

# Ocean News & Technology

News for the Ocean Industry

October 2013

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## Meeting Industry Needs .....ROV Training

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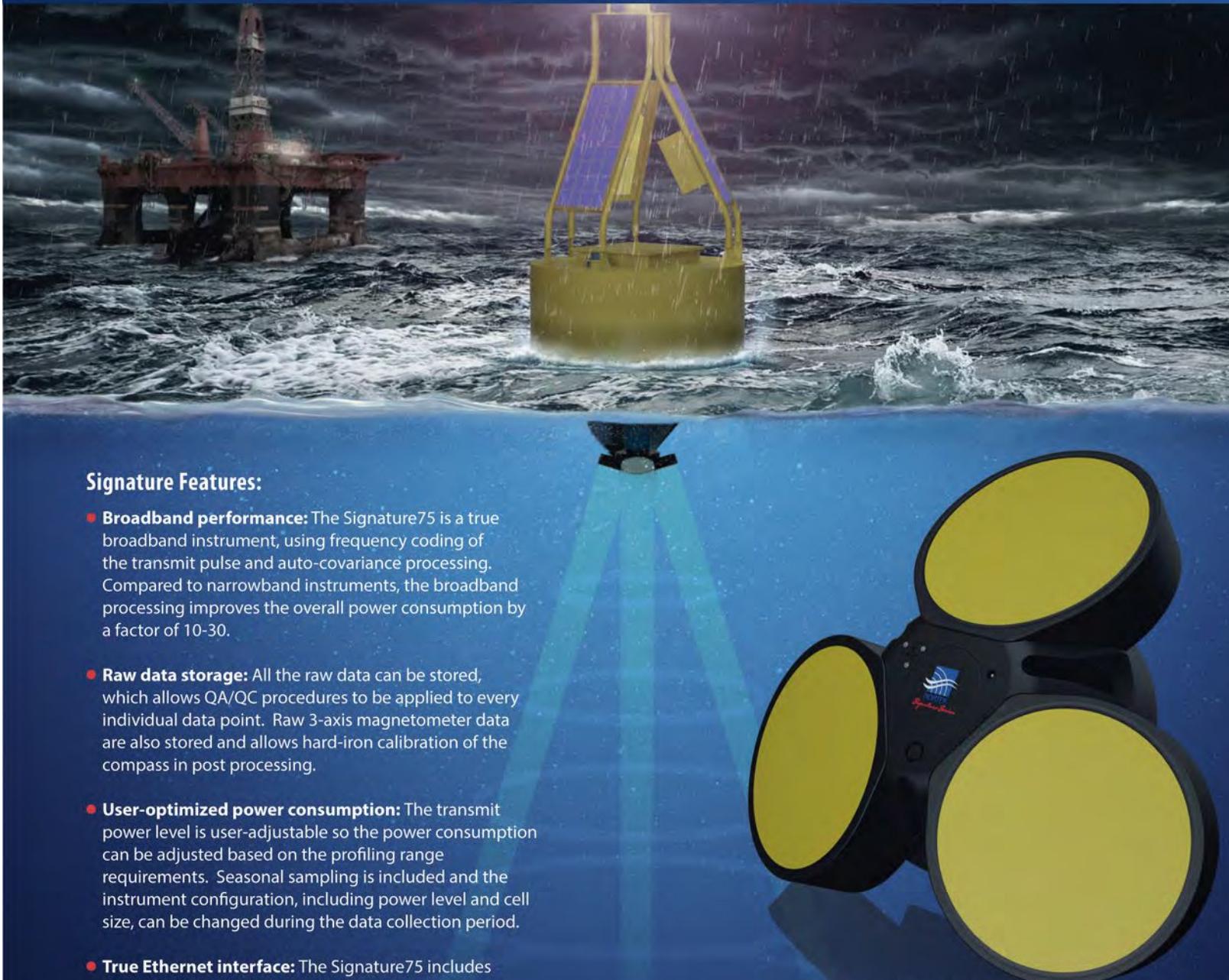
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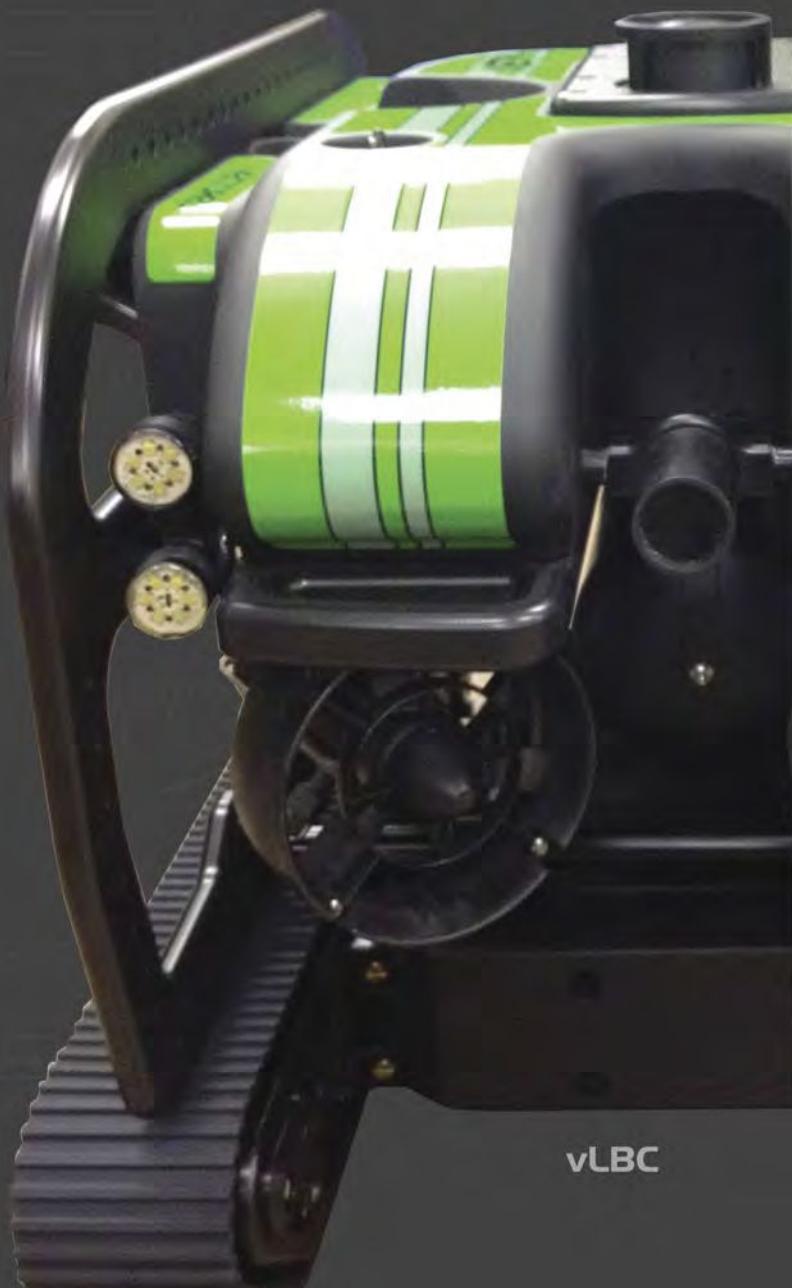
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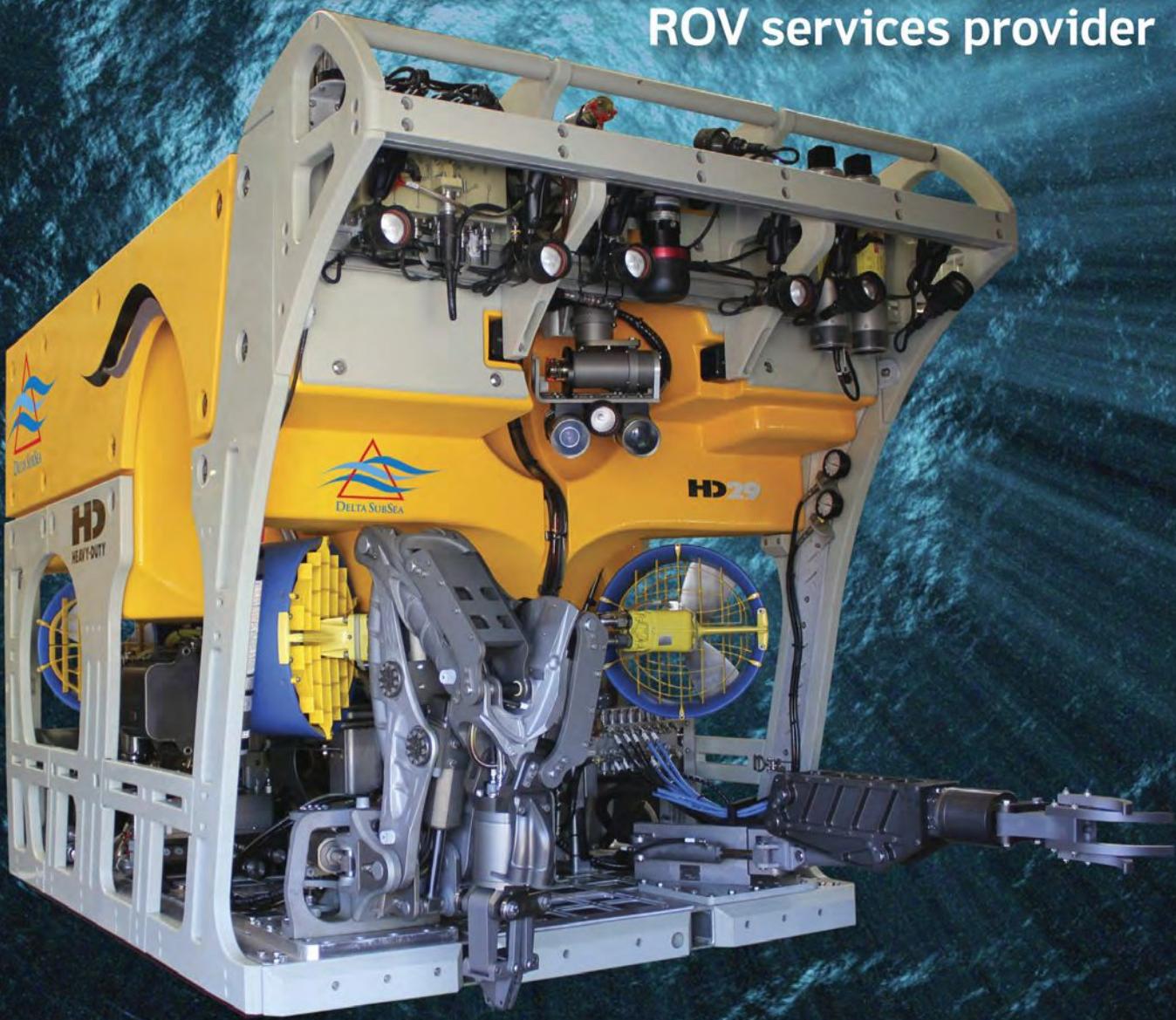
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Supply vessel during operations along the side of a drilling rig off the coast of Brazil (Courtesy: Ecospeed)

