which halted production for weeks. Together, the storms damaged 457 pipelines and destroyed more than 100 platforms. About 20 mobile drilling rigs experienced total failure, including nearly a dozen newer semi-submersible floating drilling units.



Versabar Inc.'s "Bottom Feeder" vessel removes a toppled platform from the U.S. Gulf of Mexico.

Lars Herbst, director of the Gulf of Mexico region for the U.S. Bureau of Safety and Environmental Enforcement, said efforts to overhaul offshore standards for more severe storms actually began after Hurricane Ivan in 2004, but Katrina and Rita accelerated the process.

Today, Herbst said offshore platforms and pipelines are built to withstand higher waves and stronger wind and currents, and new standards for rigs and platforms moored to the ocean floor aim to prevent the type of problems seen during Katrina and Rita.

The American Petroleum Institute released hundreds of pages of new design standards, including raising the 100-year wave crest height to 91 ft. The group developed stronger guidelines for tying down derricks, compressors and other platform features affected by storm winds. Government regulations drew heavily upon these standards.

OFFSHORE INDUSTRY HEADLINES

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Analysts: Oil patch will come roaring back to life in 2017

The U.S. oil patch should come roaring back in 2017 as oil prices finally begin to rebound, Raymond James analysts predict. However, the remainder of 2015 and all of 2016 will be “wastelands of low oilfield cash flows, spending and general activity levels” as oil prices hover below \$60 per barrel, but 2017 should usher in higher prices that could put an end to the prolonged oilfield downturn, the analysts wrote.

A growing oil glut coupled with speculation that more oil is headed to market prompted analysts at Raymond James to ratchet down their expectations that prices could rebound in the second half of 2015. Assuming that domestic benchmark oil will stay around \$50 this year, bouncing up just \$5 per barrel next year, U.S. oil field activity is expected to remain sluggish for a while, according to the recent analysis by the firm. But 2 years from now, oil companies may be singing an entirely different tune, Raymond James analysts said.

Prices aren’t expected to surge to their \$100-per-barrel highs reached in 2014 before crude collapsed amid swelling supply and anemic global demand, but even a recovery to \$65 or \$70 per barrel would help spur a restart in the oil patch, the analysts wrote.

“While it’s still far away, 2017 appears to be setting up for a significant recovery year,” according to the analysis.

Undeveloped UK shelf fields deserve attention, report claims

One of the main challenges on the UK continental shelf (UKCS) is the declining number of new offshore development projects since 2012 and the resultant drop in investment, consultants Hannon Westwood (HW) concluded in a new report on near-term developments.

New field allowances introduced during 2009 and 2010 largely influenced the surge in development approvals between 2009 and 2012, with 81% of developments approved since 2009 qualified for one of the available allowances.

However, at a time when oil prices

were high and stable (at least until September 2014), this is a major concern, HW said, and may have far-reaching implications for future investment in and ultimate recovery from the UKCS.

Some of the main factors are escalating capital and operating costs; poor project execution resulting in significant delays and cost overruns; poor access to export infrastructure; and the technical and commercial characteristics of the undeveloped discoveries.

HW analyzed 32 potential oil near-term developments (NTDs) on the UKCS with collective contingent resources of 1,600 mmbbl, 60% of which appear economic at oil prices below \$60/bbl.

As commodity prices remain weak and uncertainty continues over the timing of the recovery, companies are continuing to focus on cost reduction and supply chain efficiency, HW said. However, for those seeking to identify investment opportunities created by the prevailing environment (including operators, service providers and financial institutions), these 32 projects could merit their attention.

BP to invest \$1B on UK North Sea assets to extend field production

BP said it plans to invest \$1 billion to help extend the life of its UK North Sea assets. The investment, which is aimed at boosting output from oil fields located off the eastern coast of Scotland, comes at a time when oil companies are seeking to exit the aging basin.

BP said in a statement that the investment in the Eastern Trough Area Project (ETAP) would secure the future of the field for a further 15 years to 2030. ETAP is a network of nine smaller oil and gas fields in the Central North Sea covering an area up to 35 km in diameter.

“These are challenging times for the industry and we are having to make hard choices,” BP regional president Trevor Garlick said.

Six of the total nine different fields are operated by BP and another three are operated by Shell. The fields produce 125,000 bbl per day, and are a mix of geology, chemistry, technology and equity arrangements.

As part of its investment plans, the company will primarily focus on the west of Shetland, as well as central North Sea. In these areas, the British oil major plans to invest in new developments such as Clair Ridge and Quad204.

EU approves Shell's proposal to acquire BG Group for \$70B

The European Commission has approved Shell's previously announced proposal to acquire British oil and gas firm BG Group in a \$70 billion deal.

This is the second regulatory approval for the deal after it received a green light from Brazilian regulatory authorities. The deal still requires mandatory approval in Australia and China.

The European antitrust regulator cleared the deal, stating that it would not give Shell market power to benefit in sectors such as oil and gas exploration, liquefaction of gas and the wholesale supply of liquefied natural gas (LNG). Shell will also not be able to prevent competitors from using its North Sea gas infrastructure.

The commission also found that Shell would be unable to stop its competitors from gaining access to its liquefaction facilities or from gas transportation and processing infrastructure in the North Sea. Prior to giving the clearance, the commission investigated on the markets where the activities of Shell and BG Group overlap. The markets include the exploration for oil and gas reserves, the supply of natural gas and the liquefaction and supply of LNG.

The EU concluded that following the takeover, Shell will not be able to influence prices and the markets would remain competitive post-transaction.

Shell expects that the combination will add 25% to the company’s proved oil and gas reserves and 20% to production, each on a 2014 basis in addition to generating pre-tax synergies of about \$2.5 billion a year.

The acquisition will also provide Shell with improved positions in competitive new oil and gas projects, particularly in Australia LNG and Brazil deepwater.

U.S. household labor income would increase with oil exports: IHS report

Ending the ban on the export of crude oil sourced from U.S. basins would result in a per household labor income increase of \$158 per year, according to a report by consultant firm IHS reviewing potential benefits of ending the 1970s ban on exports of U.S. crude oil.

The report finds the economic activity that would come as a result of ending the ban also would support an additional 124,000 jobs on average through 2030, with a peak of 293,000 by 2018.

Moreover, the report from IHS finds removing the ban would result in real and direct impacts on the overall U.S. economy, including the addition of \$26 billion per year in gross domestic product to the crude oil supply chain.



Trevor Garlick

U.S. ethanol mandates could cause severe harm to consumers: study

The statutory biofuel mandates under the Renewable Fuel Standard (RFS) are infeasible to achieve in 2015 and beyond and could cause severe harm to consumers and the U.S. economy, according to a recent study by NERA Economic Consulting released by the American Petroleum Institute (API).

"Current mandates try to force more ethanol into gasoline than is safe for the majority of cars on the road," said API Downstream Group director Bob Greco in a conference call with reporters. "Rather than risk damage to vehicles, NERA predicts that refiners will instead be forced to reduce the nation's supply of gasoline and diesel by as much as 30%."

Fuel blends with higher than 10% ethanol could damage engines and fuel systems in millions of automobiles, according to research by the Coordinating Research Council, and damage lawn and marine equipment. Automakers have said use of higher ethanol blends, such as E15, could void warranties.

NERA also concluded the consumer demand for higher ethanol content gasoline like E85 and E15 is too small to serve as an outlet for higher ethanol mandates.

"You don't have to be an economist



Bob Greco

to know that removing almost one-third of our nation's fuel supply would deal a crippling blow to our economy," Greco said. "Such a large decrease in fuel supplies would have a broad impact across the entire economy, and NERA predicts this would dramatically increase fuel costs for consumers."

"While API continues to press for full repeal or significant reform of the RFS, we understand that will take time. And in the meantime, as the NERA study concludes, the consumer could feel the pinch in the form of higher energy costs. That's why we urge EPA to reduce the total renewable fuels volume requirement and waive the cellulosic ethanol requirement for 2014, 2015, and 2016."

API is the only national trade association representing all facets of the oil and natural gas industry, which supports 9.8 million U.S. jobs and 8% of the U.S. economy. API's more than 625 members include large integrated companies as well as exploration and production, refining, marketing, pipeline, and marine businesses, and service and supply firms. They provide most of the nation's energy, according to API.

Directional conductors installed on major project off Australia

Conductor Installation Services (CIS), an Acteon company that provides hammer services to install conductors and drive piles, successfully installed directional conductors to form the basis of two new production wells as part of a major project offshore Australia. Although CIS has installed directional conductors for numerous operators around the world, the recent operation was the first time that the company had installed them for this particular operator.

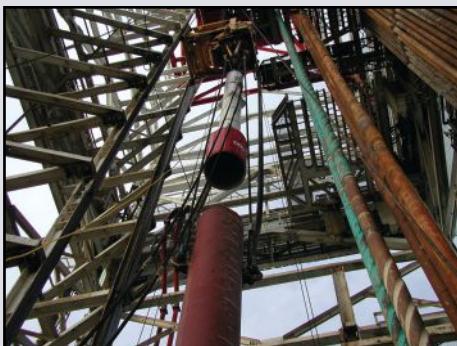
"Because the project plays such a vital role in the supply of gas to Australians, we are acutely aware of how important it is that each and every phase of construction is completed safely, with attention to detail and sensitivity to the environment," said Andy Penman, group managing director of CIS. "We are extremely pleased that this inaugural operation for this operator was a success."

To ensure that the operation would be executed successfully, it was critical that the conductors be properly positioned before being driven into the seabed. CIS engineers carefully assessed the angles required so that the conductors would be appropriately offset.

The company also produced three customized deviated drive shoes necessary to drive the conductors: two for the wells and one as a back-up. The directional drive shoes were then welded onto the conductor pup joints at the CIS Asia Pacific Region base in Singapore. Once this was completed, they were transported to Australia, the company said.

Working from the Sea Drill West Telesto jack-up rig, CIS used a 150-kJ hydraulic hammer to install the conductors safely, driving them approximately 126 m subsea and a further 117 m below the mudline to their respective target depths. The total length of each conductor extended 243 m.

The platform is live, so CIS chose to use a cold cutter system to cut the conductors to the correct height and the required bevel in order to prepare them for receiving the respective wellheads. By doing so, the cutting process was executed safely in a potentially explosive gas environment. CIS said it completed the entire offshore operation in just 3 days.



Using a powerful 150 kJ hydraulic hammer, CIS installed directional conductors to form the basis of two new wells offshore Australia, in just three days.

Offshore safety rules would make drilling some wells too difficult

The oil industry is blasting an Obama administration plan purportedly designed to better safeguard offshore exploration, arguing that the Deepwater Horizon-inspired proposal imposes costly and "ill-advised" mandates that could make some wells impossible to drill.

The Interior Department's Bureau of Safety and Environmental Enforcement (BSEE) rule, unveiled in April, aims to prevent a repeat of the 2010 Gulf of Mexico disaster by codifying a number of voluntary steps that companies have already taken to better keep offshore wells in check.

But it goes further in laying out specific mandates for the design of wells and the emergency devices known as blowout

preventers that are meant to serve as a final protection against uncontrolled surges of oil and gas. A coalition of oil trade groups insists that the proposed rule goes too far by establishing "prescriptive new requirements that would impose unjustified economic burdens, discouraging economic growth (and) innovation" often "without a clear rationale."

And the groups—including the American Petroleum Institute, Independent Petroleum Association of America and International Association of Drilling Contractors—insist that some of the proposed mandates "would introduce new risk rather than reduce (it)."

More than a dozen oil companies and drilling contractors joined in the pushback, filing public comments that were deeply critical of BSEE's well control rule.

Total awards Aquatic Moho Nord subsea contract

Aquatic Engineering and Construction Ltd. won a contract on the \$10-billion Moho Nord subsea project offshore the Republic of Congo. The contract was awarded by a UK-based subcontractor working for Total E&P Congo. Aquatic's 10-month campaign portion was to mobilize in October. Aquatic will supply reel drive systems, together with a team of supervisors and technicians that will operate the equipment hired for the duration of the operation. The company will help install 14 mi of subsea flexible pipes and 31 mi of umbilicals. The Moho Nord subsea deepwater offshore project is located approximately 46 mi off the coast of Pointe Noire and is the latest project being developed in the Moho-Bilondo license. The project is expected to achieve 140,000 boe per day by 2017. Since 2013, three other Acteon companies have received work on the Moho Nord project. Aquatic did not disclose the exact amount of the contract.

Keppel Shipyard wins vessel contracts worth \$89M

Keppel Shipyard secured a \$89 million contract for the conversion of a floating production storage and offloading (FPSO) vessel and three repair, upgrade and modification contracts. The conversion contract has been secured from Armada Madura, a joint venture between Bumi Armada Berhad and Shapoorji Pallonji Group. The FPSO conversion has already begun and is due for completion in the third quarter of 2016. The vessel will produce for the Madura Strait Block BD located 65 km east of Surabaya and 16 km south of Madura Island, Indonesia, upon completion. Separately, Totem Ocean Trailer Express, Dolphin Drilling and Saipem Offshore Norway have awarded repair, upgrade and modification contracts to Keppel Shipyard. Totem Ocean's contract is for the first conversion of a large roll-on/roll-off cargo vessel *Midnight* to operate on a dual-fuel diesel LNG propulsion system. Under the terms of the contract, Keppel will undertake the replacement of four engines, adding 2,200 sq. m of LNG capacity in addition to 47 km of new cabling.

McDermott nets second major contract from Aramco

Saudi Aramco has awarded McDermott International a lump sum contract for brownfield work on various fields offshore Saudi Arabia. This is the largest single award McDermott has ever secured in the Middle East. Work on the contract will continue through the second quarter of 2018. It follows the June 2015 signing of a second long-term agreement between the same parties for engineering, procurement, construction, and installation activities for various fields offshore Saudi Arabia. McDermott plans to maximize in-Kingdom execution with much of the engineering and fabrication scope to be performed by its engineering office in Al Khobar and fabrication facility in Dammam. The company's engineering teams in Dubai and Chennai, India will provide additional services, with procurement set to be handled by the company's Global Procurement Office in Dubai. McDermott vessels will undertake all offshore installations.

Sandvik wins awards to supply offshore control lines

Sandvik Materials Technology has won two contracts for offshore control lines for the oil and gas industry in the Middle East. The first contract is with an oil producer based in the United Arab Emirates to supply a complete package of materials, including control line tubing and clamps manufactured by Downhole Products – a Varel International company, owned by Sandvik. The second contract is with a service company in Abu Dhabi and covers a major package for chemical injection applications for use on the Umm Lulu and Al Nasr oil fields in the UAE.

'Largest Mediterranean gas field' found off Egypt

Italian company Eni said it discovered a "supergiant" natural gas field in the Zohr 1X NFW well at its Zohr prospect off Egypt, describing it as the "largest-ever" found in the Mediterranean Sea.

The discovery well is located in 4,757 ft of water in the Shorouk Block and has been drilled to a total depth of 13,553 ft. Based on the well and seismic information, the discovery is expected to contain a potential of 30 tcf of lean gas, covering an area of over 38.6 sq mi.

"Zohr is the largest gas discovery ever made in Egypt and in the Mediterranean Sea and could become one of the world's largest natural gas finds," Eni said in a statement. "The discovery, after its full development, will be able to ensure satisfying Egypt's natural gas demand for decades."

Through its subsidiary IEOC Production, Eni holds 100% of the contractor's working interest in the Shorouk Block. Eni is set to appraise the field with immediate effect in a bid to expedite the development of the discovery. The Zohr 1X NFW well hit 2,067 ft of hydrocarbon in a carbonate sequence of Miocene age, with good reservoir characteristics. The deeper Cretaceous upside of Zohr's structure will be targeted in the future with a dedicated well, the company said.

"Our exploration strategy allows us to persist in the mature areas of countries which we have known for decades and has proved to be winning, reconfirming that Egypt has still great potential," said Claudio Descalzi, Eni's chief executive officer.

"The exploration activities are central to our growth strategy," Descalzi added, noting that in the last 7 years the company has discovered 10 Bbbl of resources. Eni has daily equity production in Egypt of 200,000 boe.

Descalzi said "important synergies with the existing infrastructures can be exploited, allowing us a fast production startup."

Eni has been in Egypt since 1954 through its subsidiary IEOC. It's the main hydrocarbon producer in Egypt, with a daily equity production of 200,000 boe.

Israel's Leviathan gas field, which is estimated at 16 tcf, has so far been thought to be the largest in the Mediterranean. American company Noble Energy and the locally based Delek group have been producing gas from the Tamar field off the Israeli coast since 2013, and have also teamed up to develop Leviathan by 2019.

Tamar's stakeholders signed a contract earlier this year with a private Egyptian concern to sell as much as 5 Bcm of gas to Egyptian companies over the next 3 years. This gas will be flowing through an old pipeline that once transported gas in the opposite direction, from Egypt to Israel. In March it was reported that the Egypt government may import natural gas from Israel if its price were low enough.



Map of Mediterranean Sea with subdivisions, straits, islands and countries.



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Vantage Emerald Driller

Ophir wells to test new plays south of Bualuang offshore Thailand

Ophir Energy has contracted the jack-up Vantage Emerald Driller for a new exploration campaign on the G4/50 exploration block in the Gulf of Thailand.

Earlier this year, Ophir received environmental impact approvals for locations on the block, which surrounds the B8/38 production license that contains the producing Bualuang oil field. Ophir assumed control of these interests from acquiring former operator Salamander Energy.

The rig was to start work in October, drilling wells on the 25.3-mmbbl Soy Siam and 24.9-mmbbl Parichat prospects. Ophir plans to test two different hydrocarbon systems, neither of which has previously been evaluated in the South Western basin to the south of Bualuang. A success would de-risk numerous other analogue prospects in the same basin.

Ophir estimates the cost of the two wells at around \$10 million each. Due to the shallow-water environment, any discoveries could be brought into production within 2 to 3 years. Production from Bualuang averaged 12,600 bbl per day during the first half of the year.

Keppel Shipyard to convert Madura Strait BD development floater

Keppel Shipyard has secured contracts to convert an FPSO and perform modifications for two offshore vessels.

Armada Madura EPC, a joint venture between Bumi Armada Berhad and Shapoorji Pallonji Group, has commissioned the floater conversion. Following completion in the third quarter of 2016 it will produce for the Madura Strait block BD development, 40 mi east of Surabaya and 10 mi south of Madura Island, Indonesia.

Additionally, Keppel will undertake a renewal survey and modification works for Dolphin Drilling's drillship Belford Dolphin. For Saipem Offshore, the company will conduct refurbishment and upgrading works, including installation of a new 827-ton abandon and recovery winch, an additional thruster, and a living quarters extension for a field development ship, the company said.

Prosafe to supply semi-submersible vessel to Petrobras offshore Brazil

Prosafe is to supply its Safe Eurus semi-submersible vessel to Petrobras Netherlands for safety and maintenance support offshore Brazil as part of a \$164 million contract.

According to the semi-submersible accommodation vessels operator Prosafe, the contract will begin in the first quarter of 2017 and will continue for a period of 3 years. The contract is expected to be the first for the Safe Eurus vessel, which has been designed and built to serve the Brazilian market.

Prosafe said that Safe Eurus will be the company's second vessel under charter to Petrobras. This new-build accommodation unit is under construction at a yard in China.

The technologically advanced dynamically positioned (DP3), harsh environment semi-submersible safety and maintenance support vessel Safe Eurus has a capacity to accommodate up to 500 persons and has several recreation facilities. It will provide Petrobras with a lift capability of 300 tons.

The vessel also features a large capacity open deck area and telescopic gangway. Safe Eurus vessel will be of Gusto MSC's Ocean 500 design and will be equipped with 500 beds, 10-point chain mooring.

Prosafe reported operating profit of \$248.3 million in 2014 and net profit of \$178.8 million. The Cyprus-headquartered company operates globally and employs 800 persons.



Safe Eurus will be Prosafe's second vessel under charter to Petrobras.

Royal IHC launches new 550-ton pipelaying vessel Sapura Rubi

Royal IHC has successfully named and launched the pipelaying vessel, Sapura Rubi, in a ceremony at the company's shipyard in Krimpen aan den IJssel, The Netherlands. The naming of the fully integrated vessel was performed by Ms. Glauzia Maciel, Human Resource Manager of Sapura Navegação Marítima S.A.

The Sapura Rubi is the fifth 550t pipelaying vessel that IHC is supplying to Sapura Navegação Marítima, a joint venture between SapuraKencana and Seadrill. All five vessels are being completely designed, engineered and built by IHC. Like her sister vessels, the Sapura Diamante, Sapura Topazio, Sapura Onix and Sapura Jade, the Sapura Rubi is destined for Brazilian waters to develop deep-sea oilfields of up to 2,500m on behalf of Petrobras.



Pipelay vessel Sapura Rubi launched.

The vessel will be equipped with a pipelaying spread designed and built by IHC, and two below-deck storage carousels, with capacities for 2,500t and 1,500t of product respectively. A vertical (tiltable) lay system with a 550t top tension capacity will be permanently installed for the deployment of a range of flexible products, and the tower orientation allows for maximum deck space. A custom-designed IHC control system integrates each aspect of the pipelaying spread to ensure excellent levels of performance, safety and reliability.

Arjan Klijnsoon, IHC's Executive Director Marketing & Sales, says: "With these ships, Sapura Navegação Marítima has entrusted IHC with an impressive order. The entire project has been on – or ahead of – schedule, which proves us to be a reliable partner in complex activities.

"The operational vessels, the Sapura Diamante, Sapura Topazio, and Sapura Onix, are all performing very well. With the launch of the final vessel, we have almost reached the end of a fantastic project.

Harkand \$10.5M Swordfish DSV upgrade complete

Harkand completed the \$10.5 million upgrade of its Gulf of Mexico based dive support vessel (DSV) Swordfish. Originally built in 2007, the Swordfish is the youngest DSV in this region and is said to have been upgraded to the highest safety standards in the offshore industry.

The fully International Marine Contractors Association (IMCA) compliant, ABS classed, 104 m long, DP2 DSV features a newly upgraded 15-man saturation diving system with a three-man bell along with a new 165 ft surface diving system. The vessel comes fitted with a new build 18-man self-propelled hyperbaric lifeboat (SPHL) for evacuation of the divers under saturation in case of an emergency.

This SPHL can be coupled with a newly built and dedicated portable hyperbaric rescue facility (HRF) to ensure safe decompression of divers. Following the upgrade work being carried out at the Port of Galveston, Mike Brown general manager of diving operations for North America and Africa, said: "Our commitment to establish industry standard in safety is exemplified by this recent investment to upgrade the Swordfish ensuring that the vessel not only meets but surpasses the required IMCA safety standards.



DSV Swordfish upgraded.

Solstad to lay-up 10 vessels due to weak markets

Norway-based Solstad Offshore is set to lay-up 10 offshore vessels citing market downturn. The lay-up is expected to take place by the end of this year and will primarily include platform supply vessels (PSVs) and anchor handling tug supply vessels (AHTs) and is expected to make about 300 people redundant.