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# EDITORIAL

By John Manock



## Ocean News & Technology

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# Submarine telecom cable market continues to grow, but slowly

This is usually the time of year when I reflect on the state of the submarine fiber optic cable market. This market, which has a long history of volatility, has been remarkably stable for the past several years. Still, it is an unusual industry and an interesting one to follow.

Since its inception in the late 1980s, the submarine fiber optics market has been infamous for its boom and bust phases. These phases featured heavy new cable construction for about 3 years, followed by a similar period of slow growth, although with a particularly brutal bust from 2002 to 2006. This boom-bust pattern was a fixture of the market through 2008, when the last boom ended. The 4-year period from 2009 to 2012 featured a steady growth period that had never been seen before. This period has thus far continued into 2013 and shows no signs of changing.

What do I mean by steady growth? I measure growth by the total amount of submarine fiber optic cable contracted for during the calendar year. In traditional boom periods, it was not unusual to see more than 80,000 km of new cable contracted for annually. In bust periods, that number was frequently below 30,000 km. In 2003, it was close to zero.

During this steady state period, new contract awards are totaling between 40 to 50,000 km/year. Neither feast nor famine, neither fish nor fowl, pick the cliché of your choice, but these totals don't fit in with the traditional boom-bust pattern.

Why is this happening? The market has changed and the reason for it is the same reason that so many other things have changed — the Internet. The Internet has created insatiable demand for bandwidth, much of which is carried by submarine cables.

The market doesn't fly through the roof, however, because there are equally strong forces holding it down. These are technological advances that allow existing cables to be upgraded, in some cases well beyond their original design. This slows demand for new cables as the older ones are able to take up more and more of the bandwidth demand. Another limiting factor is the high cost to install new cables. This makes cable projects very expensive and scares off some investors. Failure to

gain funding has doomed many large, ambitious projects.

The result of these forces — internet demand, pushing up and upgrades, and financing pushing down — is that the market has settled into a very steady growth period. Some years see a little higher growth, while others are a little lower, but the consistency is remarkable for an industry for which the term "consistency" never seemed to apply.

So how is 2013 going so far? Through August, just over 32,000 km of submarine cable was contracted. This is perfectly consistent with an annual total of between 40,000 and 50,000 km. It could surpass 50,000 km if a very large contract is awarded, but that will just reduce 2014's total a bit. There are only so many large contracts that will get funded.

For suppliers, the steady state market is not entirely good news. At the level of 40 to 50,000 km/year, there is not enough work to go around to make everyone happy. It is still boom and bust for them — a boom when they get a couple of big contracts, a bust when they go to someone else. The bright side, however, is that these busts can be quite brief.

Perhaps the wild card in all this is the offshore oil and gas market. This is a small but growing market featuring the connecting of platforms to submarine fiber optic networks. There are a number of examples of this already in the Gulf of Mexico, North Sea, and elsewhere. In recent months, there seems to be an increase in activity and there are a number of projects in the pipeline — some exclusively for use by the offshore platforms and others combined with commercial telecom projects. As many of these potential networks are of significant size, moving forward on a few will definitely impact the demand for submarine cable and provide an additional market for suppliers.

Overall there has been little change in the submarine telecom cable market as a whole over the past few years and no new boom or bust is in sight. There is always the potential, however, for a burst of new construction that would push demand beyond the levels we have seen since 2008, but it would be unlikely that a boom could sustain itself for long. More likely, we will continue to see the market growing slowly, but steadily.

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# Meeting Industry Needs.....ROV Training

By Paul Gleisner, Delta SubSea, LLC

Energy is a basic need, a requirement of our life for the human race to survive. Without energy we would all perish. Energy is traded as a commodity similar to metals, agricultural goods, livestock, etc. Therefore, there is a large financial emphasis placed on energy as a commodity. Crude oil, natural gas, gasoline, etc. are energy commodities and they all play a significant part in our everyday lives. Individuals are impacted at the gas pumps by high crude prices and alternatively oil producing nations can be affected by low crude prices — but in some way we are all affected. The average person does not think about the process involved to change the crude oil to a useable substance (e.g., diesel fuels, plastics, polymers, etc.), it is one of those things we all take for granted. Behind the scenes there are a multitude of people working to extract crude oil and natural gas hydrocarbons from the geological structures in which they are found.

Due to the nature of where these hydrocarbons are found there is an inherent high risk to extraction of crude oil and natural gas; the Piper Alpha disaster in July 1988 (167 fatalities) and the Deepwater Horizon disaster in April 2010 (11 fatalities) emphasize just how dangerous this work can be. Human fatalities are the highest price to be paid, but in addition to this there are financial, environmental, psychological, and other factors that are affected by such a disaster. The financial penalties awarded as a result of these disasters does not compensate for the loss of life. In both of the above cases, safety and training played a large part in the findings.

To enhance the safety aspects, the industry uses Remotely Operated Vehicles (ROVs) to undertake work at depth that may previously have been carried out by divers, thereby reducing individual risk.

## An ‘aging industry’

Market reports show that if we look at the demographic of the offshore industry there is a substantial number of people over the age of 40 and a number of novices entering the industry; the novices are not necessarily young persons, but may be in their 30s looking for a second career. This statistic is no different in the ROV side of the offshore industry, which is why companies are looking at individuals who have had a successful career in other industries, armed forces or even from an IT background who may have relevant transferable skills that will allow them to become good ROV pilot technicians.

## Can I be an ROV pilot?

What makes a good ROV pilot technician? Are they good mechanics? Can they play computer games? Are they an electrical expert? — No one statement applies. To be a good pilot technician it helps to have all of the aforementioned attributes along with a number of personal skills. The role a pilot technician plays is extremely important, can be very tiring, can be stressful, and can involve a lot of time away from home — but it also can be fun and comes with its own rewards. Not everyone is cut out to be a pilot technician, but if that is the route a person chooses then there are plenty of companies who would be willing to give them a chance of a new career, companies like Delta SubSea LLC and other industry leading companies. Once an individual has decided on their career choice and chosen a company with which to gain employment, the hard work really starts...

## Training, personal development, and competency

The inherent dangers of the offshore industry have been highlighted over the years on a number of different occasions. While there will never be a 100% guarantee of safety, by ensuring personnel have the correct training (Figure 1) and development, companies can go a long way towards making it a safer and more enjoyable environment in which to operate.



**Figure 1.** Training new personnel on installation and operation of a newly designed water blaster.

For the industry in general, and more specifically the ROV operational arena, there are regulations, legislation, and standards that all companies are required to meet to enable them to carry out offshore operations. There are organizations such as the International Marine Contractors Association (IMCA) and the Offshore Petroleum Industry Training Organization (OPITO) that provide guidelines, initiatives, and documentation to assist companies in developing a competent workforce, thereby ensuring a high standard of safety is achieved.

Companies such as Delta SubSea LLC and other industry leading companies will have their own training programs, personal development plans, and competency programs in place to ensure that personnel have the correct skills and ability to operate offshore in varying environments. How each company designs, delivers, and implements training is down to the strategy developed to align the training requirements with the business needs while ensuring that all personnel are equipped with the tools, knowledge, and understanding to fulfill their role offshore.

Before an individual can proceed offshore, there are certain courses that need to be completed and these make up the foundation of what is required for offshore operations. This training is based around safety to, from, and while on a vessel, platform,

spar, etc. and covers safety induction, fire safety, first aid, helicopter emergency escape, and survival at sea. Individuals also require a medical that confirms them as “Fit for Work Offshore,” and this has to follow OGUK/UKOOA guidelines. Depending on where they are going to be operating geographically, there may be other certifications required including medical inoculations. All of the aforementioned training and certification does not take into account any technical, leadership, or other skills that will be required to work offshore; this shows how much emphasis the offshore industry places on safety training to protect personnel.