Splash 24 / 7 reported Solstad Offshore vice-president Sven Stakkestad as saying that approximately 150 of the dismissed workers will be from Scandinavia and primarily Norway. Stakkestad added that the downsizing process will continue and is required to ensure that the company will make it through the downturn.

Weak oil prices are said to have affected the company's supply business in the North Sea and Brazil. In its mid-year 2015 report, Solstad Offshore announced that the company's fleet comprised 46 wholly-owned or partly-owned vessels at the end of second quarter.

According to the company, the market will remain weak for the balance of this year, as well as in 2016. The Norwegian offshore service and supply ship shipping company operates 50 vessels and two newbuilding CSV, including 19 construction service vessels, 22 anchor-handling tug supply vessels, and nine platform supply vessels.

DSME delivers midwater drilling rig to Songa Offshore

South Korea's Daewoo Shipbuilding & Marine Engineering (DSME) has delivered midwater rig Songa Endurance to Songa Offshore. The sixth generation, high specification, harsh environment rig was soon to depart and sail to Norway to commence an 8-year drilling contract with Statoil.

Initially, the rig will work on the Troll Field on the Norwegian continental shelf.

The unit is a flexible rig design prepared for future deep water operations and Arctic operations, which can be implemented by minor post upgrades.

According to Songa Offshore, Songa Endurance's voyage was to take place with tow-assist and it would arrive with com-

pletion of all third-party equipment installation and ready for final acceptance testing.

The rig, which has been designed for a year around drilling, completion and testing, as well as intervention operations in water depths up to 500 m, is expected to begin drilling operations by the end of this year.

The DP3-certified Songa Endurance is equipped with a drill-floor in addition to a layout with improved safety and working environment features.

Songa will soon have a fleet of seven midwater semi-submersibles and hold position as Statoil's largest drilling services provider.

Songa said the new rig is the second one in a series of four category D rigs that were built for and contracted to Statoil. Other rigs of this category include Songa Equinox, Songa Encourage and Songa Enabler.



Midwater rig Songa Endurance

Vantage, DSME at odds over drillship cancellation

Daewoo Shipbuilding & Marine Engineering Co. said it canceled a \$595-million order for the drillship Cobalt Explorer from Vantage Drilling. Daewoo said the customer failed to make an interim payment. Vantage said it terminated the contract according to the terms of the agreement and would seek to recover all funds paid to the shipyard.

Cobalt Explorer was scheduled for delivery by the end of this year. It is a seventh generation, dual-activity ultra-deepwater drillship equipped with two seven-ram BOPs and 10,000 ft of riser. DSME reportedly plans to continue building the ship and will try to find a new buyer.

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Fugro Americas makes debut



Fugro has debuted its newbuild geophysical survey vessel, Fugro Americas.

Following completion of construction in Louisiana earlier this year, the vessel conducted a geochemical coring campaign in the Caribbean Sea.

Measuring 193 ft in length, Fugro said the multi-purpose vessel is suited for high-resolution geophysical surveys and seafloor mapping. It is permanently mobilized for rapid deployment throughout the Americas.

Fugro also owns and operates three Hugin AUV systems, two depth rated to 9,842 ft and one to 14,764 ft, all of which are portable and able to be mobilized onto the Fugro Americas.

TGS to acquire coring, geochemical analysis data offshore Mexico

Mexico's Comisión Nacional de Hidrocarburos (CNH) has authorized TGS to acquire multibeam, coring and geochemical analysis data over an area of about 600,000 sq. km offshore Mexico.

To be conducted in conjunction with the 186,000-km TGS Gigante seismic survey, the project is expected to cover the entire deep water area of Mexico's offshore sector. This also includes the production of trends such as the Perdido Fold Belt, and Campeche Bay.

"We are pleased to create a portfolio that combines all important geoscience data into one integrated package that can be used to better aid exploration efforts in this region," said Katja Akentieva, TGS Western Hemisphere senior vice-president. "These data have value from the earliest stages of reconnaissance through the end of the development program."

Fugro will use vessels that are equipped with the latest generation of multibeam sonar equipment to acquire the multibeam data. The potential oil and gas seep targets would be identified using multibeam bathymetry and backscatter data for sediment sampling.

After obtaining an environmental



impact resolution from the Mexican authorities, TGS plans to begin acquisition of multibeam and coring data in the third quarter of this year. The acquisition is scheduled for completion in the fourth quarter of 2016.

Meanwhile, oilfield services company Schlumberger has launched a new deep-water 3D seismic survey in Mexico's Campeche basin to expand its Gulf of Mexico seismic data portfolio.

The acquisition of the multiclient wide-azimuth survey will cover 80,000 sq. km using two fleets of WesternGeco vessels, including Amazon-class, the purpose-designed 3D seismic vessels.

"Building on our experience in the U.S. Gulf of Mexico, we are focused on

collaborating with customers to understand and prioritize the hydrocarbon potential in the Mexican waters of the Gulf," WesternGeco president Maurice Nessim said. "We have begun acquisition of high-quality seismic images of the Campeche Basin, which when combined with advanced modeling and interpretation, will help our customers identify new exploration opportunities and minimize risk."

Phase 1 MexicoSPAN fasttrack data available from ION Geophysical

ION Geophysical has available the fasttrack prestack time migrated data from Phase 1 of its MexicoSPAN program. Phase 1 will comprise 13,670 mi of deep-image 2D seismic data. The fasttrack data is expected to be delivered for use in Mexico's remaining Round 1 offshore tract bidding. ION planned to complete Phase 1 in late September and go directly into Phase 2 at that time.

ION said its combined YucatanSPAN, GulfSPAN, FloridaSPAN, and MexicoSPAN programs will deliver a complete, basin-wide regional view of the Gulf of Mexico. Meanwhile, ION said it will employ an aggressive cost reduction initiative to cope with declines in crude oil and natural gas prices.



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Oil prices blamed for smallest U.S. Western Gulf sale in over 30 years

The smallest oil lease sale in more than three decades in the Western Gulf of Mexico and one of the smallest in the entire U.S. Gulf attracted only five bidders 19 August, with low oil prices said to limit interest in the prospects offered.

Australia's BHP Billiton was the biggest of the tiny circle of bidders in Western Gulf Lease Sale 246, which offered acreage offshore Texas. The offers collectively yielded total high bids of \$22.7 million, the smallest Western sale sum since 1983 and well below the \$110 million in last year's comparable sale.

BHP made offers on 26 ultra-deepwater blocks at the sale, which was held in New Orleans and took just 14 minutes. BP, Anadarko Petroleum, Colombia's Ecopetrol and small independent Peregrine Oil & Gas also participated.

In all, the companies made 33 bids on 33 tracts, also the lowest number of blocks receiving bids in a Western sale since 1983, sale sponsor U.S. Bureau of Ocean Energy Management said in a press conference after the annual auction.

Mike Celata, acting gulf regional director for the U.S. Bureau of Ocean Energy Management, said his agency expected a lesser turnout because of low oil prices, at sub-\$42 per barrel, were on a par with those seen during the 2009 economic recession.

"We had lower expectations" for Sale 246, Celata said. "Low, longer-term oil prices have showed that some companies were not interested in bidding in this sale."

Mexico sweetens oil auction terms to avoid repeat of Phase 1 flop

Oil companies competing in the next phase of Mexico's historic Round One auction were to know the minimum level of profits demanded by the government prior to the auction in a bid to raise investor interest.

CNH also decided it would offer companies the possibility to conduct additional exploration and extraction beyond reserves that have already been discovered. The changes are aimed at avoiding a repeat of the first phase of the

auction in which the government missed its own modest expectations, awarding just two of 14 contracts offered. During that auction, Mexico's finance ministry only revealed the minimum level of profits companies would have to pay the government after firms presented their bids.

The next round was to be awarded on September 30 and involved five production-sharing contracts covering nine shallow water oil fields along the southern edge of the Gulf of Mexico. The regulator already said in August that it would

lower the corporate guarantee—money a consortium has to put up in case of an accident—for the second phase.

Twenty companies pre-qualified for the late September auction, either as individual operators or in consortia, including international oil majors Chevron and Royal Dutch Shell.

Mexico's oil regulator is running the five-phase Round One auction, which aims to lure billions of dollars in investment and reverse a decade-long dip in crude output.

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Lundin proves up more oil near NS Edvard Grieg development

Lundin Norway said it proved more oil near its Edvard Grieg development in the central Norwegian North Sea. The semi-submersible Bredford Dolphin drilled well 16/4-9 S on the Luno II North prospect on the southwestern flank of the Utsira High, roughly 9.3 mi south of the Edvard Grieg field and 2.5 mi northwest of the Luno II discovery well, 16/4-6 S.

The well encountered a 75-ft oil column in Jurassic-Triassic conglomeratic sandstones. Pressure data indicates that petroleum system is different to that evidenced in the Luno II discovery. A drill-stem test in the oil zone flowed 1,000 bbl per day through a 32/64-in. choke.

Lundin estimates resources for Luno II North at 12-26 mmboe. A potential development could involve combining Luno II North and the 27-71-mmboe Luno II as a subsea tieback to the Edvard Grieg infrastructure. This was the fourth appraisal well drilled on license PL359 since it was awarded in 2006. Water depth was 328 ft. Bredford Dolphin now heads to the Norwegian Sea to drill wildcat well 6306/5-2 in PL642 for Repsol Exploration Norge.

In the Barents Sea, the semi-sub-



mersible Island Innovator was expected to soon spud exploration well 7220/6-2 for Lundin on PL609 in block 7220/6, targeting the Neiden prospect. Petroleum Safety Authority (PSA) Norway, which approved the well, expected drilling to last for 40 days. Additionally, PSA granted Statoil consent to use new pipelines and subsea production facilities on the Åsgard field in the central Norwegian Sea, in 656 to 984 ft of water. Åsgard comprises the Smørifik, Smørifik Sør and Midgard fields, developed via subsea completed wells tied back to an oil production and storage vessel, Åsgard A, and Åsgard B, a gas-condensate-processing semi-submersible.

BOEM calls for input on proposed 2017-2022 U.S. Gulf lease sales

The Bureau of Ocean Energy Management (BOEM) is seeking information and nominations from interested parties regarding proposed oil and gas lease sales in the Gulf of Mexico Western, Central and Eastern Planning Areas for inclusion in the Draft Proposed Five Year Outer Continental Shelf Oil and Gas Leasing Program for 2017-2022.

BOEM said it will analyze the information in response to this Call for Information and Nominations, which will primarily identify and evaluate areas with potential for oil and gas development, as well as determine possible environmental effects and potential conflicts in the call area.

Comments will be used to develop lease terms and conditions to ensure safe offshore operations. Comments will also be used to assess potential conflicts between offshore exploration and development operations and state coastal management programs, and to develop proposed actions and alternatives in the National Environmental Policy Act (NEPA) review process.

For more information, visit www.regulations.gov.

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China Oilfield to drill exploration wells in Okhotsk Sea off Russia

China Oilfield Services (COSL) has secured a contract to drill two exploration wells in 2016 for Rosneft and Statoil's joint ventures Magadanmorneftegaz and Lisyanskymorneftegaz. The wells are to be drilled in the Magadan-1 and Lisyansky areas of the Okhotsk Sea located south of the Arctic Circle, according to Rosneft.

The Magadan-1 well will be drilled 100 km offshore, and the Lisyansky well will be around 90 km offshore. Both are located in areas with water depths of less than 150 m. Based on a combined score of technical and economic parameters, the tender was won by COSL and it will offer its semi-submersible drilling rig Nanhai-9 for the drilling works.

Rosneft said participation of Asia-Pacific partners in the offshore operations is in line with development strategy for better exploration and production of hydrocarbons.

"The agreements reached open up new prospects for further cooperation between leaders of the oil and gas industry in Russia, Norway and China in the exploration of oil and gas resources," said Igor Sechin, Rosneft's management board chairman.

In 2012, Rosneft and Statoil signed a cooperation agreement to explore areas of the shelf in Russia jointly and for Rosneft to join in the Norwegian shelf exploration. Based on the agreement, the companies set-up the ventures as well as completing a series of exploration operations, including 2D and 3D seismic and geotechnical surveys.

Cairn Energy sets its sights on the potential of the Bellatrix prospect

Cairn Energy has confirmed it will drill an exploration well on the Bellatrix prospect as part of an upcoming appraisal and exploration drilling campaign offshore Senegal. The program, likely to be performed by the ConocoPhillips-contracted drillship Ocean Rig Athena, was to start in early October with two appraisal wells on last year's deepwater SNE oil discovery, according to partner FAR. The aim is to prove an economic threshold for a development, said to be around 200 mmbbl.

Cairn Energy exploration director Richard Heaton said the third well would target the Bellatrix prospect, which 3D data processing suggests also overlies the northern end of the SNE field.

"This will define the northern end of the (SNE) field," he added. "It allows us to characterize the reservoirs there. We'll have an extensive logging program here, but at the moment there isn't a firm cor-

ing program here or a firm testing program. Obviously results will depend a little bit on how the first two wells also go, so we have some flexibility here."

FAR managing director Cath Norman said: "The Bellatrix prospect is one of a number of high-quality targets the joint venture has identified in both the Rufisque and Sangomar license areas offshore Senegal. The great attraction in drilling Bellatrix is that it will allow us to gain additional information on the extent of the SNE field..."

Chevron pushes Big Foot first oil and gas production into 2018

Chevron now expects first oil from its deepwater Big Foot TLP in the Gulf of Mexico in 2018. Initial plans called for production to start later this year. Installation was halted and the TLP moved to sheltered waters earlier this year when several pre-installed tendons lost buoyancy. The Big Foot platform is a dry-tree extended TLP with an on-board drilling rig and production capacity of 75,000 bbl of oil and 25 mmcf per day of natural gas.



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PA Resources, ETAP plan phased Zarat development

PA Resources and state oil company ETAP have submitted an updated development plan for the Zarat gas-condensate and oilfield offshore Tunisia.

Zarat, in shallow water, contains estimated recoverable reserves of 147 mmboe. It is Tunisia's largest undeveloped field, PAR said, and producing its gas will be critical in alleviating the country's expected future gas supply deficit.

Its geology is similar to PAR's nearby Didon field and to other producing fields off Tunisia such as Ashtart and Hasdrubal, and the larger El Bouri and Al Jurf fields offshore Libya to the east.

Zarat has been partitioned into north and south licenses. ETAP has the option to back-in to the southern tract for an interest of up to 55%, leaving PAR with 45%—a decision on this back-in option is due shortly after the authorities have approved the new plan.

Joint Oil, a consortium of ETAP (Tunisia) and National Oil Company (Libya), holds the northern tract license.

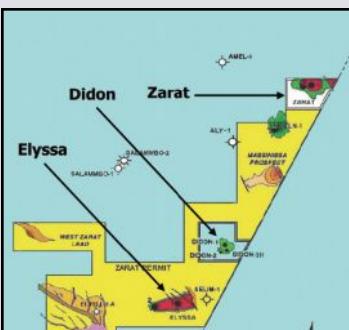
The proposed development is in two phases with a view to reducing capital outlay. Phase 1 calls for four production wells and installation of facilities to process and export 20,000 bbl per day of oil and 100 mmcf per day of raw gas.

Phase 2 involves a further four development wells and expansion of the facilities to increase capacity to 40,000 bbl per day and 200 mmcf per day. PAR anticipates first oil in 2020.

The scheme makes use of existing Gulf of Gabes infrastructure for the reinjection of carbon dioxide (CO₂), export of sales gas to shore, onshore gas processing, and extraction of the LPG stream.

Additionally, the Zarat complex could serve as a hub to facilitate development of nearby stranded oil and gas fields in the eastern Gulf of Gabes, such as PAR's Elyssa gas field.

Assuming approval for the plan, the development will enter a front-end engineering and design phase leading to project sanction during 2017.



Israel approves offshore natural gas development

Israel's government has approved a deal with a consortium that includes the U.S.-based Noble Energy to increase the quantity of natural gas produced at the Tamar field in the Mediterranean Sea. The agreement also calls for rapid development of Leviathan, Karish and Tanin natural gas fields.

Israeli Prime Minister Benjamin Netanyahu announced an agreement, which is aimed at setting a framework to exploit gas discoveries that may bring in major new government revenue. Expected to face a parliamentary vote, the agreement will also make the country become a gas exporter and provide it with strategic leverage in the region.

"We need to extract the gas from the sea. This decision is an important milestone. We are overcoming the obstacles step by step," Netanyahu said.

He said the gas will be extracted from the bottom of the sea and will reach Israeli citizens, Israeli industry and the Israeli

economy for the benefit of the citizens of Israel.

"This outline will pass one way or another, and it is about time that it does," he added. "The true interests of the State of Israel require the passage of this outline as quickly as possible."

From the Tamar gas field located in Israel's exclusive economic zone roughly 80 km west of Haifa in a water depth of 1,700 m, Noble and Delek produced gas since 2013.

Based on the agreement terms, Delek will divest its 31% stake of the offshore gas field within a period of 6 years, and Noble would reduce its holdings from the existing 36% to 25%.

Subsea 7 to install West Nile Delta subsea spread

BP awarded Subsea 7 a \$500-million contract for the subsea development of the Taurus and Libra fields offshore Egypt. This represents the first phase of the West Nile Delta project in water depths of around 2,624 ft.

Subsea 7 will be responsible for engineering, procurement, installation, and pre-commissioning of subsea infrastructure for nine wells, including 46.6 mi of umbilicals and 62 mi of pipeline. It will manage the program from its Global Projects Centre in London, with fabrication of the subsea structures and spools to be performed at the Petrojet Maadia yard near Alexandria.

Offshore installation is expected to start during the second half of 2016 using the pipelay vessel Seven Borealis and the heavy construction vessel Seven Arctic.

Elsewhere, Subsea 7 has completed installation of bundles and pipelines for the Talisman-operated Montrose project in the UK central North Sea and has started pipelay for Premier's Catcher project in the same sector.

Maersk Oil gets okay for UK North Sea Culzean project

The UK Oil & Gas Authority has approved the development of the Maersk Oil-operated high-pressure/high-temperature (HP/HT) Culzean field in the UK central North Sea.

Maersk Oil and its co-venturers, JX Nippon and BP (Britoil), are investing around U.S. \$4.5 billion in the development. Over the projected life of the field, it is anticipated that \$3.3 billion in opex will be spent in the UK domestic market.

Discovered in 2008 by Maersk Oil and its co-venturers, the gas/condensate field has resources estimated at 250 to 300 mmboe. Production is expected to start in 2019 and continue for at least 13 years, with plateau production of 60,000 to 90,000 boe per day. The field also is expected to produce enough gas to meet 5% of total UK demand at peak production in 2020-2021.

The development has benefited from the HP/HT Cluster Area Allowance introduced by the UK government as part of the 2015 budget. The allowance supports the development of HP/HT projects—which typically have considerably higher capital costs—and encourages exploration and appraisal activity in the surrounding area or “cluster.”



The Culzean development will feature a bridge-linked platform complex.

"We are pleased the field will support UK economic growth as well as extend understanding of HP/HT development. Culzean is the latest in a series of large investments by Maersk Oil in the North Sea where we are active in Denmark, Norway, and the UK, reflecting our commitment to the future of the North Sea region," said Jakob Thomasen, chief executive officer of Maersk Oil.

NPD authorizes start-up of subsea compression at Gullfaks off Norway

Statoil and its partners have secured the consent of the Norwegian Petroleum Directorate (NPD) to operate a new subsea wet gas compressor and umbilical on the Gullfaks field in the North Sea. In July, the NPD authorized start-up of subsea compression at Statoil's Åsgard project in the Norwegian Sea.

"For Gullfaks, this gas compression means extended lifetime and an increase in the gas recovery rate from Gullfaks Sør Brent from 62% to 74%," said Astri Fritsen, principal engineer at NPD.

The compressor station and the umbilical installed on the seabed on Gullfaks will increase the well stream from templates D, L, M, and N. Production was due to start no later than October.

In addition to accelerating gas production and extending the period when the gas capacity on the Gullfaks C facility is fully employed, the new infrastructure will increase gas and condensate volumes extracted from the reservoirs on Gullfaks Sør Brent and Rimfaks Brent.

According to Fritsen, the technology can be deployed on other new and existing Norwegian fields in the future.

InterMoor provides rapid mooring support in the U.S. Gulf of Mexico

Subsea services company InterMoor has provided Anadarko Petroleum with rapid hook-up services for its Heidelberg truss spar in deepwater Gulf of Mexico. At a water depth of 5,300 ft, the 80,000 bbl per day spar was hooked-up to three mooring lines in Green Canyon Block 860, offshore Louisiana.

The original contractor of the project resumed the job after the hooking-up work was finished, and completed the remaining six mooring lines along as well as the spar installation. InterMoor said that the company initiated the engineering in March, with offshore work beginning in early June.

"Our extensive experience in mooring all types of floating oil and natural gas facilities and our ability to adapt our previous procedures in just a month meant we could mobilize vessels quickly and efficiently, while assuring safety in execution," said Todd Veselis, InterMoor manager of projects.

"Our client required a high level of responsiveness to ensure the project remained on schedule," he added. The company said InterMoor provided crews for each of the five vessels that were mobilized from Fourchon, Louisiana. More than 40 InterMoor staff on two tugs and three anchor-handling vessels were mobilized.

The main anchor-handling vessels included the Kirt Chouest and the Dino Chouest, with a third one acting as a support between them and the platform. These vessels, including McDermott's DB 50, maintained station keeping for the spar and concluded the operations for hook-up to make the spar storm safe.



InterMoor hooks up 80,000 bbl per day spar to three mooring lines in Green Canyon Block 860.

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Kongsberg collaborates on R&D to optimize gangway operations

Technology company Kongsberg Maritime is working with Norwegian shipping company Østensjø and the Norwegian Marine Technology Research Institute (Marintek) on a new R&D project to optimize gangway operation through new dynamic positioning (DP) philosophy and simulation training.

The new project, which is part of the Norwegian government's innovation program, Maritime Activities and Offshore Operations (MAROFF), is useful for operations using motion-compensated and telescopic gangways that are typically found on accommodation vessels in the offshore sector.

The project will use Kongsberg Maritime's DP controller for operation of Edda Fortis, the new generation accommodation vessel of Østensjø, and will involve the collection and analysis of operational data.

Simulation studies will also be analyzed using the SIMO simulation tool package and Kongsberg Maritime's DP algorithms.

Kongsberg Maritime also plans to develop a new simulation software system for crew training on critical operations, incidents and planned operations preparation. In order to simulate the compensation of the motion between the rig and the accommodation vessel, sensor data will be interfaced to Kongsberg's DP system.

The DP control strategy on board will be adjusted using data analysis in a bid to extend the operational window defined for gangway operation.