An ROV pilot technician has to be able to maintain, inspect, and operate ROV systems and associated equipment that involves technical expertise, practical dexterity, and ability. The only way the individuals will gain these traits is with training designed specifically to suit their needs and a program that provides not only technical training but also personal development — all of which should ultimately lead to proof of competency. The individual training programs should not only develop an individual’s technical skills but also their personal skills. It is important that continued professional development offers a holistic training regimen that allows for individuals to develop their interpersonal communication, personnel management, and leadership skills that will allow them to further their career and develop themselves into future supervisors and managers that will fill the void left due to natural attrition.

It is important to explain the difference between training and competency, as this is an area that causes confusion and can lead to inaccurate assumptions. If an individual attends a course such as High Voltage Training (Figure 2), carries out a practical assessment, completes a written/oral examination, and gains a certificate of successful completion, they can be said to be trained in that particular subject area. However, this training does not mean they are competent in that area; this training provides a learning session that enhances their knowledge, skills, and ability to carry out a particular task that will improve current and future performance in the workplace. All companies should train their personnel or the individual will not progress or improve their value to the company and workforce.



**Figure 2. High voltage training course at Delta SubSea LLC.**

Proof of Competency requires that an individual has the knowledge, skills, ability, experience, and training in a particular role. To achieve this, an individual is required to build a portfolio, collect relevant evidence, and undertake a number of assessments to prove competency. Most companies like Delta SubSea LLC and other industry leading companies provide their ROV pilot technicians with a logbook to record their operating hours, offshore assessments, tooling hours, etc., which can all be used as evidence in the competency program. IMCA has drawn up a solid set of competency guidelines for all levels of pilot technician, supervisor, and superintendent that can be readily adapted to suit individual company needs — and these are seen as the “industry best practice.”

### Summary

Technical training is of paramount importance in the ROV world due to the complexity and ongoing development of the subsea ROV systems. As manufacturers such as FMC Technologies Schilling Robotics, Seanic, and others develop more sophisticated operating systems, it is important that ROV operators are kept up to date with the emerging technologies. In order to adapt to new technologies and to prepare ROV pilot technicians for offshore projects, simulators have been developed that allow the pilot technician to undertake certain simulated scenarios prior to operating in the actual arena (Figure 3). This training is an invaluable way of providing new personnel with “stick time” prior to flying an actual vehicle on an operational sortie.



**Figure 3. Delta SubSea’s ROV Simulator for testing and training ROV pilot technicians.**

The transcript of the Deepwater Horizon enquiry intimated that lack of training had an adverse effect on the ability of personnel to react, but it was not so much a lack of training as a lack of current, up-to-date training. Training an individual does not stop at the initial course and they’re eventually gaining competency — training is an ongoing commitment through an individual’s career. Complacency is what causes most incidents and disasters, along with human error.

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# OCEAN INDUSTRY

## Archeological offshore map created of the five D-Day invasion beaches



6 June 2014 represents the 70th anniversary of the WWII D-day invasion. To commemorate this historic event, an expedition took on the monumental task of creating the largest and most accurate continuous archaeological map offshore of the five D-Day invasion beaches.

In just 27 days, 511 sq. km were initially surveyed using the Edgetech 4600 540 khz combined bathymetric and side-scan sonar with over 300 wrecks and obstructions identified. An R2Sonic 2024 700 kHz Ultra High Resolution (UHR) Multibeam Sonar was then used to highlight over 50 sites. During the survey, a SeaBotix ROV and a Deep Sea Power and Light drop camera were used to investigate and identify targets. The R2Sonic Sonar, a second Seabotix ROV, and precise positioning equipment was supplied by Measurronics that consisted of Trimble, Applanix, Marinestar, and CODA equipment. Data collection was done using Hypack's HYSWEEP software.

The 7 week operation culminated with two Nuytco manned submersibles, Aquarius and a Deep Worker, that were used to film and bring veterans down to the shipwrecks they once sailed on — a truly moving experience for everyone involved.

It must be noted as well that all of the survey equipment was donated and much of the survey team volunteered their time for the expedition. Work continues with the enormous 11-TB data set. Collaboration with the United Kingdom Hydrographic Office (UKHO) continues in an effort to update the international wreck database for the area. Dassault Systems are creating 3D visualizations to help reveal the wrecks on the seafloor.

The operation was based aboard two French vessels, the Andre Malraux, operated by the Department of Underwater and Undersea Archeological Research (DRASSM), and the Etoile Marine's Magic Star.

MC4 and LCL Production are producing a 90-min documentary for the international market. PBS/Nova will broadcast an adaptation in North America, both to be aired commemorating the 70th anniversary.

For further information, please contact Andy Sherrell at 321-591-9575 or [aj@sos-oe.com](mailto:aj@sos-oe.com).

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### U.S. IOOS Summit report released

The Interagency Ocean Observation Committee (IOOC) and the U.S. Integrated Ocean Observing System (IOOS®) have released the U.S. IOOS® Summit Report, a culmination of the work leading up to — and a synthesis of the outcomes from — the IOOS® Summit, held from 13-16 November 2012 in Herndon, Virginia, to assess ocean observing progress over the past decade and to develop plans for the next decade of ocean observations. To better protect life and property, sustain a growing economic vitality, safeguard ecosystems, and advance quality of life for all people, according to over 200 regional, national, and global ocean observing experts, now — now more than ever — the U.S. needs a sustained and integrated ocean observing system. This is highlighted in the U.S. IOOS® Summit Report, which shows how improved ocean observing can become an increasingly valuable commodity worldwide with the rising role of maritime commerce and new ocean-related investments, vulnerability to ocean-related natural disasters, the need to provide security for coastal populations, and the challenges of providing food and water for more people. The U.S. IOOS® Summit Report allows the United States to move forward with the vision and insight of these over 200 ocean observing community leaders who convened in November 2012. A significant level of the consensus that transpired at the U.S. IOOS® Summit was around a set of major themes and challenges that will be the ocean observing focus over the next 10 years.

### Saab Seaeye acquires Hydro-Lek

Saab Seaeye, a wholly owned subsidiary of defense and security company Saab, has acquired Hydro-Lek Limited, a UK manipulator and tooling manufacturer for underwater vehicles. The acquisition strengthens Saab Seaeye's product portfolio of remotely operated, autonomous, and hybrid underwater vehicles with the ambition to further grow the company. Formed 20 years ago, Hydro-Lek is an established supplier of manipulators and tooling for the ROV industry and defense and research industries. The acquisition enables Saab Seaeye to leverage Hydro-Lek's unique tooling capability to further increase its presence in the commercial ROV market as a complete underwater ROV supplier. Hydro-Lek will be a fully owned subsidiary of Saab Seaeye Limited, which is part of the underwater systems operation within Saab's business area Dynamics. The acquisition is expected to have no material effect on Saab's consolidated statements in 2013.

## OceanGate Inc. announces revolutionary hull design for subsea manned submersible

OceanGate Inc., a global provider of manned submersible solutions for research and commercial applications, has announced the completion of the initial carbon fiber hull design and feasibility study for its next generation manned submersible — Cyclops™. Under a contract issued to Boeing Research & Technology (BR&T), OceanGate, the Applied Physics Laboratory at the University of Washington (APL-UW), and Boeing have validated the basic hull design for a submersible vehicle able to reach depths of 3,000 m (9,800 ft). With its large 180° borosilicate glass dome, the new vehicle will offer clients a chance to examine the environment, collect samples, and deploy technology in subsea settings in person and in real time. When commercially available in 2016, Cyclops™ will be the only privately owned deep-water (greater than 2,000 m/6,600 ft) manned submersible available for contracts. A follow on 6,000-m version is slated for completion in 4Q 2016.



The Cyclops™ submersible will feature a 7-in. thick, individual-fiber-placed carbon fiber hull using proprietary Boeing manufacturing technology. The ability to accurately place thousands of individual strips of pre-impregnated fiber will overcome many of the hard-to-control variables surrounding traditional filament winding processes and permit the hull to withstand the very high compressive loads at 3,000 m (300 bar/4,300 psi).

The use of carbon fiber will also help make Cyclops™ significantly lighter than other subsea manned submersibles, making deployment operations faster, easier, and cost efficient. While in the water, Cyclops™' five crew members can comfortably observe the ocean depths through a massive glass dome, which offers unobstructed views for at-depth inspections, environmental assessments, discussion, decision making, and observation.

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

## NOAA confirms wreck is lost 19th century U.S. Coast Survey steamer

More than 153 years after it was lost in a violent collision at sea, government and university maritime archaeologists have identified the wreck of the ship Robert J. Walker, a steamer that served in the U.S. Coast Survey, a predecessor agency of NOAA.

The Walker, while now largely forgotten, served a vital role as a survey ship, charting the Gulf Coast — including Mobile Bay and the Florida Keys — in the decade before the Civil War. It also conducted early work plotting the movement of the Gulf Stream along the Atlantic Coast.

Twenty sailors died when the Walker sank in rough seas in the early morning hours of 21 June 1860, 10 mi off Absecon Inlet on the New Jersey coast. The crew had finished its latest surveys in the Gulf of Mexico and was sailing to New York when the Walker was hit by a commercial schooner off New Jersey. The side-wheel steamer, carrying 66 crewmembers, sank within 30 minutes. The sinking was the largest single loss of life in the history of the Coast Survey and its successor agency, NOAA.

## Study to articulate economic benefits of ocean observing

The U.S. Integrated Ocean Observing System (IOOS®) has awarded ERISS Corporation the funds to work with The Maritime Alliance on a study that will articulate the impact of the ocean observation sector in the U.S.

"IOOS® data and information fuel industry with knowledge that determines business operations. Shellfish growers rely on ocean acidification data to know when to take action to protect crops. Shipping companies check ocean currents, wave heights, and bridge clearance data to know when it is safe to deliver goods," said Zdenka Willis, U.S. IOOS® program director. "This study will begin to quantify our economic benefits with facts, figures, company names, and more."

The nationally focused study will inventory companies classified as providers of technology to IOOS® and intermediate users of IOOS® information that sell it to end users. The study will address items such as number of companies in each category (provider and intermediate user), size of these companies, volume of activity, volume of exports, and number of employees. The study will include narratives by

companies on how IOOS® has helped their operations, planning, and growth, as well as perceived potential for future growth and investment.

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

## NOAA, government, and academia deploy underwater robots to improve hurricane science

A fleet of underwater robots is descending into waters off the east coast to collect data that could help improve storm intensity forecasts during future hurricane seasons. Several regions of the NOAA-led U.S. Integrated Ocean Observing System (IOOS®) are partnering to deploy 12 to 16 autonomous underwater robotic vehicles, also known as gliders, from Nova Scotia to Georgia.

The gliders will be available through the peak fall Atlantic storm season to collect data on ocean conditions, which will help improve scientists' understanding of hurricanes and pave the way for future improvements in hurricane intensity forecasts.

Scientists will deploy the first gliders in the fleet in early September and continue deploying from different locations throughout the next 2 to 3 weeks. Each glider will be deployed for 3 to 8 weeks, collecting data into October.

## UNH launches marine science and ocean engineering school

The University of New Hampshire announces the launch of its new School of Marine Science and Ocean Engineering, an integration of the university's various marine-related research, teaching, and outreach activities. The new school, the first interdisciplinary school at UNH, will provide graduate courses, certificates, and degrees and will draw faculty from every college within the university.

The School of Marine Studies and Ocean Engineering operates two research vessels, the R/V Gulf Challenger and the R/V Coastal Surveyor, as well as numerous smaller boats. It maintains three major facilities — the Judd Gregg Marine Research Complex in New Castle, the Jackson Estuarine Laboratory on Great Bay in Durham, and the Chase Ocean Engineering Laboratory on the UNH campus in Durham — and supports the Shoals Marine Laboratory on Appledore Island.

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



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# The importance of choosing the right hull coating system and maintenance regimen for vessels in the offshore oil and gas industry

By: Steven Ferry,  
Freelance Writer, for Ecospeed



*With an STC coating in place, regular in-water cleaning can be done in-situ with no ill effect on coating or the environment.*

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## Clean hulls

Keeping a ship's hull free of even a small degree of accumulated fouling (slime) and ensuring that the coating is in good, smooth condition can save about 20% of fuel consumption; a heavily fouled hull can require as much as 80% more power to propel the vessel at the same speed. In other words, it is very good business, both economically and environmentally, to ensure that hulls of both oil-exploration service vessels and tankers are kept as smooth as possible.

Keeping the hulls of exploratory vessels and rigs clean makes business sense as well, but for a different reason. Since these are stationary vessels, kept in place by thrusters or tethers, the fouling problem is not one of increased hull friction, but one of increased hull weight as a result of heavy biofouling. This fouling not only reduces the deck loads commensurately, but, over time, will also have a damaging effect on the hull itself.