"The accurate full-scale data from the accommodation vessel will be used to improve, update and tune the simulator models to an extreme level of accuracy, which is important when training for operations with high safety requirements and small risk margins," said Terje Heierstad, Kongsberg Maritime Simulation global product manager.

GNS Science releases iMage seismic software interface

GNS Science has launched the new iMage platform as a stand-alone interface with GLOBE Claritas seismic processing software. All iMage tools use a common engineering framework designed to scale efficiently across large systems. This allows complex, high-fidelity algorithms to make the best possible use of existing hardware, said GNS Science.



Gangways eliminate the need to use dangerous ladders. Photo courtesy of Kongsberg Maritime AS.

The first tool available through iMage is called STITCH, an advanced wavefield regularization and interpolation algorithm. The image quality in a seismic survey can be dominated by irregularities in how the seismic wavefield was created or recorded. STITCH scans the seismic dataset, looking for gaps (i.e., missing traces), and then automatically selects the best method for reconstructing the wavefield from surrounding information.

GNS said future releases for iMage will include a de-ghosting-broadband solution called OCTAVE as well as a fast and "true 3D" SRME.

ITF seeks new technology solution proposals to drive down P&A costs

The Industry Technology Facilitator (ITF) has launched a call for proposals for new technology solutions to deliver cost efficiencies in through tubing logging during plug and abandonment (P&A) operations.

Organizations developing new technologies to specifically address the quality of cement bond through tubing have the opportunity to lead their own joint industry project (JIP) with funding provided by the ITF members who participate in the project.

When a well is abandoned or plugged, permanent barriers are put in place to ensure that all zones with a flow potential are isolated from each other and from the surface or the seabed. The primary method is to use cement to form plugs that are placed in the necessary seals. This requires the verification of the integrity of cement placed during well construction to ensure hydraulic isolation once a barrier is placed.

Removal of the production tubing is often necessary prior to this logging operation as tools do not exist that can

image through the tubing. This usually requires the use of a rig to remove the christmas tree, place pressure control equipment, and pull the production tubing before logging, an operation that can cost U.S. \$391,660 per day.

"In wells where historical well construction data is poor and cement integrity unknown, a common approach is to pull the production tubing to determine whether a good cement barrier exists behind the casing," said Dr. Patrick O'Brien, chief executive officer of ITF.

O'Brien point out that each well may require three plugs, which could mean in excess of \$1.17 million of rig time for each operation.

"If we can find a technology to determine the quality of the cement through tubing and verify the potential leak paths to the surface, it could significantly reduce those costs," he explained.

It is estimated there are more than 900 wells to be abandoned in the UK continental shelf alone over the next 10 years.

Exceed to unveil online tool for offshore decommissioning market

Scotland-based well management and performance improvement services provider Exceed is set to launch an online information management tool for the offshore decommissioning market.

The launch of iVISION comes to address the collaboration challenges outlined by the Oil & Gas Authority (OGA) through its call to action published in February. In the publication, the OGA recognized that the UK's decommissioning industry is still learning and adapting to this new phase.

The online platform, in which the company invested more than U.S. \$460,000, connects multi-location, multi-discipline teams and business units through one central point, which stores information and provides secured access.

Integrated with safety management, technical information, and video to drive continuous improvement, the platform will improve knowledge transfer, while cutting down the cost of existing and future projects.

iVISION can create controlled access privileges for individual users and also provides a platform for cross-company collaboration. This enables operators to work with global contractors and third parties and provides them with a platform to integrate safety management systems and technical knowledge.

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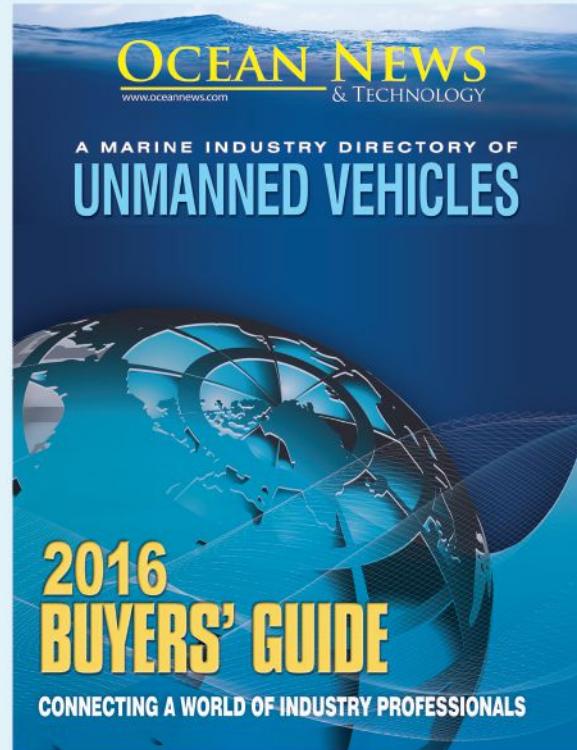
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Crowley's Jensen Maritime develops two LNG bunker barge concepts

Crowley Maritime Corp. subsidiary Jensen Maritime has unveiled the development of two new liquefied natural gas (LNG) bunker barge concepts that can be fully customized to meet a customer's unique needs, the company said.

The first concept involves outfitting an existing barge with an above-deck LNG tank. The concept can be further modified to accommodate more than one type of product if a customer has a need for multiple liquid transfers. Advantages of this design include a fast turnaround

and a reduced need to invest in specialized assets if a customer has short-term LNG requirements, the company said.

The second concept is for a purpose-built, new bunker barge. Offering greater carrying capacity and improved visibility, the design features a larger LNG tank that is nestled inside of the barge. This new barge will also feature the latest safety features and efficiencies.

"We understand that customers have very different needs when it comes to LNG," said Johan Sperling, company vice president. "Whether LNG is required for the long or short term or in larger or smaller quantities, Jensen has a bunkering solution. In addition to offering customers maximum flexibility and top safety features, all Jensen designs are developed using the company's proprietary production engineering capabilities, which makes the outfitting, construction and assembly more efficient."

Bunker barges offer a solution for an industry that is currently struggling with the decision over which to develop first-LNG infrastructure or vessels. These barges are an ideal resource for those who have LNG needs at ports not located near an LNG terminal or as an alternative to over-the-road transportation.

IHRDC releases new version of its IPIMS E&P e-Learning software

IHRDC released a new and improved version of its IPIMS e-Learning software, said to be a solution for building competencies in upstream petroleum technology. The new IPIMS 3.0 includes significant updates to the user interface and instructional design of IPIMS Background Learning, which is IHRDC's largest e-Learning library. The IPIMS e-Learning series is composed of 1,089 subtopic courses in 136 topics covering the four primary upstream technology disciplines.

IPIMS 3.0 will now be the default version for all IPIMS Background Learning courses launched online from www.IPIMS.com and all IPIMS SAAS instances as well as from a client Learning Management System (LMS).

IHRDC will be making the re-designed interface available to all users and no additional actions will be required by the company's licensees. Users should appreciate the software's design improvements, modern appearance, and intuitive navigation. Improvements include a new tablet-friendly user interface, clearer navigation, and in-course features such as notes, contextual help, remastered videos, an updated video player, and optional assessments.

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Cobalt selling its offshore Angola assets to Sonangol for \$1.75B

Houston-based Cobalt International Energy said it will sell its interest in offshore Angola for \$1.75 billion to state-owned Sonangol as the Angolan government claims more of its natural resources. Cobalt is unloading its 40% stake in two sizable blocks in the deal that is expected to close by 1 January 2016, subject to customary Angolan government approvals.

Cobalt will continue as the operator in a short interim period and then Sonangol will take over all control and expenses going forward. The state-owned company is planning for first oil from the Cameia development in 2018.

"We are proud of the tremendous success that our partnership with Sonangol has achieved in opening the pre-salt play in the Kwanza Basin with five significant discoveries and a deep portfolio of exploration prospects," Joseph Bryant, Cobalt chairman and chief executive officer, said in the announcement.

"We remain committed to continuing our joint efforts with Sonangol to move the Cameia development project to sanction by year end."

Cobalt has focused on exploration and production in the region for the past 7 years. Cobalt will still retain assets offshore of Gabon in west Africa as well as in the deepwater Gulf of Mexico.

Sonangol's U.S. subsidiary is located in Houston.

Fluor, Offshore Oil Engineering to form new joint venture

Fluor has agreed with China National Offshore Oil's subsidiary Offshore Oil Engineering (CNOOC) to form a new joint venture CNOOC Fluor Heavy Industries (CFHI).

The companies will own, operate, and manage the Zhuhai Fabrication Yard in China's Guangdong province through the joint venture, which will be 49% owned by Fluor and 51% by CNOOC.

The yard is located near Hong Kong in the Zhuhai Gaolan Port Economic Development Zone and serves fabrication needs in the Asia-Pacific region.

It has the capacity to accommodate fabrication modules weighing more than 50,000 tons at two million square meters and has a backlog of projects in the Asia-Pacific market.

"CNOOC Fluor Heavy Industries is an important strategic alliance, as it positions Fluor to develop a more powerful presence in the global construction and fabrication market, and enhances our abilities to serve and grow our current client base in Asia-Pacific and around the world.



Zhuhai Skidway and Assembly Yard.
Photo courtesy of Business Wire.

"Our customers are enthusiastic about this venture's ability to deliver very large cost-efficient structures."

CFHI provides Fluor access to the long-term strategic capacity to deliver offshore fabrication services for clients globally," said David Seaton, Fluor chairman and chief executive officer.

SCF acquires Cal Dive's Australian and Southeast Asian business

SCF has acquired the Australian and Southeast Asian business of Cal Dive International in partnership with Viburnum Funds and John Edwards. The company, which will be renamed Shelf Subsea, will be headquartered in Singapore and will also have operations in Perth.

Cal Dive Australia is a provider of saturation and air diving and subsea services. The company's offerings span the life cycle of a well and include geotech coring; pipeline and umbilical installation, hook-up and tie-in; inspection, repair, maintenance; well intervention; platform removal; and P&A work. The company operates a fleet of specialist vessels and also offers ROV services.

The management team of Peter Evans and Peter Malcom will continue to run the business. John Edwards, who previously partnered with SCF to build Canyon Offshore, will serve as chairman.

Total to offload interests in gas pipelines and terminal for \$905M

France-based Total has agreed to divest all of its interests in the Frigg UK Pipeline (FUKA), the Shetland Island Regional Gas Export System (SIRGE) gas pipelines, and the St. Fergus Gas Terminal to UK's North Sea Midstream Partners, in a transaction said to be valued at \$905 million.

Originally constructed in 1977, the 362-km, 32-in. FUKA gas pipeline will connect the Frigg Field on the UK-Norway median line to the St Fergus Gas Terminal in Scotland.

Even though the field is decommis-

sioned, the pipeline is still operational and is delivering gas from fields in the Northern North Sea to the terminal at St Fergus. With a capacity of 2,648 mmscf per day, the three-train processing St. Fergus Gas Terminal currently serves more than 20 fields. Total holds 100% operated interest in the pipeline as well as the terminal.

According to Total, the 234-km, 30-in. SIRGE gas pipeline has a capacity of 665 mmcf per day, connecting the Shetland Gas Plant to the FUKA pipeline. North Sea Midstream Partners will sign an agreement with px Group for the operation and maintenance of the assets upon completion of the sale.

Genesis Energy buys Enterprise's U.S. Gulf pipeline systems for \$1.5B

Genesis Energy LP agreed to buy the offshore Gulf of Mexico pipeline and service business of Enterprise Products Partners LP for about \$1.5 billion in cash, consolidating its ownership of lines where volume is growing.

The assets include about 2,350 mi of oil and natural gas pipelines and six offshore hub platforms, including a 36% interest in the Poseidon Oil Pipeline System, a 50% interest in the Southeast Keathley Canyon Oil Pipeline System and a 50% interest in the Cameron Highway Oil Pipeline System.

Together with its current positions, the deal will make Genesis a 64% percent owner of Poseidon and full owners of the other two pipeline systems. The Enterprise unit serves deepwater fields in the Gulf of Mexico off the coast of Texas, Louisiana, Mississippi and Alabama.

Keppel to acquire Cameron's rig business valued at about \$100M

Singapore's Keppel Offshore & Marine signed an agreement to acquire the offshore rigs business of the U.S.-based Cameron in a transaction valued at \$100 million. The business consists of the Letourneau jack-up rig designs, rig kit business, as well as aftermarket services. According to Keppel, the jack-up rig designs to be acquired include the Letourneau Super 116E, Workhorse, Super Gorilla XL and Jaguar. The acquisition will allow Keppel to offer the Letourneau rig designs to customers through the sale of rig kits to shipyards, or deliver ready-to-drill rig solutions from its yards. In August, Schlumberger Ltd. and Cameron announced a merger agreement valued at \$14.8 billion.

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N-Sea successfully completes Maersk IMR work scope

Subsea IMR provider, N-Sea Offshore Ltd, has successfully completed a fully integrated and managed service for Maersk Oil UK's 2015 Subsea Inspection Programme.

The work scope involved four field locations in the North Sea and utilized N-Sea's IMR and subsea capabilities for a duration of 135 days. The four locations were combined within one scope that commenced on 1 March this year, thus achieving optimum levels of efficiency and productivity.

The Siem N-Sea was utilized for the scope, to combine ROV inspection services with IMR diving works. The vessel is part of N-Sea's fleet of dive, multi-support and construction vessels designed to deliver a range of subsea services for offshore assets, platforms, FPSOs and renewables operations.

N-Sea's chief operating officer, Roddy James, said: "The successful completion of this contract further consolidates our excellent relationship with Maersk Oil, which has always been based upon trust and transparency. The project was completed efficiently and safely with no incidents, and reflected our ability to always provide 'safe, sound and swift' solutions."

"At a time when identifying streamlined and cost effective solutions is crucial, combining ROV inspection services and IMR diving works into one work scope ensured this project delivered significant cost savings and achieved optimum efficiencies for the client."

N-Sea is known for its innovative work as an independent offshore subsea contractor, specializing in IMR services for the renewable, oil and gas and telecom/utility industries, as well as for civil contracting communities. N-Sea provides nearshore, offshore and survey services to major operators and service companies alike.

For more information, visit www.n-sea.com.

Ocean Floor Geophysics completes another CSEM gas hydrate survey in Japan

Ocean Floor Geophysics Ltd. (OFG), in cooperation with Fukada Salvage and Marine Works Co. Ltd. (Fukada), has completed another high resolution CSEM survey of near surface gas hydrates using the Scripps Institution of Oceanography Vulcan system for the National Institute of Advanced Industrial Science and Technology (AIST) in Japanese waters. Following the successful 3D CSEM survey and inversion models completed in 2014, the 2015 survey comprises over 670 line km of high resolution data collected from the Fukada vessel Shin Nichi Maru. A 3D inversion of the EM data for an area of interest for this year's survey has been completed. The contract for the 3D inversion of the data for the entire 2015 survey area has also been awarded to OFG and will be completed in November this year. Fukada Salvage and Marine Works acted as prime contractor to AIST.

For more information, visit oceanfloorgeophysics.com.

Brazilian order for Tritech's Gemini

Tritech International Ltd (Tritech) is pleased to announce the sale of its industry-leading multibeam sonar Gemini to ROV providers Sistac Sistemas de Acesso S.A. (Sistac).

Sistac initially hired a deep-rate Gemini to evaluate its performance during sea trials and after the company observed its capabilities, subsequently purchased the sonar. The Gemini 720id multibeam sonar is now the primary sonar onboard Sistac's Soil Machine Dynamics (SMD) Atom Work-Class ROV.

Tritech's Gemini multibeam imaging range offers users a real-time, 120° field of view and operates at 720 kHz with a range of up to 120 m, making it ideal for obstacle avoidance and target detection. The Gemini sonar is available as a shallow 300 m version (720i) or deep-rated to 4,000 m (720id) in aluminium or titanium housing.

The sale of a key product follows recent in-country product demonstrations and the opening of Tritech's dedicated support hub where the company provides certified after sales and technical support through its partner MACSEA Ltda.

For more information, visit www.tritech.co.uk.

FMC Technologies advances C-Innovation's ROV fleet



FMC Technologies continued delivery of UHD-III remotely operated vehicles (ROVs) to C-Innovation. Their September delivery is the seventh UHD-III for their fleet, with an eighth vehicle delivering in October 2015.

C-Innovation has purchased more than 50 FMC Technologies Schilling Robotics ROVs since entering the ROV market in 2007. In addition to the newest two UHD-IIIIs, C-Innovation is upgrading all (11) of its first-generation UHD ROVs to increase offshore efficiency, available horsepower, reliability, and automated features for advanced project handling. The upgrades will be done by FMC Technologies, via its Schilling Robotics business unit, over the next 18 months.

"By continuing to invest in market-changing technology for our ROV fleet, we offer our oil and gas customers the most effective and reliable systems available today," said Steven Thrasher, technical director for C-Innovation. "This translates to an increased level of performance and efficiency that C-Innovation delivers to its customers for their subsea operations."

FMC Technologies' Schilling Robotics business unit offers the most sophisticated and advanced robotics technology in the subsea oil and gas industry. Its ROVs deliver the most power and efficiency in their class and directly benefit operators through high fidelity, automated control modes (Intelligent Power Management, StationKeep™, AutoDisplacement™, and AutoTrack™) that provide precision and stability while performing difficult intervention tasks.

"Our continued investment in developing ROV technologies that deliver superior levels of operational productivity to customers is unmatched. We are delighted to continue our long-standing partnership and collaboration with C-Innovation as they expand and upgrade their fleet," said Tyler Schilling, president for FMC Technologies Schilling Robotics.

For more information, visit www.fmctechnologies.com.

ICTINEU 3 deep submersible flagged in France

The ICTINEU 3, a manned submersible (1 pilot + 2 passengers) that can dive to 1,200 m, successfully performed sea trials and certification tests in France under DNV-GL and French Maritime Affairs witnessing, where it obtained a French flag and registration number, as well as navigation permits. The submersible is currently being prepared for deep dive sea trials and a scientific campaign that will take place next fall.



In between, the ICTINEU 3 has performed 25 dives in the clear waters of the Cote d'Azur, at Villefranche-sur-mer (near Nice) where the team has been training and evaluating the performances of the vehicle.

The ICTINEU 3 is ready to operate worldwide and is available for demonstrations to clients, scientific campaigns, short or long term renting, film projects, or any other deep-water activity. In parallel the company offers the design and construction of new-brand custom-tailored submarines. New units of the ICTINEU 3 can be ordered and will be manufactured upon request.

Equipped with the latest cutting edge

technologies, the ICTINEU 3 has proved to be an excellent vehicle for scientific research, intervention and exploration, as it provides a huge field of view to observers. It can perform long range missions both in time and distance, and it has a high maneuverability to approach targets, and yet it is comfortable. It has some additional qualities that make it a unique deep exploration vehicle: it can stop precisely at any depth in the water column as many times and as long as desired; it can navigate up and down slopes or cliffs with no limitation due to ballast; and missions can be cost effective as crew can be easily and safely exchanged while the sub is in the water, with no need for a large vessel or for recovery and re-launch operations. Thanks to its high power-high energy battery system, it can operate for long hours and perform several dives with no need to re-charge. It is versatile with an architecture that allows an easy implementation of client equipment.

Deep certification dives up to 1,000 m are scheduled for next fall.

For more information, visit www.ictineu.net.

ALSEAMAR completes first geochemical exploration survey conducted with SEA EXPLORER

ALSEAMAR, designer of the SEA EXPLORER underwater glider and provider of SEA EXPLORER glider services, completed a successful pre-exploration survey with two SEA EXPLORER gliders fitted with MINIFLUO hydrocarbon sensors for an important oil player.

Data compiled include temperature, salinity, pressure, dissolved oxygen and hydrocarbon-like components (phenanthrene and naphthalene) along 700 m depth of the water column.

Main objectives were to characterize the ocean environment and assess natural oil seeps emanating from the seabed in the survey area by using, among others, the innovative MINIFLUO hydrocarbon sensor.

The two SEA EXPLORER gliders accurately squared the survey area following pre-defined lines and cross lines while collecting ocean data with physical and bio-chemical sensors. Data files were transmitted by satellite telemetry in near real time during the performance

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of the mission for real-time events observation and appropriate gliders re-positioning.

SEA EXPLORER gliders were recovered after 3 weeks of mission in autonomy with 45% energy remaining. The SEA EXPLORER is the sole rechargeable underwater glider available on the market. This innovation has been introduced to increase reliability (leak risk free) and reduce gliders associated logistics in addition to overall operational costs.

For more information, visit www.alseamar-alcen.com.

SeaRobotics successfully delivers TankBUG ROV system

SeaRobotics Corporation (SeaRobotics) has announced the successful delivery of a TankBUG ROV system. Designed and constructed in its new high-specification manufacturing facility, the SeaRobotics TankBUG will now serve a leading water tank cleaning corporation in its efforts to provide safe and cost-efficient methods for removing sediments and debris from water storage facilities and reservoirs.

The TankBUG ROV system design consists of a vehicle deployed and operated within water storage tanks for sediment removal and inspection on the tank floor. A gas powered pump, sepa-



rate from the vehicle and outside of the tank, creates the required flow and suction at the vehicle vacuum head transporting sediment out of the tank. Nimble and lightweight, the TankBUG can reach a water depth of 120 ft (36.6 m) and can produce a suction flow of 100 gallons/minute (379 liters/minute) utilizing an umbilical and hose that is 250 ft (76.2 m) in length.

As safety takes the forefront in confined space operations, the TankBUG represents a growing initiative to help provide the water tank cleaning marketplace with a viable approach for reducing and mitigating human risk in the industry. While human diver operations require a number of precautions like dual tethers and redundant air supply systems, the TankBUG ROV system can be deployed rapidly without these measures and still safely function.

With the need for workplace safety growing every day, SeaRobotics is positioned to meet the increased demand. "The delivery of our first TankBUG is a great example of our ability to adapt our robotic marine products to new and diverse applications. The TankBUG water tank cleaning product evolved from our HullBUG product line developed for the ship hull cleaning market. The TankBUG will provide exceptional service in the water tank cleaning market, including potable water storage, as well as in a diverse array of process water storage applications," said Don Darling, president of SeaRobotics.

For more information, visit www.searobotics.com.

Deepest ROV tunnel inspection

ASI Marine (ASI) personnel conducted an ROV inspection of the Cheves Hydropower Tunnel in Peru and ended up breaking the ASI company record for the deepest flooded tunnel inspection at 570 m water depth.

The tunnel inspected is approximately 9.8 km in length, with a 35 sq. m area horseshoe profile. The purpose of the inspection was to collect data inside the newly constructed tunnel for general assessment of rock stress incidences.