Stationary vessels are open invitations to both micro and macro fouling, especially considering that conventional biocidal antifoulants require flowing water to work. These factors allow stationary vessels to accumulate fouling to almost hard-to-believe levels in a relatively short time.

In fact, a large vessel can accumulate as much as 5,000 tons of fouling in a couple of years, which will, if not addressed, not only have a detrimental effect on the hull itself, but will also reduce the vessel's effective deck loads.

It is also well worth noting that in order for a vessel to be approved for underwater inspection in lieu of drydock (UWILD) by the classification societies, the hull must be sufficiently clean to permit inspection by divers under the supervision of a classification society inspector.

## A harmful solution

In the latter part of the 20th century, the marine industry solved this age-old problem with new tin-based antifouling paints, such as tributyltin (TBT). However, it was soon found to be extremely toxic and harmful to the marine environment. As a result, it was not long before tin was banned, and it finally ceased to be used in antifouling paints in 2008.

## Post-TBT

The most frequent replacement for TBT-based products has been those anti-foulant paints that leach copper and other biocides into the water to kill the marine life fouling the hull. While these anti-foulants work for a while, they do not last long and require frequent reapplication in drydock. Such paints cannot be cleaned in the water without causing heavy pollution and without reducing their useful life. Also, since biocidal antifouling coatings need to move through water to work, these coatings are largely ineffective on stationary vessels such as drillships.

Biocidal antifouling paint problems have been compounded recently by research findings that show existing heavy-metal-based anti-foulings have the potential of worsening rather than preventing invasions of non-indigenous (alien) aquatic species, as these become tolerant of the copper and other biocides in the coatings.

Therefore, a good, long-term solution for cleaning hulls rules out paints that have a leaching function or other such active ingredients.

## A working solution

The ideal coating would be a hard hull-coating, free of

active ingredients. This coating would be as inert and long-lasting as possible and provide excellent hull protection. It would also be easy to keep clean of fouling and improve in smoothness and performance over time.

A coating known as Surface Treated Composite (STC) answers all aspects of the problem when properly applied and maintained. It combines a hard, durable, non-toxic hull coating with advanced in-water hull cleaning technology. It is wholly environmentally safe, and it can save shipowners and operators millions of dollars annually in operational costs. STC coatings also ease the much dreaded drydock curse by permitting vessels to be cleaned and maintained insitu by divers using special equipment.

### The drydock curse

The highest single expenditure for any shipowner in maintaining a ship, after delivery of the vessel from the builder, is the cost of drydocking. Docking is expensive, difficult to schedule, and disrupts the vessel's operations for a protracted period of time, especially when sailing from the Arctic or Antarctic for a suitable port.

When it comes to stationary drill vessels, drydocking grows even more complex and time-consuming. Since many such vessels are equipped with non-retractable sub-thrusters that must be removed before entering drydock, such a project can involve as many as 16 thrusters to be removed, transferred to barges, and transported ashore, while the rig, using its remaining tailshaft propulsion, makes its own way to drydock.

Once drydock is complete, this scenario reverses and all the thrusters have to be restored and recommissioned. From start to finish, drydock service for a drilling vessel can take as long as 60 days: a substantial loss of day rates.

### Drydock frequency

A vessel should not need to see drydock more frequently than is required to keep it in class. The primary reason more frequent drydockings are necessary is unchecked fouling build-up, something a properly applied and maintained STC coating can circumvent.

Designed to last the life of the hull and cleanable offshore, an STC-coated vessel would only have to drydock in accordance with class requirement, never for coating repair, replacement, or cleaning.

As oil exploration and production expands to the Polar regions, the STC coating anticipates and solves another problem: the Polar environment.

### The Polar Code

Environmentally, there are a number of aspects that make Polar regions particularly sensitive to pollution and environmental damage. The Polar regions are more pristine than more-populated and traveled waters. The emission of toxic heavy metals and biocides, the atmospheric pollution resulting from the burning of extra fuel to overcome hull friction, and invading alien species can easily cause greater havoc than they would in less pristine areas.

Recognizing this, the International Maritime Organization (IMO) is debating a strong, uniform code to be enforced throughout the Polar regions to bring about safe-and-sound maritime operations for all.

**The points such a Polar Code will most likely include are:**

- A ban on the use of toxic antifouling systems that leach biocides or emit other highly toxic substances into the water;
- Measures to reduce atmospheric pollution from greenhouse gases (GHG), black carbon, and other emissions; and
- A cleaning regime ensuring that ships sailing in Polar waters are cleaned of biofouling before voyaging into these areas in order to prevent the invasion of non-indigenous species.

Supporting this is the current IMO Report (DE 56/25) to the Maritime Safety Committee, dated 28 February 2012, which, among other things, references the following recommendation:

10.17.4 — The Polar Code should include a provision to ensure that hard and inert AFS coatings, suitable for ice operations and certified to be resistant to ice, should be used when there is any risk of hull contact with ice, since these coatings are generally non-toxic, more suitable for such operations, more economically viable, and environmentally less impactful.

### Icy waters

As any icebreaker operator will confirm, ice is not good for a hull's coating. In fact, few if any elements will destroy even the sturdiest of conventional coatings more rapidly than ice-laden waters.

The optimum coating solutions must withstand this element as well, which is exactly what the glass-reinforced surface treated composite (STC) coating delivers. In fact, an STC coating meets all of the ideals above, including satisfying environmental requirements: European authorities have certified STC products to be completely non-toxic and harmless to the environment.

The STC system combines a glass-reinforced coating and regular in-water cleaning to keep ship hulls operating at maximum performance and other underwater surfaces free of fouling. Such a coating is applied once, either on a new-build or in drydock when a ship's hull needs repainting, and lasts the lifetime of the vessel with only minor touch-ups (typically less than 1% of the whole surface per drydock), and is guaranteed for 10 years.

Initial application of an STC coating is comparable in cost to other high-quality underwater hull paint, but it is easier than others to apply in that it requires only two coats on bare metal with a 3-hour drying time between coats and extended maximum overspray time. It is simultaneously conditioned and cleaned underwater, resulting in a progressively smoother surface over time.

Through regular inspection of the ship hull and in-water cleaning of slime build-up, the ship is then kept at optimum performance. In fact, the coating improves with regular underwater cleaning, skin friction reducing with each cleaning. In-water cleaning of the largest vessels can be accomplished in 12 hrs and can usually be carried out without adversely interrupting a ship's normal operations.

With such an STC coating in place, regular in-water cleaning through the life of the vessel or rig will then eliminate the need for repainting and its requisite and costly spell in drydock, since this can be done insitu with no ill effect on coating or the environment.

For more information, visit:

[www.hydrrex.be/ecospeed\\_hull\\_coating\\_system](http://www.hydrrex.be/ecospeed_hull_coating_system).

## Russia will need 512 new offshore vessels

According to a report from Artic-Info citing Russian president Vladimir Putin, Russia will require 512 new vessels with a cost of 6.5 trillion rubles by 2030 for work in development of offshore fields in the Arctic. According to the resident, the largest Russian companies Rosneft, Gazprom, and Sovcomflot are forming a solid long-term portfolio. Putin said that Russian shipbuilding is stable with foreign manufacturers in ice-class and sea-river class ships and competitive in the design and manufacturing of drilling platforms, but needed to expand products with new types of vessels such as container ships and LNG carriers.

## U.S. Department of Transportation announces \$10M TIGER 2013 grant for Duluth Intermodal Project

The U.S. Department of Transportation (DOT) announced a \$10 million TIGER grant for the Duluth Intermodal project, one of 52 transportation projects in 37 states that will receive a total of approximately \$474 million from DOT's Transportation Investment Generating Economic Recovery (TIGER) 2013 discretionary grant program. The TIGER funds will be used to rehabilitate, rebuild, and expand a 28-acre general cargo dock at the Port of Duluth-Superior, connecting water, road, and rail infrastructure to increase freight capacity and efficiency. The Duluth Intermodal project will improve freight mobility by refurbishing a dock that is not structurally sound in order to support heavy cargo moved through the Great Lakes. The funding provided demonstrates the Obama Administration's commitment to increasing and improving the movement of freight, reducing costs, and increasing economic competitiveness in the Great Lakes region. The highly competitive TIGER program offers one of the only federal funding possibilities for large, multi-modal projects that often are not suitable for other federal funding sources. These federal funds leverage money from private sector partners, states, local governments, metropolitan planning organizations, and transit agencies. TIGER has enjoyed overwhelming demand since its creation, a trend continued by TIGER 2013. Applications for this most recent round of grants totaled more than \$9 billion, far exceeding the \$474 million set aside for the program. In all, the Department received 585 applications from all 50 states, the District of Columbia, Puerto Rico, and Guam.

## Huntington Ingalls Industries announces closure of the Gulfport Composite Center of Excellence

Huntington Ingalls Industries (HII) announced the closure of its Gulfport Composite Center of Excellence (the "Gulfport Facility") in Gulfport, Mississippi. "This is a difficult but necessary decision," said HII president and CEO Mike Petters. "Due to the reduction in the Zumwalt-class (DDG 1000) ship construction and the recent U.S. Navy decision to use steel products on Lyndon B. Johnson (DDG 1002), there is both limited and declining Navy use for composite products from the Gulfport Facility." Current work being performed at Gulfport is expected to be completed by the end of the first quarter of 2014, with closure expected by May 2014. "Ingalls Shipbuilding continues to perform well in building the composite products for the Zumwalt-class (DDG 1000) program and has demonstrated considerable learning curve improvements," said Irwin F. Edenzon, HII corporate vice president and president of Ingalls Shipbuilding. "We are working closely with our Navy customer to efficiently complete our composite work on Michael Monsoor (DDG 1001) and the mast of Portland (LPD 27) by the end of the first quarter 2014." In connection with this closure, HII expects to impact 427 employees either through headcount reductions or transfers and to incur total costs of approximately \$59 million. All but approximately \$7 million of the total costs are non-cash, and approximately \$14 million of the total costs will be recorded in the third quarter of 2013, with the remainder expected to be recognized over the following six quarters. HII estimates that these costs will reduce operating income in the third quarter of 2013 by \$15 to \$20 million with no material impact in subsequent periods. Additional details are contained in HII's Current Report on Form 8-K filed with the Securities and Exchange Commission on 4 September 2013.

## New Damen PSV for World Wide Supply



Damen Shipyards Galati has handed over the second platform supply vessel (PSV) in a series order heralding a new era in offshore construction for Damen Shipyards Group. World Peridot, built to Damen's innovative PSV 3300 design, has been delivered to World Wide Supply (WWS) as part of the Norwegian owner's latest commitment to cutting edge, modern tonnage. Delivery comes just 7 weeks after the handover of the first of class PSV 3300, World Diamond, and is part of a rolling six-ship handover schedule from Damen for WWS.

Steinar Kulen, representing owner WWS, confirmed that the worldwide-capable PSV had been delivered on schedule and would join sistership World Diamond on the North Sea spot charter market. "The collaboration with Damen in developing and building this series of PSV has been very good, resulting in a high-quality and competitive vessel," said Mr Kulen.

The remaining ships in the series have already secured long-term charters offshore Brazil.

The PSV 3300 features a radical design rethink, with a wave piercing bow, slender hull lines and diesel electric propulsion with azimuth stern drives combining to optimize seakeeping and fuel efficiency. The 80.1 m length, 1,500-tonne deck capacity vessel features DP2 capability, and has been designed to Damen's 'E3' principles — environmental friendly, efficient in operation, and economically viable.

It is one of five PSV types available from Damen ranging from 1,500 to 6,500 dwt. The group's expanding offshore portfolio includes completely new designs for Fast Crew Suppliers, Anchor Handling Tug Suppliers, a Heavy Lift Vessel, a 'Ro-Ro Deep Dredge' vessel, and the powerful new Damen Offshore Carrier 7500.

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

## Subsea vessel operations market poised for increase in demand

The subsea vessel operations market is poised to see an increase in demand in the near term with day rates for some vessels set to increase. Between 2013 and 2017, Douglas-Westwood (DW) forecast \$106 billion of expenditure on subsea vessel operations — an increase of 54% over the preceding 5-year period. Global demand is expected to increase 23% compared to the previous 5 years. The rate of increase in expenditure is expected to be higher than the growth in

vessel days, due to the move towards higher specification vessels to cater for deeper and more complicated development programmes.

While IRM-related days will continue to account for the majority of the market, field development related activity will see an even faster growth rate at a CAGR of 10.7%. This rapid pace will be primarily driven by increased development of deepwater reserves, with Brazilian and African field development work to set account for approximately half of the projected global demand.