The tunnel was inspected internally with an ROV equipped with an array of sensors, including sonar and video, with the purpose of collecting full coverage data at the headworks and downstream to the powerhouse. The ROV was specifically designed by ASI for this type of work and is unique in the world. This data was required for the client to undertake an engineering structural assessment of the tunnel and detect sig-

nificant anomalies, such as deformations, major cracks, rubble, partial collapses, and rock accumulations.

Within a short period of 2 weeks, and with very limited preparation time, ASI responded to the client's request, mobilizing internationally to the remote location. To perform the inspection, ASI utilized its ASI Mohican ROV, which afforded ASI a quick response time. This sophisticated system was specially designed by ASI for tunnel inspections and is controlled and powered from the surface, which allows the ROV to navigate through tunnels for unlimited periods of time.

In 1999, ASI obtained (and still holds) the record in the Guinness Book of World Records for the "longest flooded tunnel survey by an ROV" at a different location.

For more information, visit www.asi-group.com.

3D at Depth transforms upstream oil and gas metrology surveys

3D at Depth, a global provider of advanced subsea LiDAR systems and solutions, continues to validate the market for LiDAR technology applications for the upstream oil and gas industry. The company has just announced the completion of the 75th LiDAR spool piece metrology with a 100% success rate for all metrologies to date, using their SL1 and SL2 LiDAR technology.

Since 2009, 3D at Depth has employed LiDAR sensor technology to directly address the challenges of subsea data collection and imaging (in terms of range, accuracy, field of view, depth and integration) for metrology survey programs. Today, the company has advanced their proprietary LiDAR technology from the lab through pilot programs and into commercialization.

By aligning proprietary technology with emerging LiDAR sensor technology from other industries, 3D at Depth's objective is to transform subsea data collection, mapping, and visualization programs for a wide range of applications and industries. The SL1 and SL2 technology and the integration of software and hardware provide a 3D LiDAR platform for offshore survey contractor programs that delivers increased performance and efficiency gains over standard (traditional) technology alternatives such as acoustic LBL or Inertial methods.

3D at Depth's in-house technology utilized in the 75 metrologies was developed to greatly reduce the overall cost of each survey, while delivering robust data



sets that can be validated and comply with the IMCA recommendations for accuracy—or higher. In each case, 3D at Depth's solutions made a significant difference by reducing vessel time and increasing data accuracy and quality. 3D at Depth's average subsea laser metrology took 2.5 hours to complete, which required dual scans for 100% data validation. In comparison, other standard (traditional) technology alternatives such as LBL acoustic or LBL/Inertial mixed measurement methods can take up to 9 to 12 hours for completion using far higher amounts of equipment infrastructure, to obtain less measurement and visual information in return.

Furthermore, 3D at Depth's solutions were deployed in water depths of 50 to 3,000 m with metrology lengths varying from 6 to 90 m, and showed significant improvement in terms of speed, repeatability and resolutions, with a great reduction requirement in project planning and execution. The metrology results included full 3D visualization of the location with seabed digital terrain models (DTMs), which provide a base line for structure placement and sediment stabilization. Finally, through seamless integration into offshore survey and contractor programs, 3D at Depth and their partner companies have developed workflows that are repeatable and leverage industry-leading point cloud processing tools. The flexibility of the technology allows 3D at Depth clients to continuously optimize those workflows to find new applications for subsea LiDAR.

As LiDAR scanning technology continues to secure acceptance and build momentum in various subsea applications, 3D at Depth will continue to advance the industry through innovative solutions that address data collection, mapping and visualization challenges and demonstrate performance. The successful implementation of the technology has a wide range of impact for offshore energy, mining, defense and research programs in terms of financial and operational efficiencies.

For more information, visit www.3datdepth.com.

DeepOcean awarded survey contract

DeepOcean AS, a subsidiary of DeepOcean Group Holding BV (DeepOcean), announced that they have been awarded a call-off contract for provision of ROV based survey services by Shell in the North Sea.

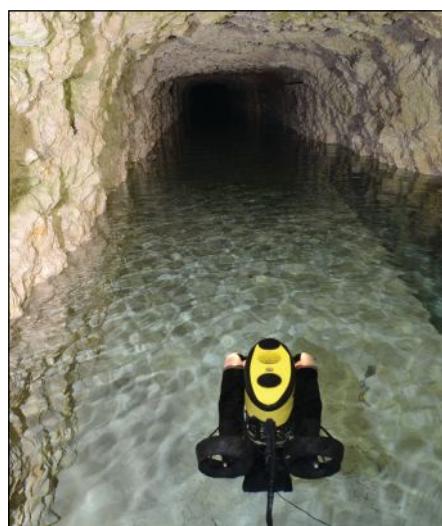
"Shell in the Greater North Sea has been on our client target list for a while now, and we are very pleased to receive this award. Also, we are keen to introduce our new generation high speed survey ROV vehicle—The Superior. By pushing survey speeds far beyond today's standards for acoustic and visual data capture and processing, we expect Shell and our other clients to see a direct effect on their overall survey cost in years to come," says Ottar Maeland, DeepOcean's EVP Greater North Sea.

For more information, visit www.deepoceangroup.com.

Malta SEWCU completes sonar training with VideoRay ROV

The Malta Sustainable Energy & Water Conservation Unit (SEWCU) recently completed training on their VideoRay Pro 3 GTO ROV with BlueView V-130 multibeam imaging sonar. Steve Van Meter traveled to the Ta' Kandja Pumping Station to train four members of the SEWCU on their recently purchased sonar. Van Meter had previously trained the crew on the Pro 3 GTO they purchased in 2014 from SR Services Ltd.

Ta` Kandja Pumping Station is the largest and primary pumping station on the Maltese Islands, with a network spanning 42 km (26 mi) and galleries stretching 915 m to 1,525 m long (3,000 to 5,000 ft). Malta relies on these aquifers for their public water supply,



including drinking water for their 450,000 citizens as well as their agriculture. Before obtaining their VideoRay, the SEWCU had to visually inspect the pumping station by walking down each gallery. Now, the ROV and sonar allow them to quickly inspect the entire pumping station within a day or two.

The SEWCU has already used their ROV and sonar for other applications, including underwater pipeline inspections, and gallery inspections at other pumping stations.

For more information, visit www.videoray.com.

NOC and WWF in partnership for novel marine robotic vehicle trials

The National Oceanography Centre has begun the latest in a series of ambitious marine robotic vehicle trials off the UK coast. Working in partnership with the World Wildlife Fund (WWF), NOC has deployed a submarine glider and an autonomous surface vehicle into the Celtic Deep area of the Celtic Sea—the two robotic vehicles will now work together over the next 3 weeks to investigate why this area is particularly attractive to marine predators such as dolphins and seabirds.

NOC's Prof Russell Wynn, who is coordinating the research, said "The Celtic Sea contains known hotspots for iconic and highly mobile marine animals such as the mighty fin whale and the globally threatened Balearic Shearwater. However, we need a greater density of observations to really understand why these hotspots are so attractive to these animals, and how stable they are in space and time. Marine robotic technologies give us the opportunity to have a persistent presence in these areas, and are changing the way in which we conduct science in the marine environment."

The Slocum submarine glider was deployed from RRS Discovery on 10 August as she travelled through the Celtic Sea. This vehicle oscillates through the water column at slow speed, providing 2D profiles from the sea surface to near the seabed. Pilots based at the NOC in Southampton will communicate with the glider when it surfaces, using satellite technology to give commands and receive data.

The C-Enduro ASV was launched from Milford Haven on 20 August. C-Enduro is a long-endurance vehicle developed for oceanographic research by ASV, as part of a UK Government Small Business Research Initiative co-

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ordinated by the NOC. This vehicle travels along the sea surface and will be carrying GoPro cameras and marine mammal acoustic detectors as well as a state-of-the-art meteorological station. It has the ability to harvest solar and wind energy from the marine environment and can therefore potentially remain offshore for several months. ASV will control the vehicle from its base in Portchester.

Prof Wynn added: "The two robotic vehicles are bristling with novel sensors that will act as our eyes and ears in the water, observing and detecting seabirds and marine mammals. The vehicles will also be continuously collecting data about weather conditions at the sea surface, the temperature and salinity of the water column, and the distribution and abundance of plankton and fish prey. The combined dataset will provide vital information about biodiversity hotspots in our seas."

For more information, visit www.noc.ac.uk.

Venezuela picks Falcon for one of earth's largest dams

The Venezuelan Government has chosen a Saab Seaeye Falcon ROV fitted with a special survey system for inspection of its vast Guri Dam and associated turbines.

Built in the 1960s and one of the largest reservoirs on earth, work is underway to extend the life of the dam by 30 years.

For their vital inspection work, the Venezuelan Government chose the Falcon after reading favorable reports of its exceptional technological capability and the range of work undertaken by the ROV for the hydro industry.

Typically these reports included a Falcon modified to swim 5 km through a tunnel in Canada; a Falcon fitted with a full sonar system on a retractable device to inspect inlets and outlets, grids and tunnels at a major Italian dam; a Falcon sent to inspect 96 km of tunnels under the city of Buenos Aires; and a Falcon employed to help position a 75 ton inlet structure to millimeter accuracy at a lake in Nevada.

For a detailed survey of their infrastructure at Guri Dam, the authorities have chosen to fit a sonar and navigation system on their Falcon formulated by California-based underwater systems supplier Symphotic TII Corporation along with MB Services in Miami that incorporates an Imagenex 881A-GS sonar with an Applied Acoustic's Easytrak positional location system.

Explaining the concept, Jack Roberts at Symphotic describes how, by combining both systems on board the Falcon, scanned images remain stable while the ROV swims around in any rotation. Also, by fitting the Falcon with a Lyyn real-time video enhancement system that self-optimizes the image at 25 times a second, clearer pictures can be captured than would otherwise be possible.

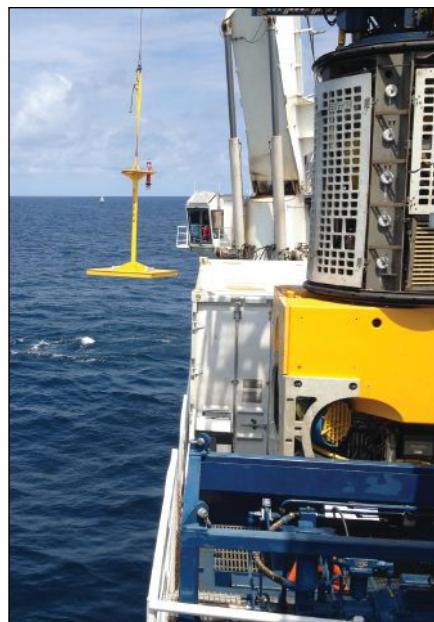
It is the Falcon's intelligent control architecture that makes it feasible to readily integrate a variety of complex systems onto the ROV. This, together with its five powerful thrusters for precise maneuverability and steadiness in moving water, has made the Falcon a worldwide success.

For more information, visit www.seaeye.com.

Total saves times with Sonardyne Fusion 6G at Egina

French oil major Total, operator for the Egina oil field offshore Nigeria, together with its construction and survey partners, has successfully installed a Fusion 6G subsea positioning network to support its development of the \$15 billion project. Supplied by Sonardyne International Ltd, UK, the acoustic technology specified for Egina, which is still ongoing, included a field-wide array of Compatt 6 seabed transponders that were deployed and made ready for work 8 days ahead schedule.

Located 150 km off the coast of Nigeria, in water depths of up to 1,750 m, the Egina field covers an area of around 500 sq. mi. Infrastructure will include an FPSO, an oil offloading terminal and



subsea production systems that will include 52 km of oil and water injection flowlines, 12 flexible jumpers, 20 km of gas export pipelines, 80 km of umbilicals, and subsea manifolds. Production at the field is expected to reach 200,000 barrels per day at its peak.

Fusion 6G is Sonardyne's sixth generation of Long BaseLine (LBL) acoustic positioning system, and is widely considered the industry standard tool for subsea construction and survey thanks to its performance and time saving features. Using Fusion 6G, major tasks such as structure installation, spoolpiece metrology, ROV tracking and route surveys can be completed quickly, reliably and accurately in any water depth.

Planning for Fusion's deployment at Egina had begun several months earlier and involved senior project managers and surveyors from Total and its subcontractors, working closely with personnel from Sonardyne's own Survey Support Group (SSG). The SSG is a specialist department staffed by experienced offshore personnel, each of whom also possess unique knowledge of Sonardyne's acoustic and inertial navigation technologies and how best to configure them for any given scenario.

The work undertaken by the SSG for Egina included analyzing the proposed location for each of the Compatt transponders in the seabed network, and in doing so, verify that there was clear line of sight between each transponder in order that they can reliably range to each other. In addition, the SSG team mapped out seabed coverage and the expected positioning performance of the Compatts at all points of interest. This essential process involves specialist software and also helps to identify the optimum quantity of transponders that are needed to meet a project's positioning specification.

At Egina, the investment in time planning acoustic operations onshore, was rewarded with a highly successful offshore LBL campaign. The wide-area transponder array was deployed, installed and calibrated more than a week ahead of schedule and without any further direct support from Sonardyne and the SSG.

Commenting on the success of the project, Frederic Auger, Chief Surveyor at Total E&P said, "The array installation and subsequent UFR campaign performed at the Egina field, has proven to be an extremely successful demonstration of Fusion's capabilities. Off the

back of it, we will be using it to support ongoing field construction activities throughout the rest of this year and into the 2016 season." He added, "The system's quick setup and deployment meant that the savings in vessel time alone has more than justified our decision to trust in Sonardyne's low-risk digital technology platform."

"The successful results we've seen at Egina echo those from similar pro-

jects around the world. Fusion 6G saves time, lowers risk and delivers operational cost savings—something that is on everyone's minds more than ever at the moment," said Aude Kuchly, sales manager for Sonardyne in France. "Egina serves as another great example of how planning, rehearsal and training leads to operational success."

For more information, visit www.sonardyne.com.

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KVH TracVision chosen for newest megayachts

KVH Industries, Inc., announced that its TracVision® TV8 marine satellite television antenna system has been chosen by Monte Carlo Yachts as the preferred satellite TV system for the MCY 105, the newest and largest offering in the Italian boatbuilder's luxury line. The 105-ft megayacht is scheduled to be introduced at several European yachting shows beginning in September 2015.

KVH's TracVision TV8 is a powerful marine satellite TV system designed to provide the tracking, reception, and extended coverage needed for yachts traveling to the world's most desirable cruising grounds, harbors, and ports. Compatible with nearly all Ku-band direct-to-home (DTH) services around the globe, the TracVision TV8 enables yacht owners and their guests to enjoy their favorite satellite TV programming with affordability and convenience.

"With its exceptional performance, the TracVision TV8 perfectly complements the new MCY 105, which we have designed as the ultimate combination of elegance and comfort," said Federico Peruccio, marketing manager of Monte Carlo Yachts.

The TracVision TV8, part of KVH's award-winning TracVision line, features advanced functionality including an IP-enabled TV-Hub, high-performance tracking for a crystal-clear television picture, advanced inertial-based stabilized search for fast satellite acquisition, and the ease of accessing system information from a smartphone or tablet.

For more information, visit www.kvh.com.

Arianespace successfully launches Intelsat 34

Arianespace announced the successful launch of the Intelsat 34 maritime communications satellite. It was Arianespace's seventh launch of the year and the 67th successful Ariane 5 mission in a row. Europe's heavy launcher lifted off on 20 August at 5:34 pm (local time) from the Guiana Space Center, Europe's Spaceport in Kourou, French Guiana, witnessed by Emmanuel Macron, French Minister for the Economy, Industry and Digital Affairs.

Intelsat 34 will provide C-band telecommunications services for Latin America and Ku-band services in Brazil. In addition, it will offer Ku-band broadband Internet services for maritime and aeronautical operators in the North Atlantic.

The satellite is the 55th orbited by Arianespace for Intelsat, the world leader in fixed satellite services in terms of revenues and in-orbit capacity. Arianespace has four more Intelsat satellites in its backlog of launch orders.

Intelsat 34 weighed 3,300 kg at launch. The satellite is fitted with 18 active Ku-band and 22 C-band transponders. It will be positioned at 304.5° East and offers a design life of 15 years. Built by SSL using a 1300 series platform, Intelsat 34 is the 51st satellite from the company (and predecessors) to be orbited by Arianespace.

For more information, visit www.arianespace.com.

Speedcast selected to serve fleet of offshore barges

SpeedCast International Limited has been awarded a multi-year communications contract from Gulf Marine Services (GMS). The new dual-beam Ku-band satellite service will provide high-performance broadband connectivity for client office applications and voice services across nine GMS barges.

SpeedCast's solution will initially deliver MBR 2048/512 CIR 512/256 links for each vessel, with scope to upgrade as necessary depending on client requirements. With SpeedCast's strong global network and support capabilities the vessels will benefit from enhanced communications and VoIP services for operations and crew welfare. SpeedCast will deliver principle support for GMS from its Dubai, U.A.E., sales and support center, backed by its global support network.

This announcement follows SpeedCast's successful acquisitions of Hermes Datacomms, Geolink Satellite Services, and most recently SAIT Communications, which have further enhanced SpeedCast's products and services tailored for the energy and maritime sectors.

For more information, visit www.speedcast.com.

ST Teleport expands capacity and partnership with AsiaSat



Asia Satellite Telecommunications Co. Ltd. (AsiaSat) announced that ST Teleport has expanded its capacity commitment and strategic partnership with AsiaSat to enhance service offerings to the VSAT and media sectors.

ST Teleport recently expanded its C-band capacity in Asia with a new dedicated antenna for AsiaSat 4 at the orbital location of 122°E to provide leading-edge satellite-based service solutions for maritime, oil and gas, enterprise, and media businesses. In response to strong user demand for high-quality connectivity solutions for data and video services in Asia, both companies have further strengthened their collaboration to offer enhanced land/sea/air based VSAT services.

ST Teleport's advanced earth station complex facilities in Singapore is now capable of connecting to AsiaSat's comprehensive fleet of satellites, including the new Ku-band capacity on AsiaSat 8's South East Asia and Middle East beams, to offer more choices to customers. The extension of the partnership will accelerate growth opportunities for ST Teleport and increase its offerings to customers looking for fast and flexible satellite communications solutions at competitive prices.

"Our partnership with AsiaSat will further strengthen both of our positions in the satellite communication services sector. Access to more AsiaSat capacity will enable ST Teleport to efficiently expand our services geographically and to serve more diverse industries and businesses. ST Teleport's continuous upgrading of its network and capacity demonstrates its commitment to provide advanced and cost-effective satellite solutions to our data, maritime and media clients locally and internationally," said Joseph Chan, managing director of ST Teleport.

"We are pleased with this expanded partnership with ST Teleport. We aim to bring a new level of high performance, cost-effective satellite solutions and comprehensive coverage to ST Teleport and their clients through this stronger partnership. This collaboration also underscores our commitment to working closer with our partners and clients to deliver the quality, value and choice of capacity that meet their service needs," said Philip Balaam, vice president, sales and business development of AsiaSat.

For more information, visit www.asiasat.com.

Speedcast announces landmark energy deal

SpeedCast International Limited has been awarded one of its largest ever satellite service agreements in the energy sector. SpeedCast was selected from a field of top global telecommunication and satellite service providers to win a multi-year, multi-million dollar contract that covers both onshore and offshore services in over 20 countries for in Asia-Pacific and Africa. This award comes from one of the most prestigious global oil and gas service companies in the world and will fully leverage SpeedCast's global scale, network coverage and field support.

"Over time, this customer has the potential to provide significant global growth to SpeedCast's existing energy market share," said Keith Johnson, SVP of energy, SpeedCast. "Our client has a broad range of challenging requirements and geographic locations where our managed services will provide a critical link to deliver access to their enterprise applications and field data, thereby allowing for real-time operations."

SpeedCast has designed the solution by leveraging its global network and significant remote operations personnel in its field offices to deliver an exceptional service and uptime commitment for the customer. The initial network design encompasses over 20 countries and hundreds of remotes provided through a fully managed service. A dedicated team of SpeedCast personnel have been assigned to oversee the project, with the principle objective to deliver a superior customer experience throughout the lifecycle of the project.

"This project is a major milestone for us—winning such a high profile deal against the largest players in the energy sector shows that our vision is materializing. SpeedCast is winning market share in this sector thanks to our focus on service quality and support, our agility, and our global reach," added Pierre-Jean Beylier, CEO of SpeedCast.

This announcement comes just after SpeedCast acquired the assets and customer contracts from NewSat, an Australia-based satellite communications company. SpeedCast also acquired Hermes in March 2015, an established UK-based service provider to the energy sector globally, and Geolink in May 2015, a France-based company active in the energy sector in Africa.

For more information, visit www.speedcast.com.

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Lift-off, signal acquired for Navy's fourth communication satellite

After a 2-day delay due to tropical storm conditions, the Navy's fourth Mobile User Objective System (MUOS) satellite launched from Space Launch Complex 41.

MUOS-4, whose signal was acquired approximately 3 hours after launch, completes the initial operational constellation and provides near global network coverage for warfighters and combatant commanders. This array allows mobile forces, including submarines, surface ships and aircraft, to communicate around the world via the narrowband spectrum.

User communities that will primarily benefit include ground forces at the individual soldier level but also include members of all services and special forces.

"The legacy satellite communication system allowed users to 'talk' as long as they were within the same satellite footprint," explained Navy Capt. Joe Kan, program manager for the Communications Satellite Program Office. "MUOS allows troops all over the world to talk, text and share mission data seamlessly without having to worry about where they are in relation to a satellite."

The Internet Protocol-based nature of MUOS allows network access to classified and unclassified networks. This network access for deployed tactical users will allow the exchange of critical situation awareness and targeting information.

"With the launch of MUOS-4 we're going to deliver that worldwide coverage and communication service for users," explained Nina Tran, the program office's space division director. "The legacy payload we have on MUOS satellites allows a smooth transition to a newer, better MUOS capability. We are benefitting from providing the legacy channels for current users and we are exploring all the capability that MUOS has to offer."

MUOS is an architecture comprised of a five-satellite constellation—a fifth on-orbit spare to be launched in 2016—four ground stations across the globe, complex software to manage the network and an integrated waveform for use with user radios.

According to the program office's technical director Jim Parsons, it's the system's flexible design that allows rapid insertion of technology to keep the system up-to-speed.

"The nice thing about MUOS is that the ground system and terminals contain all the switching and routing technology," Parsons said. "The satellite remains unchanged over time and can allow technology insertion into the ground stations and the waveform over time to increase capability without having to make any satellite changes."

Cmdr. Pete Sheehy, principal assistant program manager, explained that 24/7, beyond-line-of-sight communications will greatly benefit ground forces needing aviation support.

"With MUOS, the population of disadvantaged users is going to shrink considerably," Sheehy said. "And that new population of folks who have beyond-line-of-sight communication are going to be able to do their jobs more efficiently and safely. It could be as simple as that one person who otherwise might not have had beyond-line-of-sight comms being able to say 'This is where I am. This is who I am and I need help.' And know that someone is on the other side to be able to provide that support."

MUOS is already providing legacy communications to combatant commanders via active satellites on-orbit. MUOS' advanced capability—Wideband Code Division Multiple Access—has been demonstrated in various environments, platforms and applications such as integration testing with the newest submarine antennas, Navy special operations scenario exercises and Air Force C-17 in-flight tests.

"In our testing we've tried to be as

realistic as possible," said Jarratt Mowery, director of end-to-end system testing. "In several events we've brought uniformed warfighters in and given them training on the MUOS system and operating its components. They were able to define the types of operations they would like to use the system and allowed them to exercise those operations in a realistic environment. Be that in vehicles driving around, in a forest with a thick canopy or even in airborne platforms."

An added benefit beyond the system's initial requirements is extending communications further north and south toward the polar regions. This polar coverage, up to approximately 85 degrees in the Arctic under peak conditions, is significant considering that wireless and satellite communications has always been a struggle at extreme north and south latitudes.

Over the next several days MUOS-4 will transition to reach its geosynchronous orbit location approximately 22,000 mi above Earth to begin initial on-orbit testing. The satellite's solar arrays and antennas will then be deployed. On-orbit testing will start for subsequent turn-over to the Navy for test and commissioning to service.

For more information, visit www.navy.mil.

General Dynamics to lead USCG Alaska communications system update

The U.S. Coast Guard awarded General Dynamics the Alaska Phase 2 contract to update the communications equipment and physical infrastructure for the Rescue 21 Alaska system. General Dynamics will provide a comprehensive analysis to identify the most cost-effective path to update the existing radio equipment operating in the 30 locations for Rescue 21 Alaska. The contract also provides for the evaluation of the radio and communications towers and buildings at each site. The contract is valued at approximately \$10 million with all options exercised.

"Working side by side with the Coast Guard, the General Dynamics team will take advantage of the most innovative technologies, combined with a strategic implementation plan to ensure the long-term effectiveness of this life-saving system," said vice president and general manager Bill Weiss who leads public safety initiatives for General Dynamics Mission Systems. "Rescue 21 Alaska



operates in one of the most unpredictable maritime environments in the world, and being the prime contractor for the Rescue 21 Coastal System, we have an unparalleled depth of understanding of the system and the urgency of the U.S. Coast Guard's maritime search and rescue mission."

The analysis will include radios with various roles, including those that provide digital selective calling, the radio technology that mariners use in an emergency. Once upgraded, the radios will deliver improved clarity for voice calls as well as better use of the radio spectrum for more reliable and efficient communications. General Dynamics will also perform site surveys and tower structural analysis studies, produce engineering site design drawings and installation plans for radio equipment, as well as perform system operational verification testing.

The 30 sites for Rescue 21 Alaska are located along the state's coastline and the Aleutian Islands. Many of the Rescue 21 Alaska sites are in remote and isolated locations where work crews will need to be transported by helicopter.

General Dynamics originally developed and installed the Rescue 21 coastal system that comprises more than 215,000 sq. nmi of the nation's eastern, western and Gulf coastlines (excluding Alaska), and around Guam and Puerto Rico. The Rescue 21 coastal system also keeps watch over public and commercial mariners navigating national waterways and the Great Lakes. Rescue 21 has enabled more than 80,000 search and rescue cases since the first Rescue 21 station became operational in 2003.

General Dynamics also maintains the Rescue 21 system's hardware, software and facilities located in 32 Coast Guard sectors. Among the improvements are cyber-defense technologies that 'harden' the nationwide system from malware, viruses and other cyber threats.

This contract was awarded to General Dynamics One Source, a joint venture of three General Dynamics companies: General Dynamics Information Technology, General Dynamics Advanced Information Systems, and General Dynamics C4 Systems. On 1 January 2015, General Dynamics combined the resources of Advanced Information Systems and C4 Systems as "General Dynamics Mission Systems."

Taiwan supports maritime communications network for Somalia

Oceans Beyond Piracy (OBP) and the Taipei Representative Office (TRO) have signed a Memorandum of Understanding that will allow for the establishment of the Maritime Communications Initiative (MCI)—a new maritime communications network to increase maritime safety along the Somali coast. The partnership between OBP and the Taiwanese delegation was recommended by the European Union based on mutual goals to support Somali goals for a safer maritime environment.

The MCI will initially establish Maritime Communications and Safety Centers in Bosasso, Berbera, and Mogadishu, and eventually in Hobyo and Kismayo. These centers are focused on providing safety for local shipping traffic, promoting awareness of port management, and deconflicting with international naval forces, ultimately helping to establish localized Maritime Situational Awareness along the Somali coast.

The centers will be linked to regional information sharing centers in Mombasa, Sana'a, and Dar es Salaam through a secure information-sharing platform. These centers will notify international naval forces or local maritime responders, helping to eliminate confusion at sea, thereby increasing the safety of seafarers operating in the region.

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KVH launches extensive Balkans NEWSlink service

KVH Media Group has added several new titles to its impressive NEWSlink™ portfolio with the launch of four new daily editions—Romania, Bulgaria, Serbia, and Montenegro—focusing on the Balkans region.

Each title covers the main daily political, general, financial, sporting, and entertainment stories from those countries, and is available in the native language, namely Romanian, Bulgarian, Serbian, and Montenegrin. The new titles join NEWSlink's roster of high-quality daily and weekly newspaper digests, which are currently enjoyed by seafarers and cruise guests on more than 8,500 vessels around the world.

The Balkan editions are standard four-page newspapers delivered 7 days a week, following the style of most of the 100+ currently published NEWSlink titles. All NEWSlink titles are produced in NEWSlink newsrooms located in Liverpool, Delhi, and Manila, where a near 24-hour news monitoring service ensures the most current information is included in every edition.

KVH Media Group delivers the NEWSlink titles in a range of formats and through a range of technologies, and specializes in compact formats for maritime and other industries where bandwidth is limited or delivery costs are high. The Balkan editions will also be available later this year on KVH's ground-breaking IP-MobileCast™ content delivery service, which utilizes multicasting technology to deliver content via a vessel's broadband connection without affecting the vessel's data speed or airtime plan.

"The Balkans area provides a large proportion of the world's seafarers and whilst we have covered these countries with our English-language versions, we are again responding to feedback from our customers that providing crew with news from home in their own language goes a long way to make them feel more connected to life back home," said Mark Woodhead, managing director of KVH Media Group. "As we reach the second anniversary of the ratification of MLC-2006, we remain focused on key welfare requirements for seafarers, and believe that sometimes it's the thought-

ful but important touches such as providing a daily news service that can sometimes make a big difference for many seafarers away from home for months on end."

For more information, visit www.kvh.com.

Globecomm enters FY16 with record backlog

Since taking the helm as CEO of Globecomm Systems, Inc. after the company's acquisition by Wasserstein & Company in December 2013, Keith Hall has been refining and expanding its management team and setting a new direction for what is today one of the world's premiere network integration and communication companies. In recent remarks, Hall says that the strategy is bearing fruit, and that Globecomm has made great strides migrating from a project-focused company to a product-focused one, with a concentration on serving its clients' data management and information logistics needs.

Speaking about Globecomm's legacy as a talented company known for taking on extreme engineering challenges anywhere on earth, Hall said that the skills it

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learned during this period of the company's history was a great advantage, since Globecomm now knows how to "move fast, change direction when necessary and meet customers' requirements." He added that, "The company's value proposition has shifted from pure 'managed connectivity' to 'data-managed connectivity.'"

In the interview he also emphasizes a distinct advantage the company has had almost since its inception: a global network and sophisticated infrastructure that allows for the seamless collection and delivery of broadband data and video on land and sea, leveraging satellite, terrestrial and cellular communication.

Hall also discussed why the recent edition of Globecomm's annual TechForum was titled "The Future of Mobility" and why the emphasis on big data is central to the company's future. Hall noted that mobile networks provide new and interesting access to data streams and content diversification. He cited the cutting-edge work the company is doing to power next generation mobile video experiences on behalf of innovative companies like digital video leader NeuLion. Globecomm is a technology

partner for NeuLion.

Highlights from the interview, include:

- Globecomm entered FY16 with a record backlog, despite a fall-off in the U.S. government military work tied to the wars in Afghanistan and Iraq.

- Globecomm has put increased emphasis on its satellite capabilities and teleport network.

- Mobility will be at the heart of the company's vision to lead in data management.

- Globecomm has stepped up the provisioning of services to governments, regions and cities as they continue to transform their economies, create access to better healthcare and education, and "eliminate distance" using satellites and telecommunications.

For more information, visit www.globecommsystems.com.

KVH introduces mini-VSAT Broadband 2.0

KVH Industries, Inc. is introducing the second generation of its mini-VSAT Broadband solution. The new offering is designed to transform the maritime VSAT market with an unparalleled

combination of data delivered at the network's highest speeds, lower price points than previous airtime plans, and the content, tools, and support to optimize broadband effectiveness.

The expanded service, mini-VSAT Broadband 2.0, encompasses rugged, reliable antennas and other hardware, flexible airtime options, extensive operations and entertainment content, innovative content delivery, and comprehensive support – all available from a single global provider.

"Other satellite communications providers respond to increasing broadband demand by simply increasing airtime rates. We knew there was a better solution," says Martin Kits van Heyningen, chief executive officer of KVH. "We provide maritime customers with affordable, usage-based plans at the data speeds they need to take advantage of new cloud-based applications for improving operational efficiency—and we give them the tools they need for bandwidth management by user and vessel."

For more information, visit www.kvh.com.

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VBMS contracted for Rampion export cabling

VBMS has been awarded a contract by E.ON for the installation of two 16 km-long export cables for the Rampion Offshore Wind Farm. The 150 kV HVAC cables will transport the power ashore from the 400 MW wind farm to the onshore cable in Brooklands Pleasure Park in Worthing, South East England. VBMS will deploy the DP2 cable-laying vessel Stemat Spirit, which proved its capability for this type of project during the Humber Gateway OWF export cable installation for E.ON in 2013.

The scope of this contract includes the lay and simultaneous burial of the cables. VBMS recently added a new plough to the spread, which provides a high-performance trenching solution for large diameter cables. The project will be executed in the third quarter of 2016.

The Rampion Offshore Wind Farm, located in the English Channel off the coast of Sussex, will consist of 116 turbines, each with a generating capacity of 3.45 MW. This Round 3 project is expected to be completed in 2018.

For more information, visit www.vbms.com.

Ostwind 1 cable project approved

In accordance with the Offshore Installations Ordinance, the German Federal Maritime and Hydrographic Agency (BSH) decided to approve the sea route of 50Hertz's Ostwind 1 offshore cable project within the EEZ.

"We are greatly pleased with the permit for this last 20-km section in the EEZ. This means that the entire cable route is now approved," said Uwe Gyßer, Ostwind 1 project leader at 50Hertz. "We can now also press ahead with the project in the EEZ as planned."

The competent authority in these matters, namely the Ministry for Energy of Mecklenburg-Western Pomerania, already granted 50Hertz its approval for the land route on 9 March 2015 and for the sea route in territorial waters on 10 July 2015.

For more information, visit www.50hertz.com.

NEC to build SKR1M

NEC Corporation announced the signing of a contract with Telekom Malaysia Berhad (TM) and TT dotCom Sdn Bhd (TTdC), a wholly owned subsidiary of TIME dotCom Berhad (TIME), to construct the Sistem Kabel Rakyat 1 Malaysia (SKR1M), an optical submarine cable system that will connect Peninsular Malaysia, Sabah and Sarawak.

SKR1M, a 100 Gb/s optical fiber submarine cable system measuring approximately 3,700 km in length, will connect Cherating, Kota Kinabalu, Miri, Bintulu, Kuching and Mersing. Following SKR1M's anticipated completion in mid-2017, it is expected to enhance connectivity between Peninsular Malaysia, Sabah and Sarawak.

For more information, visit www.nec.com.

First Subsea completes Goliat bend stiffener connections

First Subsea has successfully completed the installation of bend stiffener connections for gas lift and production risers, power cables and umbilicals, for the Goliat FPSO in the Norwegian Barents Sea. Operated by ENI Norge AS, the Goliat FPSO is the first offshore oil development in Norway's Arctic region, in the Barents Sea.

In total the Goliat FPSO features 11 Type II bend stiffener connections (BSC) at present, with a further 10 receptacle I-tubes pre-installed within the base of the vessel, enabling more tie-backs to be added as field production increases. The Type II BSC was selected for the Goliat tie-backs because the receptacle has no moving parts, enabling a simpler riser, umbilical or cable connection.

The First Subsea Type II BSC comprises a ball and taper connector attached to a bend stiffener, which is pulled into a pre-machined I-tube. The connector is self-energizing and self-aligning, and features First Subsea's Automatic Release Clamp (ARC) enabling both diver-less and ROV-less bend stiffener connections.

For more information, visit www.firstsubsea.com.

First installation of new repeater following successful sea trials



Global Marine Systems Limited, a UK-headquartered specialist in underwater cabling and engineering projects, has just completed a major fiber optic installation project in the Gulf of Guinea. Importantly, this major telecommunications project for customer Huawei Marine Networks (HMN), a Global Marine joint venture partner, will be the first installation of the R2 repeater following successful sea trials, which took place on Cable Innovator in November 2014.

The project saw the installation of a 1,011 km repeatered fiber optic subsea cable system installed between Lagos in Nigeria and Kribi in Cameroon. It also encompassed a branching unit, for future connection, to Escravos and Qua Iboe in Nigeria's southeast region.

Project activities included PLGR (post lay grapple run) and route clearance, surface lay, cable burial, the supply and installation of pipeline crossing protection, PLIB (post lay inspection burial), and direct shore ends. Global Marine's C.S. Sovereign, a multi-role DPS-2 vessel, capable of performing a diverse range of offshore engineering activities, undertook the project. Earlier this year, C.S. Sovereign successfully completed a platform-to-platform fiber optic system installation in the North Sea for oil & gas communications specialist Tampnet, complete with a Cable End Module (CEM) deployment.

A highlight of the project was the first deployment of HMN's second-generation RPT 1660 R2 repeater that provides an optical loop back facility for performance monitoring and accurate fault location. The upgraded product supports up to six fiber pairs and incorporates unique, 4x4 pump redundancy architecture. The new design, with its slim-line profile allows for simultaneous lay and burial of the product, increasing the efficiency of the installation process.

"We are very proud to successfully deliver this system for HMN," says Andy Lloyd, director, installation at Global Marine. "Coupling our expertise and our long standing capability in subsea engineering with HMN's advanced transmission technology, we are confident that this system will bring solid, high capacity data communications to Nigeria and Cameroon."

For more information, visit www.globalmarinesystems.com.

RentOcean wins cable laying deal in Germany

RentOcean, part of Oceanteam Shipping ASA's solutions division, has been awarded a contract with Bohlen & Doyen GmbH for supplying a lay spread for a cable laying project in Germany. The lay spread includes a 4,000 ton demountable turntable and loading tower with built-in tensioner. The contract has a duration of 1 year, plus options.

In addition to the lay spread contract, the company has also entered into a framework agreement with Bohlen & Doyen GmbH for future equipment, transport and storage deliveries, making RentOcean their main partner and supplier of offshore cable laying and onshore storage solutions.

Bohlen & Doyen GmbH is part of the SAG Group, one of the leading service and system suppliers for electrical power, gas, water, and communication networks.

"RentOcean has a long standing relationship and has collaborated successfully with B&D several times in the past and we are very pleased to be chosen as their main partner on cable laying equipment including related engineering and onshore storage," said Lex van Doorn, managing director of RentOcean.

For more information, visit www.oceanteam.no.

TekLink® system installed in Gemini project

Work to install the latest generation of Tekmar Energy's pioneering TekLink cable protection system (CPS) has started on what is poised to be one of the world's largest offshore wind parks, the Gemini project in the Dutch North Sea.

Tekmar's contract with maritime contractor Van Oord involves the subsea specialist implementing its 6th generation TekLink cable protection system (CPS). The scope of work includes Tekmar supplying its TekLink cable protection system to protect both the inter-array and export cables along with the company's polyurethane Bellmouths to ensure a seamless connection to the offshore substation J-tubes.

Installation has already begun as a result of the company building and delivering all of the systems ahead of schedule. The TekLink system has revolutionized the connection of subsea power cables into fixed structures with the sixth generation system building on the successful track record of its predecessors.

The latest system has been rigorously trialed on Tekmar's TekTower, a

foundation-like test and training facility based on site at its cutting-edge manufacturing hub in Newton Aycliffe.

Jack Simpson, senior manager of offshore wind at Tekmar, said: "The Gemini project is a great example of industry collaboration. Involving our client Van Oord in training and in the demonstrations of our product underpins our focus on delivering added value and our commitment to continu-

ing to develop best-in-class cable protection systems for the market that are the most effective in terms of performance, QHSE, cost and operational efficiency."

"Gemini is also a significant project for Tekmar because it represents the fourth project that we have worked on with Van Oord while it is the first to install our 6th generation TekLink. The advanced system evolved from previous

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generations through a combination of holding product demonstration events for clients and gaining valuable feedback as well as lessons learned from our experience on more than 38 offshore wind projects representing over 4,500 cable protection systems around the world."

The Gemini offshore wind projects, comprising two wind parks and 150 turbines, is located 85 km off the coast of Groningen and is the biggest project of its kind in The Netherlands. Once operational, it is to be one of the world's largest wind parks in terms of size and production.

The project partners behind Gemini

include Canadian independent renewable energy company Northland Power (60% project interest), wind turbine manufacturer Siemens (20%), Dutch maritime contractor Van Oord (10%), and renewable energy, waste and raw materials company HVC (10%).

For more information, visit www.tekmarenergy.com.

Nexans delivers cables to West-Africa

Nigeria and Cameroon are to receive a boost to Internet connectivity after Nexans delivered repeatered optical cables for the Nigeria-Cameroon Submarine Cable System (NCSCSC) in a contract with turnkey contractor, Huawei Marine Networks Co. Ltd.

Nexans will supply approximately 1,100 km of the latest generation of Repeatered Optical Cables (ROC-2) and associated accessories for the project.

The Nigeria-Cameroon Submarine Cable System will deliver broadband to users in both countries by the end of 2015. The submarine cable system, which will be the first wholly owned by Cameroon, will have a capacity of 12.8 Tbps.

Optical repeaters were integrated into the cables by Huawei Marine at Nexans' facility in Rognan, Norway, in a complex process that represents the start of a new era for Nexans Submarine Fibre Solutions (SFS).

"Nexans has met the needs of our project by not only producing high quality repeatered cable, but also providing dedicated support in the complex process of integrating the repeaters into the cable. The delivery of these cables is a key milestone in the NCSCS project," said Kevin Zhang, project director at Huawei Marine.

Krister Granlie, executive vice president, hybrid underwater cables for Nexans, said, "After several successful partnerships with Huawei Marine, we are pleased to be working with the company again on the NCSCS project. Nexans fully satisfied the delivery time and quality requirements of the contract. The NCSCS project represents a key milestone for Nexans in entering the repeatered cable system market, and we look forward to continue collaborating with Huawei Marine in the future."

Delivery of the cables started in the spring 2015 and the project will be completed later this year.

For more information, visit www.nexans.com.

ASN achieves distance record for undersea data transmission

Alcatel-Lucent Submarine Networks (ASN) has achieved a breakthrough record of data transmission over a distance of 10,000 km using real-time processing prototypes of a unique cost-effective 300 Gbps new modulation technology that will optimize the performance of submarine cable systems.

The trial has been achieved on the 10,000 km of ASN's test bed, combining the innovative 300G 8QAM (8 quadrature amplitude modulation) technology of ASN's 1620 SOFTNODE platform and second-generation coherent submarine fiber (CSF-2).

8QAM technology can optimize both existing and new undersea cable systems, enabling operators to deliver more than 15 Tbit/s per fiber pair on transoceanic systems—equivalent to 2.25 million HDTV channels streamed simultaneously.

Olivier Gautheron, chief technology officer of Alcatel-Lucent Submarine Networks said: "This breakthrough underlines ASN's strategic focus in R&D to raise the bar for undersea fiber-

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optic technology. Our researchers continue to develop new solutions to further apply our own innovation to help traditional and web-scale operators cope with increasing requirements for speed, capacity and cost-effectiveness."

Leveraging the largest research and development capabilities in the submarine cable industry, in Villarceaux, France, ASN has achieved several breakthroughs in both repeatered and unrepeatered submarine cable systems. This new record is the latest in a long series of two dozen records over the past 20 years, all showcasing breakthroughs that have transformed long distance data transmission.

For more information, visit www.alcatel-lucent.com.

Hibernia Express enables Ireland to expand global commerce

Hibernia Networks is completing its project for a new 4,600 km low latency submarine cable route connecting Halifax, Nova Scotia to London, England and Cork, Ireland. Ready for service in September 2015, Hibernia Express will serve as a foundational element to Ireland's preeminent position in the global cloud infrastructure marketplace, providing data centers and Internet exchanges the connectivity to address the immense bandwidth needs of businesses in North America and Europe. The highly scalable Hibernia Express cable will yield in excess of 10 Tbps per fiber pair, which is nearly triple the capacity delivered on current transatlantic systems.

Conor Healy, CEO of Cork Chamber, commenting on this announcement, stated, "The addition of such a significant piece of enabling infrastructure to the region will add a vital new resource to our already strong multi-national sector working to enhance and facilitate further growth in the coming years, in addition to opening the region up to new sectors operating in cloud-based technologies and data center provision. The provision of Tier 1 international fiber connectivity from Cork has been a major priority of the Chamber and we are delighted to welcome this infrastructural announcement, which will further consolidate and strengthen both the region's and Ireland's reputation as a prime location for growth and investment."

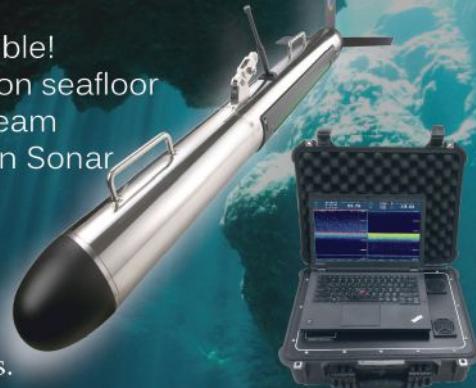
There has been a recent surge in demand for data center services in Ireland. According to a recent article by



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The Irish Times, demand from global businesses is expected to at least triple Ireland's data center capacity within the next 3 years.

Welcoming the announcement, Minister for Agriculture, Food and Marine, Simon Coveney, said, "This is a very positive development for Cork and for the wider economy. The significant improvement in connectivity that this project will deliver will enhance the Cork region's reputation and capacity for investment as well as strategically positioning Ireland generally as a leader in telecommunications with high-speed international connectivity."

Hibernia Networks provided Ireland with the country's first direct network connecting North America 5 years ago.

For more information, visit www.hibernianetworks.com.

Infinera's new technology recovers AJC outage

Infinera announced the rapid recovery of network capacity on the submarine optical fiber cable connecting Australia, Guam and Japan, managed by Australia Japan Cable (AJC). AJC recently experienced a network path failure following a subsea cable fault in 7,000 to 8,000 m water depth.

The Infinera team and AJC rerouted over 400 Gbps of traffic from the impacted AJC section to alternate paths on the AJC optical fiber ring configuration. The rerouting utilized the capabilities of the Infinera DTN-X platform featuring Infinera's new on-demand Time-based Instant Bandwidth™ technology. The rerouting of the lost traffic was able to commence within minutes after receipt by AJC of the Time-based Instant Bandwidth license. This avoided a route outage while the cable repair ship was mobilized, transited to the repair site, and implemented in the challenging deep water repair.

AJC is a private submarine cable network and operates a 12,700 km link from Sydney to Tokyo via Guam. AJC experienced a subsea fault affecting services operating on the optical fiber route between Maruyama, Japan and Tumon Bay, Guam, including services on the Infinera DTN-X and other vendor platforms. Using Infinera's new Time-based Instant Bandwidth technology, AJC in collaboration with Infinera was able to quickly respond by activating network capacity over an alternate route consisting of one terrestrial and two subsea AJC segments to recover

over 400 Gbps of affected traffic. With this new technology, AJC was able to activate new capacity on an alternate AJC route because of the systems unique ring-based architecture and recover all of the traffic being carried via Infinera equipment.

An expansion of Infinera's Instant Bandwidth, which allows permanent software activation of line-side bandwidth in 25, 50 or 100 Gbps increments depending on the application, Time-based Instant Bandwidth, enables the on demand activation of bandwidth in those increments for specified durations of time, with the deactivation of the line-side bandwidth at the end of the time period. The Instant Bandwidth technology takes advantage of pre-deployed optical network capacity enabled by Infinera's photonic integrated circuit (PIC) super-channel technology on the DTN-X platform.

AJC deployed the Infinera DTN-X platform to deliver up to 5 Tbps of non-blocking optical transport network capacity with 500 Gbps super-channels. The high capacity super-channels are enabled by PICs developed and fabricated by Infinera—the only supplier delivering 500 Gbps of transmission capacity from a single line card today. The DTN-X platform provides the foundation for AJC's agile, flexible and resilient network architecture to enable quick activation of pre-deployed capacity. It features the Time-based Instant Bandwidth technology, which activates capacity for a defined time period for diverse situations including major network faults, natural disasters or planned short-term events.

With Intelligent Transport Networks, Infinera provides carriers, Cloud operators, governments and enterprises the ability to quickly deliver differentiated services by enabling a virtual pool of intelligent bandwidth.

For more information, visit www.infinera.com.

Alcatel-Lucent, Apollo achieve new transmission record

Apollo and Alcatel-Lucent Submarine Networks (ASN) have successfully demonstrated a capacity of 8 Tbps of data per fiber pair—equivalent to approximately 1.25 million HDTV channels simultaneously streamed—on the Apollo South system, which connects France to the U.S.

For the demonstration ASN used its current generation 1620 Light Manager

submarine line terminal, equipped with the latest 100 Gbps technology and made use of innovative detection techniques and advanced error correction coding. In combination with proprietary modulation and pulse shaping schemes, this commercially available solution counteracts the signal distortions and noise that impact high speed, long-distance transmission performance.

This capacity demonstration was made possible by implementing smart spectral engineering that includes a fully flexible WDM grid and multiple modulation schemes tuning the optical transmission in order to match each channel format to line performance. This spectral engineering capability will be further extended with next-generation technology offered by the 1620 SOFTNODE, enabling an increase in the ultimate capacity per fiber pair of more than 10%. Additionally, with the next step evolution of error correction coding and pulse shaping schemes, more than 10 Tbps per fiber pair can be unlocked.

For more information, visit www.alcatel-lucent.com.

AquaComms, Equinix working together on AEConnect

Equinix, Inc. announced that it is working with Aqua Comms Limited (AquaComms) on the deployment of AquaComms' new transatlantic fiber optic system, America Europe Connect (AEConnect). Scheduled to be ready for service before the end of 2015, AEConnect, spanning more than 5,400 km across the Atlantic between Long Island, New York, and the west coast of Ireland with stubbed branching units for future landings, will provide high capacity connectivity from New York to London and beyond to greater Europe.

According to research by TeleGeography, London (2) and New York (5) are in the top five global metros for peak international Internet traffic and the London to New York route is the second largest international Internet traffic route globally with multiple terabits of peak traffic. In its 2015 Global Bandwidth Research Service report, TeleGeography notes that private network bandwidth on the trans-Atlantic route eclipsed Internet bandwidth for the first time in history, rising to 13.9 Tbps and accounting for 56% of used bandwidth.

For more information, visit www.aquacomms.com.



Seanic's New ROV/SIT Wet Test Tank Expands the Playing Field

Houston is the epicenter for deepwater technology and today's advanced ROVs and intervention hardware play a major role in making it all happen. Deepwater developments are often in some of the most challenging environments in the world. The high cost of offshore operations leaves little to chance, which is why subsea hardware will often undergo rigorous system integration testing (SIT) before deployment.

When it comes to world-class SIT testing, Seanic Ocean Systems (Seanic) is expanding the size and quality of the playing field. Seanic is already known for its ability to design innovative solutions to remote problems by creating custom subsea products that integrate seamlessly with ROV's of all makes. Now they are building a wet test tank that will be available to the public with capabilities beyond anything else along the Gulf Coast.

In January 2016, Seanic will relocate to a state-of-the-art facility that features a 50'x50'x30' in-ground, wet test tank built especially for enhanced ROV and system integration testing of subsea hardware. But being big isn't all this tank offers. It is spatially designed for ROV testing and includes multiple cameras that transmit to an array of high-definition televisions casting real-time feeds to an air-conditioned viewing room. This convenience is designed so customers no longer have to peer through the porthole of an above ground tank or squeeze into an often-crowded ROV shack. This enormous test tank offers more insight into performance and reliability than any other commercial facility in the Houston area.

Located on 10.5 acres just west of Houston in Katy, Texas, in a 55,000 square foot building, the new facility will be home to Seanic's creative design team with an expansive shop that includes overhead cranes and a dedicated welding facility. Meanwhile, a huge expansion of storage space accommodates clients who need to store and maintain equipment. Also part of the expansion, Seanic has reserved space for client-collaboration, including multiple conference rooms and meeting spaces.



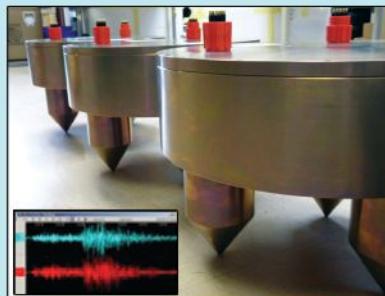
Seanic's rise has been rapid. President Tom Ayars explains, "When we drafted our initial business plan in 2006, there was a clear need for a company that would deliver intervention tooling products and services, but not compete by building or operating their own ROVs. These tools had to be smartly engineered, but not over engineered which is often the case. They needed to withstand the continuous abuse these tools see. And they had to be reliable to the point where clients were confident they would increase uptime which directly translates to reduced operational costs."

By late 2008, the phrase "Simple, Rugged, and Reliable" became synonymous with the Seanic product line. As a result, clients began turning to Seanic to solve other bespoke intervention challenges and the company's Engineering Solutions group gained a reputation for providing fast response, cost-effective solutions. Now, they are building the ultimate ROV/SIT wet test tank to support the testing of those advanced concepts.

"This expansive new facility will showcase our capabilities in a new way and give our customers a user friendly full service center to develop some of the subsea solutions of the future. Our industry is evolving, and Seanic intends to be a proactive participant in that evolution as we always have, by responding to our clients, and, of course, by continuing to build products that are Simple, Rugged, and Reliable."

For more information, visit www.seanicusa.com/facility-expansion.

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Offshore Communications Backbone

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

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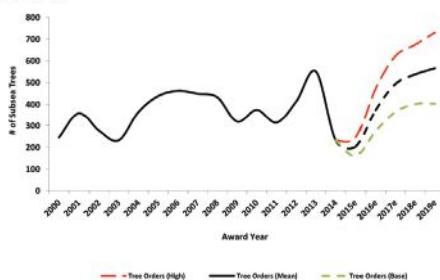


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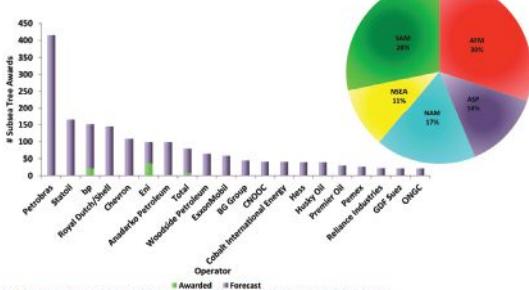
Global Subsea Tree Awards

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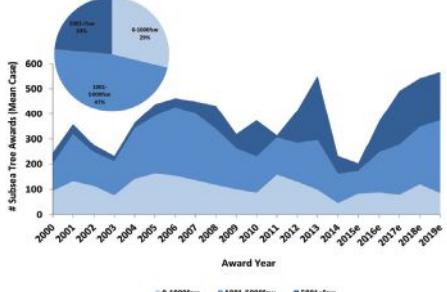
2015 – 2019e Forecast Subsea Tree Awards

Top 20 Operators – 1,707 / 2,174 Awards (Mean Case)



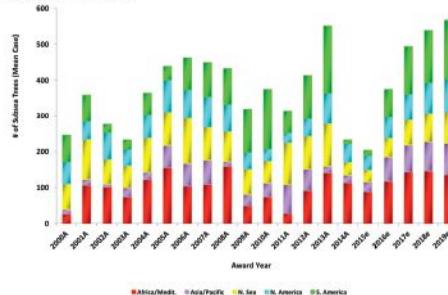
Global Subsea Tree Awards by Water Depth

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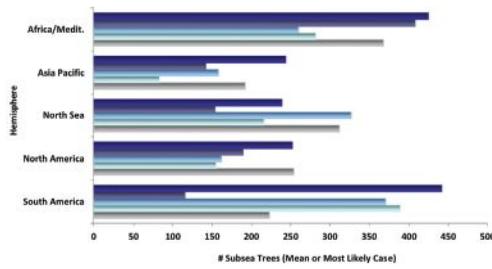
Quest Global Subsea Tree Forecast Awards

Mean Case 2000a – 2019e



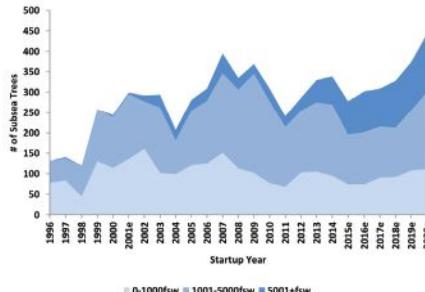
Global Subsea Tree Awards by Year

2005 – 2019e (Mean Case) 3-Year Buckets



Global Subsea Tree Startups by Water Depth

1996 – 2020e Startups – Normalized Case



FOR MORE DETAILED INFORMATION

(281) 491-5900 - USA • 44 (0) 1737 371704 - London • e mail: corp@questoffshore.com
www.QuestOffshore.com • www.SubseaZone.com • www.FloatingProductionZone.com

Monthly Stock Figures & Composite Index

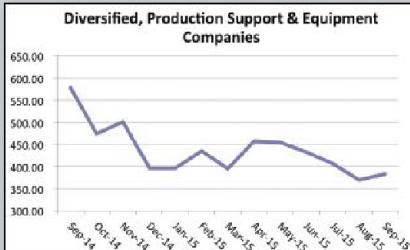
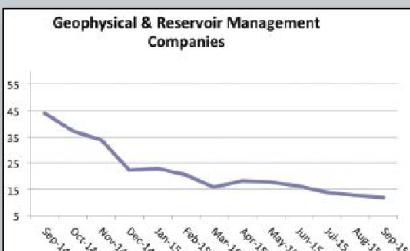
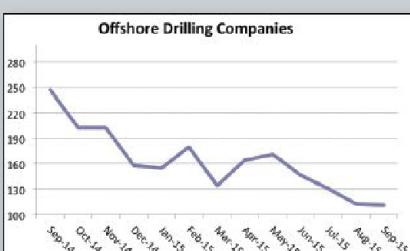
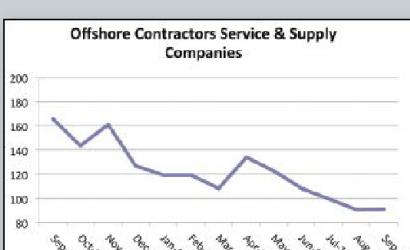
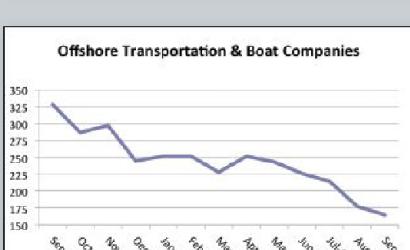
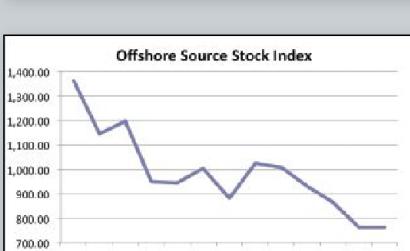
Industry Company Name	Symbol	Close(Mid) September	Close(Mid) August	Change	Change %	High 52 week	Low
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	53.53	53.34	0.19	0.4%	70.45	44.11
Cameron Intl. Corp.	CAM	64.38	47.21	17.17	36.4%	72.20	39.52
Drill-Quip, Inc.	DRQ	64.37	59.60	4.77	8.0%	93.70	53.37
Halliburton Company	HAL	36.94	39.12	-2.18	-5.6%	67.89	30.93
Tenaris SA	TS	25.35	25.34	0.01	0.0%	47.06	22.85
Newpark Resources, Inc.	NR	6.13	6.70	-0.57	-8.5%	13.00	5.79
Schlumberger Ltd.	SLB	73.46	80.91	-7.45	-9.2%	105.85	68.01
Superior Energy Services, Inc.	SPN	13.84	15.42	-1.58	-10.2%	34.42	12.59
Weatherford International, Inc.	WFT	9.96	9.05	0.91	10.1%	22.93	7.21
Deep Down, Inc.	DPDW	0.63	0.75	-0.12	-16.0%	1.55	0.44
FMC Technologies	FTI	33.79	31.65	2.14	6.8%	57.87	27.94
Total Diversified, Production, Support and Equipment.....	382.38	369.09	13.29	3.6%	586.92	312.76	
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	3.94	4.42	-0.48	-10.9%	12.54	3.68
Mitcham Industries, Inc.	MIND	3.79	4.22	-0.43	-10.2%	11.84	3.61
Compagnie Gnrale de Gophysique-Veritas	CGV	4.21	4.15	0.06	1.4%	10.95	3.63
Total Geophysical / Reservoir Management.....	11.94	12.79	-0.85	-6.6%	35.33	10.92	
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	16.10	18.00	-1.90	-10.6%	44.89	15.21
Diamond Offshore Drilling, Inc.	DO	22.24	22.40	-0.16	-0.7%	40.74	20.00
ENSCO International, Inc.	ESV	16.21	16.28	-0.07	-0.4%	46.77	14.20
Nabors Industries, Inc.	NBR	9.95	10.45	-0.50	-4.8%	24.76	8.94
Noble Drilling Corp.	NE	11.91	12.44	-0.53	-4.3%	25.69	10.52
Parker Drilling Company	PKD	2.81	2.75	0.06	2.2%	5.87	2.34
Rowan Companies, Inc.	RDC	17.22	16.46	0.76	4.6%	28.27	14.63
Transocean Offshore, Inc.	RIG	14.89	13.56	1.33	9.8%	35.98	11.26
Total Offshore Drilling.....	111.33	112.34	-1.01	-0.9%	252.97	97.10	
Offshore Contractors, Services, and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	6.23	6.46	-0.23	-3.6%	27.70	5.31
Gulf Island Fabrication	GIFI	11.7	12.63	-0.93	-7.4%	23.57	8.74
McDermott International, Inc.	MDR	4.74	4.03	0.71	17.6%	6.52	2.10
Oceaneering International	OII	40.88	39.86	1.02	2.6%	72.19	37.00
Subsea 7 SA	SUBCY.PK	8.15	7.69	0.46	6.0%	14.71	7.09
Technip ADS	TKPPY.PK	12.37	13.07	-0.70	-5.4%	21.51	12.06
Tetra Technologies, Inc.	TTI	7.07	7.07	0.00	0.0%	12.01	4.62
Total Offshore Contractors, Service, and Support.....	91.14	90.81	0.33	0.4%	178.21	76.92	
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	61.05	61.92	-0.87	-1.4%	83.12	58.00
Gulfmark Offshore, Inc.	GLF	7.37	7.69	-0.32	-4.2%	37.26	6.62
Bristow Group	BRS	30.30	35.72	-5.42	-15.2%	75.00	28.47
PHI, Inc.	PHII	22.69	25.96	-3.27	-12.6%	43.60	21.01
Tidewater, Inc.	TDW	16.02	17.02	-1.00	-5.9%	46.96	14.35
Trico Marine Services, Inc.	TRMAQ.PK	11.07	11.65	-0.58	-5.0%	14.35	10.22
Hornbeck Offshore	HOS	16.67	17.88	-1.21	-6.8%	39.94	15.60
Total Offshore Transportation and Boat	165.17	177.84	-12.67	-7.1%	340.23	154.27	

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Ocean News & Technology

Monthly Stock Figures & Composite Index

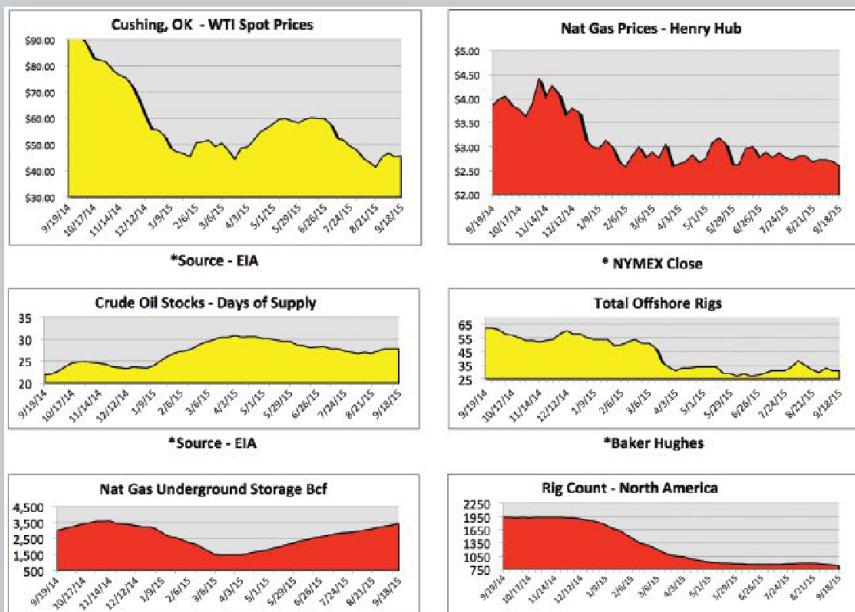
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Total Offshore Transportation and Boat	165.17	177.84	-12.67	-7.1%	340.23	154.27
						
Total Offshore Source Index	761.96	762.87	-0.91	-0.1%	1,393.66	651.97
						

DISCLAIMER

The information on this page is provided for information and comparison purposes only and should not be used to make financial and business decisions and is accurate to the best of our knowledge for the period indicated.

Oil & Gas Industry Trends

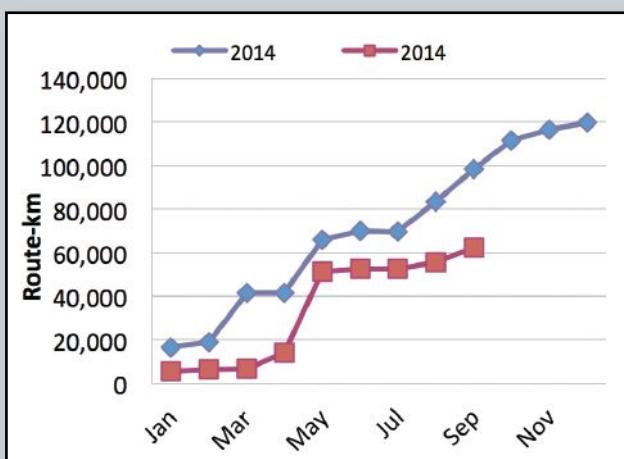
Monitoring the Pulse of the U.S. Offshore Oil & Gas Industry



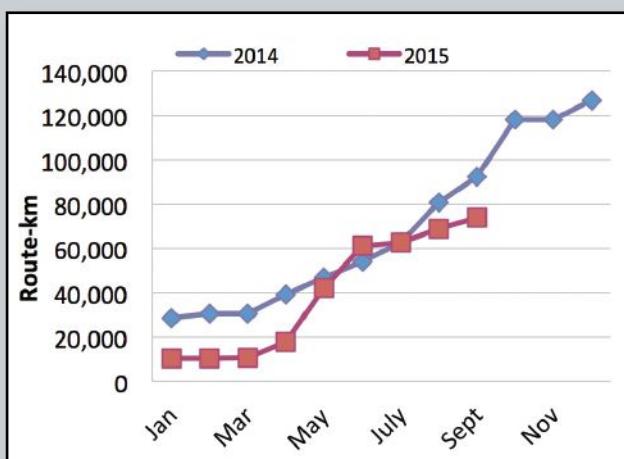
Positive trend, at least 3 weeks
Changing trend, less than 3 weeks
Negative trend, at least 3 weeks

Subsea Telecom & Power Cable Data

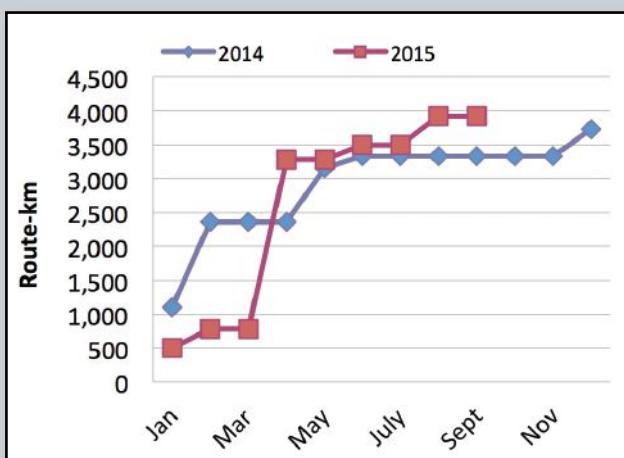
FO Cable Awards by Month



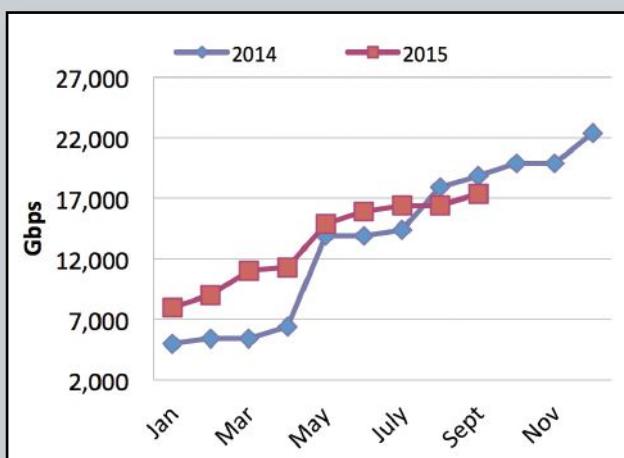
FO Cable Announcements



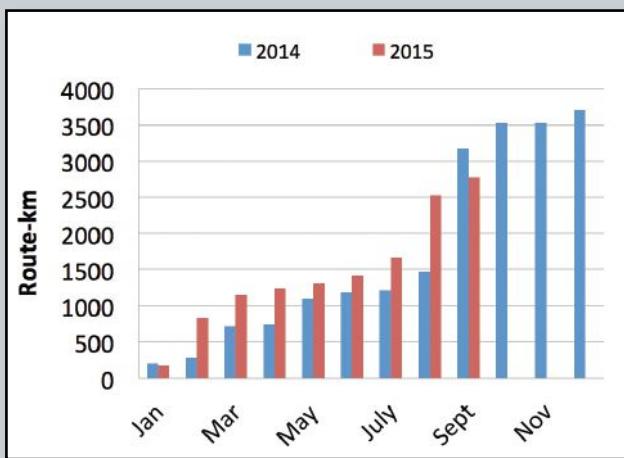
Submarine FO Cables Entering Service in Route-km



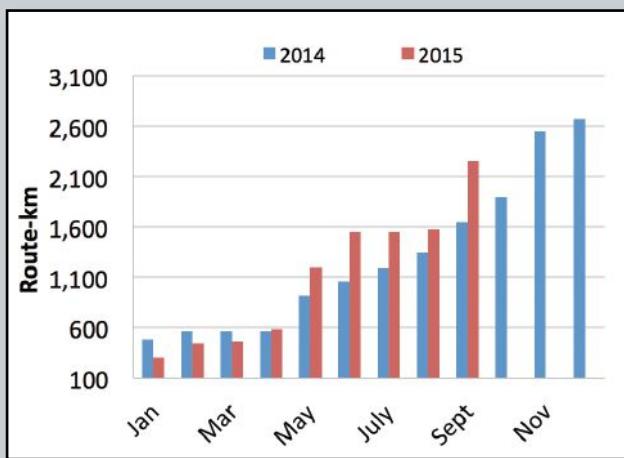
Upgrades of Existing Cable Systems in Gbps



Submarine Power Cable Awards in Route-km



Submarine Power Cable Announcements in Route-km



Gulf of Mexico Data

Current Deepwater Activity

Operator	Area	Block	Lease	Rig Name	Prospect Name	Water Depth (ft)
Shell Offshore Inc.	WR	508	G17001	NOBLE JIM DAY	Stones	9,568
ExxonMobil Corp.	WR	584	G20351	MAERSK VIKING	Julia	7,120
Union Oil Co. of California	WR	677	G18753	PACIFIC SHARAV	Saint Malo	7,038
Shell Offshore Inc.	MC	566	G08831	NOBLE GLOBETROTTER	Fourier addition	7,020
Chevron USA Inc.	WR	758	G17015	T.O. DISCOVERER CLEAR LEADER	Jack	6,968
BP Exploration & Production, Inc.	GC	743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	6,853
BP Exploration & Production Inc.	GC	743	G15607	SEADRILL WEST AURIGA	Atlantis	6,826
Marathon Oil Co.	WR	225	G32668	MAERSK VALIANT		6,779
Murphy Exploration & Production Co.	DC	134	G23488	DIAMOND OCEAN BLACKRHINO	Dalmation	6,167
Noble Energy, Inc.	MC	948	G28030	ATWOOD ADVANTAGE	Gunflint	6,094
BP Exploration & Production Inc.	MC	778	G14657	THUNDER HORSE PDQ	Thunder Horse North	6,031
Statoil Gulf of Mexico LLC	WR	160	G34634	T.O. DISCOVERER AMERICAS		5,861
Anadarko Petroleum Corp.	WR	51	G31938	DIAMOND OCEAN BLACKHAWK	Shenandoah	5,857
BP Exploration & Production Inc.	MC	775	G09866	SEADRILL WEST VELA	Thunder Horse North	5,673
Murphy Exploration & Production Co.	MC	819	G27312	T.O. DISCOVERER DEEP SEAS	Thunder Horse North	5,672
Eni U.S. Operating Co. Inc.	MC	772	G16647	ENSCO 8500	Triton	5,639
BP Exploration & Production Inc.	MC	776	G09866	SEADRILL WEST CAPRICORN	Thunder Horse North	5,636
Eni U.S. Operating Co. Inc.	MC	773	G19996	WIRELINE UNIT (N.O. #2)	Devil's Tower	5,610
Freeport-McMoRan Oil & Gas LLC	MC	127	G19925	NOBLE TOM MADDEN	KOQV	5,509
Anadarko Petroleum Corp.	GC	859	G24194	ROWAN RESOLUTE	Heidelberg	5,346
Freeport-McMoRan Oil & Gas LLC	MC	129	G10977	ROWAN RELENTLESS	King South	5,330
Anadarko Petroleum Corp.	GC	903	G24197	NOBLE BOB DOUGLAS	Heidelberg	5,274
Chevron USA Inc.	GC	807	G31752	PACIFIC SANTA ANA	GC 807 (Anchor Well)	5,183
LLOG Exploration Offshore, LLC	MC	253	G35491	SEADRILL WEST NEPTUNE	Delta House	4,927
ExxonMobil Corp.	AC	65	G09249	COIL TUBING UNIT (L.J. #3)	Diana (South)	4,852
Cobalt International Energy, LP	GB	958	G30876	ROWAN RELIANCE		4,846
ExxonMobil Corp.	EB	946	G08212	T.O. DEEPWATER CHAMPION	Diana	4,657
ExxonMobil Corp.	EB	946	G08212	COIL TUBING UNIT (L.J. #3)	Diana	4,657
Anadarko Petroleum Corp.	GC	683	G18421	DIAMOND OCEAN BLACKHORNET	Caesar-Tonga	4,473
BP Exploration & Production Inc.	GC	782	G15609	MAD DOG SPAR RIG	Mad Dog Phase 2	4,428
Hess Corp.	MC	725	G22898	STENA FORTH	Tubular Bells	4,311
Chevron USA Inc.	GC	640	G20082	TRANSOCEAN DEEPWATER ASGA	Tahiti 2	4,292
BHP Billiton Petroleum (GOM) Inc.	GC	609	G16764	T.O. DEEPWATER INVICTUS	Shenzi	4,288
Shell Offshore, Inc.	AT	18	G33863	STENA ICEMAX	Gnome	4,253
Statoil USA E&P Inc.	MC	942	G24130	MAERSK DEVELOPER	Mirage	4,197
Chevron USA Inc.	GC	596	G16759	T.O. DISCOVERER INSPIRATION	Tahiti North	4,023
Freeport-McMoRan Oil & Gas LLC	GC	643	G35001	NOBLE SAM CROFT		3,885
Shell Offshore, Inc.	MC	809	G05868	NOBLE DON TAYLOR	Ursa	3,848
Chevron USA Inc.	GB	978	G26693	T.O. DISCOVERER INDIA		3,836
Shell Offshore, Inc.	MC	809	G09883	H&P 204	Ursa	3,797
Anadarko Petroleum Corp.	EB	602	G14205	WIRELINE UNIT (L.J. DIST)	Nansen	3,678
Shell Offshore, Inc.	MC	807	G07963	OLYMPUS N88	Mars	3,037
Shell Offshore, Inc.	MC	807	G09882	H&P 201	Mars	2,945
Walter Oil & Gas Corp.	GB	302	G24479	NONE RIG PA OPERATION (LAF)	GB 302	2,410
Walter Oil & Gas Corp.	GB	302	G24479	COIL TUBING UNIT (LAF #4)	GB 302	2,410
Shell Offshore, Inc.	GC	116	G05904	ATWOOD CONDOR	Popeye	2,316
Energy Resource Technology GOM, Inc.	GC	237	G34971	CAL-DIVE Q-4000	Phoenix	2,249
LLOG Exploration Offshore, LLC	GC	39	G34066	SEADRILL SEVEN LOUISIANA	GC039	1,955
Hess Corp.	GB	260	G09216	COIL TUBING UNIT (LAF DIST)	Baldpate	1,645
LLOG Exploration Offshore, LLC	MC	794	G34909	NOBLE AMOS RUNNER		1,472
Whistler Energy, LLC	GC	18	G04940	NABORS MODS 201	Boxer	750
Chevron USA Inc.	GB	189	G06358	WIRELINE UNIT (L.C. DIST)	Tick	718
Ankor Energy LLC	MC	21	G22850	NABORS MODS 200		668
Fieldwood SD Offshore LLC	EB	110	G02650	NONE RIG PA OPERATION (LJ)	Tequila	660
W&T Offshore, Inc.	EW	910	G13081	H&P 203		557

Deepwater prospects with drilling and workover activity: 55

Current Deepwater Activity as of Tuesday, 8 September 2015

Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,292	36,230	2,288
201 to 400	86	1,130	20
401 to 800	193	896	10
801 to 1,000	320	579	9
1,000 & above	2,990	2,064	28

Rig Activity Report 11 September 2015

Location	Week of 09/11	Week +/- Ago	Week +/- Ago	Year
Land	813	-14	827	-1039
Inland Waters	4	0	4	-9
Offshore	31	-2	33	-35
U.S. Total	848	-16	864	-1083
Gulf of Mexico	29	-2	31	-33
Canada	185	-2	187	-220
N. America	1033	-18	1051	-1303
				2336

Activity by Water Depth Information current as of Tuesday, 8 September 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

Ocean Tracking Network (OTN) retrieves valuable data using EdgeTech PORT MFE acoustic releases

The Ocean Tracking Network (OTN) team based at Dalhousie University in Halifax, Canada recently retrieved 4 years' worth of valuable data from 21 moorings deployed near the entrance to Maxwell Bay, Devon Island, in the Lancaster Sound. These moorings, located in the Canadian high arctic were deployed in September 2011 and had collected valuable marine life information through the use of fish tags and receivers. An essential part of each mooring was the EdgeTech PORT MFE long-life acoustic release.

Attempts were made for several years to reach the location and recover the equipment but the team was repeatedly turned away by unfavorable ice conditions. Concern was growing as the years passed by and the opportunities for recovery diminished. Happily, researchers aboard the experimental fisheries vessel Kiviuq I reached the location in September of this year and recovered 100% of the valuable equipment and data. The EdgeTech PORT MFE acoustic releases worked flawlessly even after the very long deployment. As one of the OTN team members readily pointed out, "this is a further testament to the reliability of the EdgeTech family of acoustic releases."

For more information please visit www.EdgeTech.com.



New 7-way valve pack from Hydro-Lek offers greater reliability and flexibility

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Ocean News & Technology

As part of a drive to develop innovative and reliable products to meet new customer requirements, Hydro-Lek has updated the design of their 7-way valve pack to ensure ease of use and maintenance and greater flexibility, with a significant saving in weight.

A major new feature of the HLK-73300 is the replacement of o-rings and taper-threaded fittings with parallel-threaded fittings and Dowty seals, enabling a fast, easy and oil-tight connection to a wide range of fitting types including Quick Disconnects. In addition, new captive flow adjusters allow easier fine tuning of valve flow settings—and full control of manipulator movement—without the risk of fully removing and losing the adjustment screw.

A wide number of variations of the valve pack are available and customers can select from numerous system options including polarity, output function fittings, supply input fittings and coil voltage. Two additional ports allow a second HLK valve pack to be connected as a slave where more than seven bi-directional valves are required.



The HLK-73300 is also available as a 5-way valve pack and as a 4- and 6-way with bi-pass valve. Hydro-Lek valve packs are used widely within the subsea industry for controlling the operation of tooling skids on a variety of ROVs worldwide.

For more information, visit www.hydro-lek.com.

Impact Subsea launch the ISA500 – altimeter, heading and attitude sensor

Impact Subsea is pleased to announce the launch of the ground breaking ISA500—a 500 kHz underwater altimeter that also provides heading, pitch and roll.

With 120 m (394 ft) altitude range measurement capability, the ISA500 is the longest range 500 kHz altimeter available today. Making use of a composite transducer and advanced digital acoustic engine, the ISA500 is able to achieve significantly long range while providing sub-millimetre measurement accuracy.

In addition to altitude, the ISA500 also provides heading, pitch and roll readings—ideal for basic AUV/ROV navigation or to monitor underwater equipment deployment.

Under 11 cm (4.3 in.) in length, 4.5 cm (1.8 in.) width and weighing just 0.325 kg in water (0.72 lbs) makes the ISA500 a highly compact unit. This form factor is ideal for applications where space and weight are critical considerations. Using under 60 mA of power at 24 VDC makes the ISA500 one of the most power efficient units available to date—ideal for AUV or long-term monitoring deployments.

The integrated pitch and roll sensor can be used to automatically compensate for pitch, roll and altimeter misalignment to provide consistent true altitude readings—a first in altitude measurement technology.

Provided in a robust titanium housing, complete with industry standard connector ensuring that the ISA500 is not only at the forefront of technology but built to withstand the harshest of underwater environments.

For more information, visit www.impactsubsea.com.



Trials show new high capacity, low latency inter-vessel broadband communications system

The Norwegian Coastal Administration (NCA), Norwegian Coast Guard and the Norwegian Clean Seas Association for Operating Companies (NOFO) took part in a comprehensive, full-scale trial of Kongsberg Maritime's unique 'MBR' (Maritime Broadband Radio) inter-vessel communication system in the North Sea this June.

During the North Sea exercise, MBR was used as the communication platform for data exchange and coordination of simultaneous operations. Units were mounted on multiple operational assets, including a plane that streamed real-time surveillance video directly to the vessels, thus giving them a new perspective and a completely different situational understanding.

By installing MBR communication units on every vessel/asset involved in an operation, a broadband link is established and a maritime 'information highway' created – one that enables high-speed, high capacity, low latency transfer of data, without the need for



additional infrastructure and no prospect of data 'disappearing' en-route. There are also no airtime charges; data transfer between vessels and assets is free once an MBR network has been established.

Exceeding 50 km sea-level operational range, MBR is a true game changer in interconnectivity between vessels. It is set to become a crucial, cost-effective component in complex multi-asset offshore operations that take place across large areas with multiple teams working simultaneously. MBR supports complete situational awareness through enhanced communication between vessels, facilitated by seamless broadband data, voice and HD video transfer between all assets in the network.

For more information, visit www.km.kongsberg.com.

Radiant 2500 video lights

Fantasea proudly announces the release of the Radiant 2500 and Radiant Pro 2500—durable and powerful video lights, that offer a variety of quality lighting options for enhancing color and light in underwater videos and still images. Featuring an ergonomic design and durable construction, these lights can be comfortably integrated into any underwater photo system, such as with action cams, amphibious cameras, compact digital housings and more.

A battery power indicator light around the power switch enables easy monitoring of the battery power. Color temperature of the beam is warm and assists with producing vivid and colorful videos and still images without having to use any color correction filters. Adjustable power output allows controlling the intensity of the beam in various compositions and diving conditions, as well as extending the burn time of the light (batteries will provide power for a considerably longer time when the light is set at lower intensity settings such as 50% or 25%).

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Depth rated to 100 m/330 ft, the Radiant 2500 and Radiant Pro 2500 fulfill the needs of both recreational and technical divers.

The Radiant Pro 2500 makes use of 12 powerful LEDs that provide an ultra bright, wide and even beam. The light offers a variety of operation modes, which makes the light suitable to light a wide range of classic and creative compositions. Operation modes include wide angle white light (120°), narrow angle white light (15°), red light, Ultra Violet (UV) & blue light, and two flashing modes (white and red) that can serve for signaling / SOS purposes. In the flashing modes, the light can provide up to 8 hours of burn time. Finally, a "memory" function will return the light to the same setting as previously used before the light was last turned off.

The Radiant 2500 makes use of six powerful LEDs that provide an ultra bright, even and wide output. A wide beam angle of 120° makes the light suitable for lighting a wide range of compositions. In the flashing mode, the light can provide up to 8 hours of burn time.

For more information, visit www.fantasea.com.

Septentrio's launches its newest receiver: the AsteRx-U

Septentrio announces the launch of two successors to the highly successfully APS-U. The AsteRx-U and the AsteRx-U Marine are multi-constellation dual antenna receivers that incorporate the latest GNSS tracking and positioning algorithms and interference mitigation. Machine control users in the agricultural and construction industries as well as users in marine and mining industries benefit from a complete system with integrated UHF radio, Wi-Fi, USB, Bluetooth and cellular connectivity and a spectrum analyzer. All configurations can be done via the on-board web interface.

The AsteRx-U and AsteRx-U Marine feature a full range of positioning techniques and algorithms to ensure the highest accuracy and reliability. The spectrum analyzer enables users to visualize

the RF spectrum. Based on its extensive experience with real-life interference sources and their mitigation, Septentrio has developed interference mitigation technology that counteracts various kinds of ambient intentional and unintentional RF interference automatically.

The AsteRx-U family of receivers is built around Septentrio's latest ASIC, GReCo4, which was introduced in 2014. It incorporates built-in jamming detection and countermeasures, multi-path rejection, fast acquisition, and other advanced features. Both receivers have over 500 hardware channels to track all available constellations (GPS, GLONASS, Galileo, Beidou, IRNSS and QZSS) and feature many algorithms: LOCK+ technology to maintain tracking during heavy vibration machine use and IONO+ technology to assure the accuracy of the position even in regions of elevated ionospheric activity.

The AsteRx-U has decimeter and centimeter level RTK positioning including TerraStar; the AsteRx-U Marine also supports VEPPOS PPP augmentation services. It includes extra anti-jamming technology to counter Iridium and INMARSAT-uplink interference, as well as an extra antenna connector for a dedicated L-band antenna to optimize L-band reception at high latitudes.

Straightforward to setup and integrate with existing systems, the AsteRx-U and AsteRx-U Marine uses any device with a web browser to facilitate usability and configuration for the user.

Jan Leyssens, Septentrio product manager stated: "We want to make it easy for our customers to use high accuracy positioning in their work. Using the integrated communication functionality in the compact and portable AsteRx-U, users won't have to worry about adding their own modems or UHF radios to get access to corrections". He continued: "The receiver web interface is available wirelessly on any mobile device. It was designed together with several of our key customers, resulting in an interface that is not only

easy to use by field operators, but also provides many useful troubleshooting tools, such as the spectrum analyzer, to solve problems in the field and minimize downtime."

The AsteRx-U will be presented to the public for the first time at ION GNSS+ –taking place in Tampa, Florida - and InterGEO 2015–taking place in Stuttgart, Germany during the week from 14-18 September.

For more information, visit www.septentrio.com.

Construction Monitoring System (Version 2.0) – new release

Coda Octopus is delighted to announce the release of version 2.0 of its unique and powerful Construction Monitoring System (CMS) software.

The CMS software delivers a comprehensive workflow management tool for use in construction projects requiring complex and repeatable placements such as breakwater construction or asset positioning. Although certified for Accropode™, Accropode™ II, and Xbloc®, we can incorporate other models types on client request.

The use of intuitive 3D models provides real-time guidance for asset placement throughout the construction process. The unique model tracking technology means the asset can be located and the final position and attitude recorded in the global CMS database. The tracking can be further activated on subsequent survey data allowing the master asset database to be quickly updated with any block post-placement movement—a critical aspect of breakwater applications that is challenging to observe with inertial positioning or diver only solutions.

CMS provides the capability to manage, monitor and document the entire construction phase of asset placement projects.

Site design, pre-lay information and data can be loaded into CMS (full XYZ and rotations) for control, progress reporting and real-time visualization of placed assets, including those being actively placed.

The workflow process allows multiple systems to operate simultaneously on a large site plan with recorded data being merged to provide a complete summary of pre-lay, post-lay and changes in position.

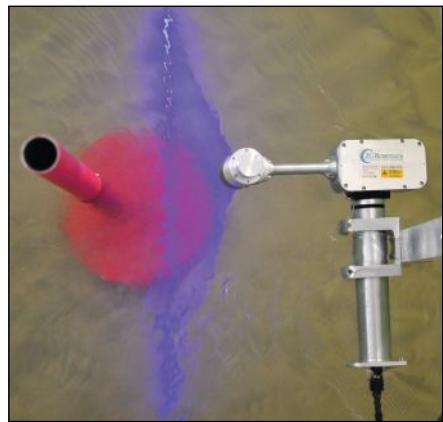
For more information, visit www.codaoctopus.com.



Seateronics secures first UK sale of 2G Robotics' ULS-200 underwater laser scanner

Seateronics, an Acteon company, has secured the first UK sale of 2G Robotics' ULS-200 underwater laser scanner. The system was purchased by HR Wallingford, a world-leading independent civil engineering and environmental hydraulics organisation, based in Oxfordshire.

Adil Ali, product sales manager, Seateronics, said, "HR Wallingford is a leader in global hydrological research and purchased 2G Robotics' ULS-200 system based on the impressive level of resolution and accuracy it delivers. Seateronics has an excellent track record of customer service and technical support and provided close client liaison in both commercial and technical matters leading up to the sale."



The ULS-200 is 2G Robotics' mid-range underwater laser scanner. The system has a lightweight, compact design and low power and bandwidth requirements, enabling simple integration and operation. The system generates 3D point cloud models. From these models, highly accurate and precise measurements can be captured for detailed analysis of underwater structures and environments.

HR Wallingford recently opened the Fast Flow Facility, one of the world's largest marine test facilities, with a unique, dual-channel flume for wave-current-sediment modeling. The company conducted trials with the ULS-200 at the facility, with technical support from Seateronics and 2G Robotics. HR Wallingford subsequently purchased a ULS-200 and has successfully deployed it in marine renewables projects and scour research.

For more information, visit www.seateronics-group.com.

Sonardyne acoustic release transponders are worth their weight

Sonardyne International Ltd, UK, specialists in subsea navigation and positioning technology, report that their heavy duty, deep ocean and coastal acoustic release transponders continue to set the performance and reliability standard within ocean science, hydrographic survey and offshore construction arenas.

Products such as their ORT, DORT and LRT have established themselves as an important component in the inventory of commercial, scientific and naval organizations worldwide that rely upon them to deploy and recover valuable seafloor sensors and equipment. With features that include depth ratings over 9,000 ft, 3-year battery life and highly secure acoustic communications, Sonardyne's acoustic releases are as dependable as they are capable.

The latest model to be added to the company's product line up is the WRT 6 (Wideband Release Transponder 6)—arguably their most capable acoustic release to date. Tough and reliable, WRT 6 is fully compatible with Sonardyne's sixth generation (6G) acoustic positioning systems, which are widely installed on offshore and research vessels to support a wide range of survey operations.

Fitting the WRT 6 into one of Sonardyne's Heavy Duty Release Frames provides a safe and efficient way to remotely control the deployment of large equipment such as landers, instrument strings and oil field hardware onto the seabed. Upon receipt of a securely encoded acoustic signal sent from the operator at the surface, the release mechanism of the transponder activates, allowing the installation crane wire to be automatically disconnected without ROV or diver intervention.

For shallow water and coastal applications, Sonardyne's Lightweight Release Transponders (LRTs) are heavyweights when it comes to performance. With a depth rating of over 1,600 ft, a high safe working load, long battery life and a highly reliable screw-off release mechanism, the Sonardyne LRT possesses all the essential features that users demand.

Recently, Finnish-based environmental monitoring company Luode Consulting chose Sonardyne LRTs to support its water and ice quality research in Scandinavia. Using them to



deploy and recover specialist recording instruments, the company has now completed over 350 studies across the region, including under-ice thickness profiling and water cooling monitoring close to nuclear power stations, without a single failure or instrument loss.

Whether the water depth is shallow or deep, the load is kilograms or tonnes, and deployment is days or years, Sonardyne will provide the ideal acoustic release transponder.

For more information, visit www.sonardyne.com.

Tiburon Subsea's ROV "Otis" working with GreenSea Systems

Tiburon Subsea Services Inc. has selected GreenSea Systems Inc. to supply its new controlling and operating system for their science class ROV "Otis." GreenSea Systems is a world leader in automation and navigation for unmanned underwater vehicles. The new control, navigation and station-keeping upgrades being added to OTIS will make the vehicle one of the most versatile ROVs of its size available for rent.

The custom 600-m ROV offers low power consumption, excellent optics and sensors. It is an ideal vehicle for marine research, HD filming and or light work loads as it can be deployed from a boat or any platform. "When today's light class inspection vehicles are not enough and you need a working class system this ROV is the perfect solution," states Tim Taylor President of Tiburon Subsea.

Otis is an electric light work-class vehicle equipped with precision tracking system (USBL), optically corrected color HD video camera, quad LED lighting array, color laser video measuring system, multi-beam imaging sonar and five axis hydraulic manipulator. Optional payloads include CTD sensor and sample collection, sampling trays, jet tools, scanning sonar, sub-bottom profile sonar



and other custom sensor packages, tools can also be integrated as needed.

For more information, visit www.tiburonsubsea.com.

Webtool announces Umbilical Emergency Disconnection Tool

Cutting tool specialist, Webtool, has developed an emergency disconnection tool (EDT) for subsea intervention systems. The Webtool EDT enables rapid cutting of umbilical multiple fluid transfer jumpers, electrical lines and tension wire in the event the DP surface vessel drifts off-station.

As an integral part of either a

workover tool or dedicated emergency disconnect package, Webtool EDT guillotine cutter is a simpler and quicker emergency disconnection than more complex multi-line stabplate systems. It offers considerable weight savings compared with other emergency disconnect systems and is easily retrofit to intervention systems.

Within a well intervention emergency disconnect package, the umbilical is connected to a sacrificial hose and cable bundle and securely positioned in the mouth of the Webtool EDT emergency cutter. This ensures the umbilical is severed in the correct place within seconds.

The hydraulically operated Webtool EDT is able to cut up to 30 bundled 10,000 psi rated hydraulic jumpers and electrical lines in an emergency disconnect situation at water depths up to 3,000 m. Once activated, the umbilical is cut in a single operation. Designed for deployment for extended periods subsea, Webtool EDT can be function tested in situ, ensuring the tool is ready for use in the event of an emergency.

Webtool EDT is part of the Webtool



range of high performance cutting tools designed and manufactured exclusively by Allspeeds Ltd.

Colin Schroder, managing director, Allspeeds, said, "The Webtool EDT allows operators and contractors to include a simple, cost-effective, and highly reliable emergency disconnection as an integral part of their subsea intervention systems."

For more information, visit www.allspeeds.co.uk.

Straightpoint launches running line dynamometer

Force measurement, load monitoring and suspended weighing load cell manufacturer Straightpoint has launched a new product for measuring tension on lines—the running line dynamometer (TIMH).

The product, part of the tension in

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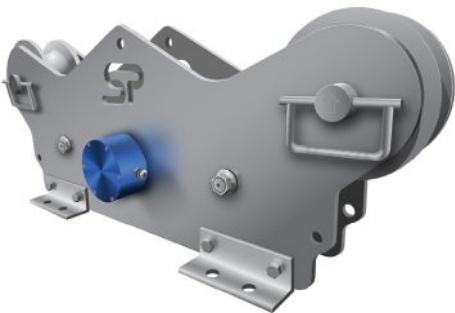


www.cleangulf.org



motion range, is built with dockside, marine, offshore, towage and salvage applications in mind but it is anticipated that the TIMH will also be used in other industries once it is proven in the field.

End users have noted two outstanding features of the dynamometer. First, the product is launched with a Straightpoint hallmark, the ability to deliver to a short lead-time of within just 3 days. Second, it can be used when there is no anchor or dead end on the line, for example, when there is a requirement to measure a force at a specific point of a longer line.



As is the case in many industries, lifting professionals overseeing marine, offshore, towage and salvage applications are often presented with an unforeseen requirement to find out the weight of a load or the force on a wire rope or line. When a project is already underway, the speed at which force measurement technology can be delivered to a site is of paramount importance.

Straightpoint can also provide custom-engineered mounting solutions, upon request, which Ayling anticipates being able to take from order to delivery in 4 weeks.

The TIMH is constructed from marine-grade stainless steel and is suitable for many wire rope configurations up to 80 tons and will, as an option, calculate lineout in meters or feet along with line speed. It is available as a wireless or cabled system utilizing the HHP range of handheld displays or SW-MWLC software.

For more information, visit www.straightpoint.com.

Brazilian Order for Tritech's Gemini

Tritech International Ltd (Tritech) is pleased to announce the sale of its industry-leading multibeam sonar Gemini to ROV providers Sistac Sistemas de Acesso S.A. (Sistac).

Sistac initially hired a deep-rate Gemini to evaluate its performance during sea trials and after the company observed its capabilities, subsequently purchased the sonar. The Gemini 720id multibeam sonar is now the primary sonar on board Sistac's Soil Machine Dynamics (SMD) Atom work-class remotely operated vehicle (WROV).

Tritech's Gemini multibeam imaging range offers users a real-time, 120 degree field of view and operates at 720 kHz with a range of up to 120 m, making it ideal for obstacle avoidance and target detection. The Gemini sonar is available as a shallow 300 m version (720i) or deep-rated to 4,000 m (720id) in aluminium or titanium housing.

The sale of a key product follows recent in-country product demonstrations and the opening of Tritech's dedicated support hub where the company provides certified after sales and technical support through its partner MACSEA Ltda.

Mario Gonçalves, Sistac comments: "Sistac is extremely pleased to have purchased the deep-rated Tritech

Gemini to assist our operations in Brazil. We worked with MACSEA, a partner of Tritech, for a recent technical demonstration of the Gemini 720id multibeam sonar which validated the quality of the product and its suitability for our vehicle."

Antonio Silva, commercial manager for MACSEA, comments: "MACSEA's aim is to serve the Brazilian market with locally based equipment, we are therefore delighted by the sale of a Tritech Gemini 720id to Brazilian company Sistac for their WROV."

Sistac was founded in 1995 initially to provide local diving and rope access services and in 2007 began providing ROV support in the area. The ATOM ROV is stationed on board the Sistac Vitória vessel, which is hired by Petrobras for ROV and dive support operations. MACSEA Ltda, established in 1980, has extensive experience in the underwater technology market and provides in-country customer support as a Tritech Certified Service Centre.

For more information, visit www.tritech.co.uk.

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Trelleborg tackles high temps with new flowline insulation

Trelleborg's offshore operation has engineered a new insulation cover that not only withstands extremely cold temperatures at subsea depths but also, with the combination of a silicone liner, the extreme temperatures of hot hydrocarbons. The insulation cover achieves the highest temperatures yet accomplished and, in addition, is significantly lighter than steel covers; not molded directly to the pipe, the cover gives easy access to critical parts of the flow stream.

Ben Wait, customer group manager for Trelleborg's offshore operation, says, "The new insulation covers are made from a combination of our trusted insulation systems including silicone Vikotherm S1 and polyurethane Vikotherm P7. They utilize the properties of cast systems which are poured in a liquid form and solidify to create the finished jacket, unique to the application. We've taken our proven knowledge in designing bespoke insulation systems and combined a silicone inner layer to withstand the high temperatures of hot

hydrocarbons. The polyurethane outer layer is lighter in weight than traditional steel to produce the ideal solution."

As the polyurethane and silicone used in the insulation cover has previously been qualified, time to market was significantly reduced, meaning that it was quickly ready for use by our customers.

Wait continues, "This new solution provides piece of mind for operators, especially those who have previously experienced the success of our silicone and polyurethane materials. Our latest technological advancements allow us to cater to the increasing demands of the industry and enable the systems to operate at ever increasing water depths and operating temperatures."

For more information, visit www.trelleborg.com/offshore.

the Echoscope C500 and Dimension.

The addition of the Vantage software capability gives existing and new Echoscope owners a greater range of software options. They can now choose between Vantage or Underwater Survey Explorer (USE) depending on the requirements for the task in hand. Typically Vantage will offer more utility for the ROV pilot, while USE offers more survey capability for pole mounted and ROV applications.

The Vantage / Echoscope package has recently been deployed on a major multiple flow-line installation project. The Echoscope was mounted on a work-class ROV and the Vantage software used to monitor in real-time 3D the flow-line touch-down point irrespective of the water visibility conditions which were extremely poor for part of the operation.

The use of the Echoscope / Vantage combination saved both the operator and the end client many hours of downtime on the project.

For more information, visit www.codaocutpus.com.

Vantage ROV navigation software now paired with Echoscope sonar

Coda Octopus announces the Vantage ROV visualization and navigation software can now be used with all existing and new 3D sonars in the Coda Octopus family, the Echoscope 1000,

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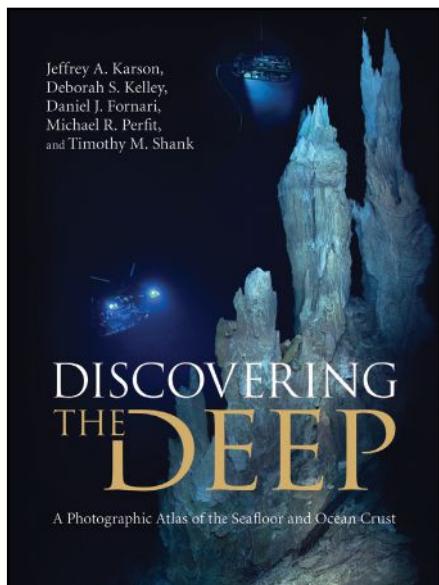


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MEDIA SHOWCASE



Discovering the Deep A Photographic Atlas of the Seafloor and Ocean Crust

By Jeffrey A. Karson, Deborah S. Kelley, Daniel J. Fornari, Michael R. Perfit, and Timothy M. Shank

Discovering the Deep was 10 years in the making and utilizes spectacular full color photographs taken by the most advanced ocean exploration vehicles and technology and developing technologies used to explore this difficult-to-access and perpetually dark environment. Later chapters discuss the major geological components of Earth's crust and the myriad environments along the global mid-ocean ridge—where oceanic crust is created. Readers are guided through the discoveries of chemosynthetic biological communities at hydrothermal vent sites, which revolutionized our ideas on the existence and origins of life on Earth and elsewhere in the universe.

Discovering the Deep is a fantastic reference for researchers, students of marine science and anyone interested in oceanography. A suite of online visual and teaching resources, including video clips and images suitable for lecture presentations combine with the book to provide a comprehensive, up-to-date view of the origin of oceanic crust, seafloor volcanism, hydrothermal venting, and biological processes at mid-ocean ridges. As a ‘coffee-table’ book for people interested in ocean and Earth science or as an indispensable reference for researchers, teachers, and students of marine geoscience, this visually stunning resource is one that all oceanographers and ocean enthusiasts will want on their bookshelves.

Cambridge University Press, ISBN: 978-0521857185
Hardcover, 430 pages, May 2015

The advertisement features a large photograph of a ship's hull cutting through green, choppy water, creating white spray. Overlaid on the image is the text 'EVERYTHING YOU NEED TO POWER FORWARD' in large, bold, sans-serif font. In the bottom right corner of the image, there is a dark rectangular callout box containing promotional text.

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API appointed **Will Hupman**, director of government affairs, and **Vincent Erfe**, director of government affairs, to its advocacy team who will work to advance the oil and natural gas industry's policy priorities with Congress, the administration, and regulators. Hupman served as director of federal government and external affairs at Alpha Natural Resources, as legislative director for U.S. Congressman H. Morgan Griffith and as legislative counsel for U.S. Congressman J. Randy Forbes. He also served as a Peace Corps volunteer in Nicaragua. Hupman earned his undergraduate degree from the University of North Carolina at Chapel Hill and his Juris Doctor from Louisiana State University. Erfe served as legislative director to U.S. Congressman Michael R. Turner and as senior legislative assistant to U.S. Congressman David Dreier. Earlier in his career, he worked at the U.S. Chamber of Commerce. Erfe earned his undergraduate degree from Johns Hopkins University and his Master of Business Administration from the University of Maryland.

Midstream provider Navigator added **Albert Johnson** to its senior leadership team as vice president of business development. An energy industry veteran with

nearly 20 years of experience, Johnson will assist in leading Navigator's business development efforts, including the development of corporate growth strategy and



Johnson

structure, commercial activities and product scheduling. Prior to Navigator, Johnson served as director of business development for Sunoco Logistics Partners LP, where he was responsible for business development and asset management activi-

ties across the company's pipeline system related to the marketing, gathering and mainline transportation of crude oil. Prior to Sunoco, Johnson spent 10 years with Phillips 66 and ConocoPhillips in various roles in terminal and refinery operations.

Total E&P Nigeria Ltd. has appointed **Ahmadu-Kida Musa** as deputy managing director, DeepWater District based in Lagos. He replaces **Charles Ngoka**, who has retired. Musa was executive director, Port Harcourt District for Total E&P Nigeria Ltd. He is a 1984 engineering graduate (B.Eng. Civil) of the Ahmadu Bello University, Zaria. He also holds a post graduate diploma in

Petroleum Engineering from Institut Francais du Petrole.

Statoil's board of directors has elected **Wenche Agerup** as a member. She had been executive vice president for Corporate Staffs and general counsel of Norsk Hydro since December 2014. Agerup also is on the board of the Oslo Stock Exchange and seismic company TGS.

Cobalt International Energy, Inc. said that **Shannon (Shane) E. Young, III** will join Cobalt as chief financial officer and executive vice president. Young is currently senior vice president and chief financial officer for Talos Energy LLC. He replaces **John P. Wilkison**, who has indicated his desire to pursue other interests. Wilkison was to remain as a consultant to Cobalt through the end of October to ensure a smooth executive transition. Young has over 20 years' experience as an investment banker at Goldman Sachs, Morgan Stanley, and Salomon Brothers. Young has a bachelors in business administration in finance from The University of Texas at Austin and a masters of business administration with distinction from the Amos Tuck School of Business at Dartmouth College. Cobalt was formed in 2005.



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Aquatic Engineering & Construction Ltd, an Acteon company, has appointed **Martin Charles** as group managing director. Charles replaces Aquatic's former president, Chris Brooks, who has departed Aquatic after eight years. Charles joined Aquatic in 2014 as regional general manager, Europe, Middle East and Africa (EMEA) and became COO earlier this year. He has a wealth of experience in oil and gas and associated market sectors.

BMT Designers & Planners, a subsidiary of BMT Group, the leading international maritime design, engineering and risk management consultancy, has announced the promotion of **Kai Skvarla** to president. Formerly vice president of strategic planning with BMT for the past five years, Kai will now concentrate on developing new commercial markets for the firm to generate sustained growth. BMT has also announced the appointments of **Albert Graves** as financial controller and **Greg Jose** as marketing manager. Albert will join the senior leadership team to further strengthen the company's financial performance and business processes, while Greg brings marketing and business development and proposal expertise to support and improve the company's marketing strategy and performance.

Global Marine Systems Limited, the UK headquartered world leader in subsea system engineering, installation and maintenance, has appointed **Richard Fraser-Smith** as its new CFO. He started in June 2015 and sits on the company's board and leadership team. Mr. Fraser-Smith joins Global Marine with a wealth of relevant experience. Most recently he was European Finance Director at CH2M Hill, a U.S.-based organisation that offers a diverse range of engineering consulting, design, project management and project delivery services. Some of the notable UK infrastructure projects to which Mr. Fraser-Smith contributed during his time with CH2M included Crossrail, HS2 and Thames Tideway. Prior to that he was regional finance director at Halcrow Group Limited, the company acquired by CH2M Hill in 2011.

Richard Benzie has been appointed technical director of the International Marine Contractors Association (IMCA) to replace Jane Bugler who retired at the end of September 2015 after 18 years in the role.



Charles

Oceaneering International, Inc. announced the promotion of **Clyde Hewlett** to COO. In this capacity he will have expanded responsibility for managing all of Oceaneering's oilfield business. Also, announced was the appointment of **Alan R. Curtis** as senior vice president and CFO and the promotion of **Eric A. Silva** to senior vice president, operations support. In addition to finance, tax, and accounting functions, Mr. Curtis will also be responsible for the oversight of Oceaneering's investor relations activities, corporate development, risk management policies, and facilities management. Mr. Silva joined Oceaneering in February 2014 and holds a bachelor's degree in Accounting and is a certified public accountant in the State of Texas.

ASV is delighted to announce that **James Hailstones** has joined the team as the company expands its reach into the offshore energy market. Based in Aberdeen, he will lead industry engagement as more firms look to introduce ASVs into their operations. He is an electronics engineer with over 30 years experience in the offshore survey industry, operating in the oil/gas, government, communications and renewable sectors. After spending 15 years working in an offshore environment on a global basis, Hailstones moved into various managerial positions working both in the USA and UK over the last 15 years.

SeeByte is pleased to announce the appointment of **Nick Green** as SeeByte's new senior programme manager. Nick has come on board as SeeByte seeks to have a greater presence within the maritime community on the South of England. Nick's responsibilities will include supporting and developing SeeByte's customer base in the South Coast, with a particular focus on the military and oceanographic markets.

Teledyne Optech is pleased to announce that **Dr. Mark Whorton** has assumed the role of president of the U.S. organization Teledyne Optech, Inc. In this role, Dr. Whorton will oversee U.S. operations and apply his expertise to the development of the Optech Coastal Zone Mapping and Imaging Lidar (CZMIL) and our line of digital aerial cameras.



Hailstones



Green

CLS, the France-based ocean-monitoring group and subsidiary of the French Space Agency, acquired the U.S.-based oceanographic services company, **Horizon Marine**, to provide additional services to the offshore energy industry. CLS's expertise in remote sensing, and numerical modeling will enable Horizon Marine to provide clients greater situational awareness through actionable metocean intelligence and improved forecasts to increase current-sensitive 'work windows'.

AXYS Technologies Inc. announced it has signed a definitive agreement to acquire 100% of the **FLiDAR NV** shares. Canadian-based and privately-held, AXYS has been a market leader in environmental monitoring for the last 40 years. Belgium-based FLiDAR was formed in 2011 as a joint venture between 3E and Offshore Wind Assistance (part of the DEME group) to become a world-leading provider of floating LiDAR offshore wind measurement technology, well-known for its proven accuracy and exceptional European service team.

Proserv group LLC, a leading energy services company, has acquired **Nautronix**, a leader in the supply of subsea digital acoustic communication products and positioning services to the oil and gas industry, based in Aberdeen, UK. Proserv is a portfolio company of Riverstone Holdings LLC, an energy-focused private equity firm based in New York.

Kongsberg Maritime is pleased to announce the creation of a European support centre in Southampton, UK, for its Seaglider AUV. The new support centre will begin stocking spare parts and battery refurbishment kits immediately and will have the capacity to perform standard vehicle battery refurbishment services and minor system repairs by Q4 2015.

Makai Ocean Engineering, Inc. is now providing expanded corrosion services at their Marine Corrosion Laboratory (MCL) in Kailua-Kona, Hawaii. The MCL is located at the Natural Energy Laboratory of Hawaii Authority (NELHA), making it the only location in the U.S. where large flows of shallow and deep seawater from depths up to 3,000 ft are continuously available.

DNV GL is building a new conference centre and large-scale fire and explosion demonstration area at their unique major hazard testing and research centre in Cumbria, UK. The new training facility will greatly enhance experiential learning for the oil and gas, chemical and security industries.

CALENDAR & EVENTS

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www.ewea.org/annual2015

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www.oceans15mtsieewashington.org

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New Orleans, LA
www.workboatshow.com

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www.gulfcoastconference.com

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 Distribution: Euromaritime; Naval Future Forces; Deepwater Decommissioning Workshop; GOM Oil Spill & Ecosystem
 Product & Services Focus: Multibeam & Side Scan Sonars; Research & Development Services

FEBRUARY

Editorial: Subsea Fiber Optic Networks; Decom & Abandonment
 Distribution: IEEE/Current, Waves, Turbulence Measurement Wkshp; NACE Corrosion; Decommissioning and Abandonment Summit; U.S. Hydro Product & Services Focus: Connectors, Cables & Umbilicals; Diver Detection Systems

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

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 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
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 Product & Services Focus: Acoustic Modems, Releases & Transponders; Marine Communications; Survey & Exploration Services

NOVEMBER

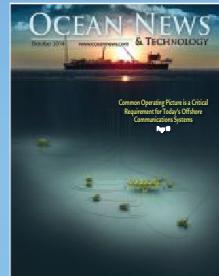
Editorial: Offshore Support, Supply & Emergency Vessels; Deep Sea Mining
 Distribution: International Workboat, EWEA 2015 Paris
 Product & Services Focus: Ship Protection Systems; Cranes, Winches & Control Systems; Vessel Charter/Leasing Services

DECEMBER

Editorial: Light Workclass ROVs; Commercial Diving; Year in Review
 Distribution: TBA
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