The World Subsea Vessel Operations Market Forecast 2013-2017 analyzes the main factors driving demand for ROHSV, DSV, Flexlay, LWIV, and Pipelay Vessels.

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

#### **Woods Hole Group awarded contract to install PORTS® System in Jacksonville**

Woods Hole Group will be working with the Jacksonville Marine Transportation Exchange (JMTX) for the installation, operations, and maintenance of a large-scale Physical

Oceanographic Real Time System (PORTS®) in Jacksonville, Florida. NOAA PORTS® is a network of sensors in ports and harbor providing access to information that improves maritime commerce and safety.

Upon completion, JXPORTS networks will be the second largest PORTS installation in the country. It will provide invaluable information to the users of St. John's River, including the shipping industry, tug services, military personnel, cruise ships, commercial and recreational fisherman, and academic institutions. The system will provide access to real-time quality controlled data (every 6 minutes) that will facilitate safe navigation and will also promote greater understanding of the waterway system and its environment for research and engineering purposes. With knowledge of water depths, current speeds and direction, the distance from the water surface to overhead bridge superstructure, and other information, ship pilots can navigate safely and more efficiently. The system is intended to reduce the risk of accident and improve maritime commerce.

Woods Hole Group is a leading port

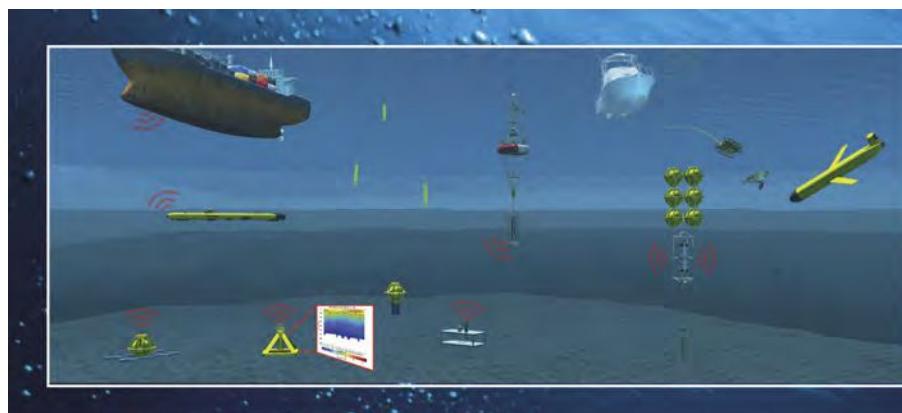
systems management expert, currently maintaining more than 80 PORTS® stations along the east coast and Gulf of Mexico. The JXPORTS project includes installation, commissioning and management of the system for 3 years. Woods Hole Group, which has offices worldwide, has set up an office in Jacksonville staffed with personnel proficient with the operation and troubleshooting of the complex sensors that will be incorporated in the JXPORTS network.

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

#### **Unique System FZE delivers Marorka's ship performance monitoring solutions**

Unique System FZE, a Unique Maritime Group company, has been contracted by ADNATCO-NGSCO to deliver ship performance monitoring solutions that will help to optimize vessel performance and subsequently aim to reduce fuel consumption and carbon emissions.

The project's objective is to implement energy management systems for ADNATCO-NGSCO's entire fleet. The first stage of the project includes the installation of ship performance moni-



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toring systems on board ADNATCO's six vessels: two LNG vessels, two bulk carriers, and two oil tankers. The principal objective will be to improve the vessel's performance and to eliminate environmental concerns such as excessive fuel consumption and carbon emission in the long term. Marorka's Onboard Energy Management System and Marorka Online, a fleet reporting tool, have been selected for this purpose. The system gathers data from the required instrumentation points and presents the overall efficiency of the vessel in a user-friendly interface. The main advantage of this system is its ability to provide real-time information from each vessel in fleet, thereby facilitating informed decisions related to energy efficiency.

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

## Ship's bridge and engine room simulator upgrades for new Dutch Maritime Training Facility

Kongsberg Maritime has won the competitive tender to conduct an upgrade and extension of the simulation facility at Noorderpoort Eemsdollard — Energy & Maritime in Delfzil, The Netherlands. The contract includes

upgrade of the Kongsberg Maritime simulators installed at Noorderpoort Eemsdollard's Abel Tasman College in 2006, which have now been moved to a brand new training facility in Delfzil.

Starting autumn 2013, Kongsberg Maritime will deliver an extensive upgrade of the school's ship's bridge and engine room training capabilities, using the latest versions of its market leading Polaris and Neptune simulators. In addition to completely updating the simulators with the latest models, visuals, and vessel functionality, the upgrade will significantly enhance the existing instructor stations, ensuring full control of each and every aspect of the simulation exercises and pedagogical process.

"This extensive upgrade to our facilities will help us to enhance the quality of our simulation training through the use of standardized simulators and improved functionality for our instructors," comments Wim van de Pol, member of the Board, Noorderpoort Eemsdollard — Energy & Maritime. "The new suite of cutting-edge simulators will also support our ability to attract more students for our already highly regarded courses, so the upgrade

will play an important part in our future growth and success."

The upgrade to Noorderpoort Eemsdollard's Polaris Ship's Bridge Simulator features an extension to the part task Ship's Bridge Simulator to include a new instructor station, full mission bridge (DNV Class A), including 270° horizontal field of view, six full mission bridges (DNV Class B) with 60° to 120° field of view, and seven GMDSS stations integrated with each bridge.

The Neptune Engine Room Simulator scope of work also covers an extension to the instructor station, with installation of the latest Neptune Instructor System, in addition to 15 new student stations, including latest versions of MAN 5L90MC VLCC and MaK 8M32C Trawler models. Kongsberg Maritime will also deliver a new Neptune Full Mission ERS Class B simulator with engine control room console, main switchboard, and engine room equipment in addition to a Neptune Power Plant Simulator including a Neptune Instructor Station and 15 student stations.

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

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## NOAA awards \$967,000 to 11 marine debris removal projects

NOAA's Marine Debris Program announced that it provided \$967,000 through NOAA's Restoration Center to support locally driven, community-based marine debris prevention and removal projects. Eleven groups across the country received funding to remove derelict fishing nets, litter, lumber, tires, and other harmful marine debris from shorelines and coastal waters. "Marine debris plagues coastlines all over the country, and these communities have the expertise and motivation to address it," said Nancy Wallace, Marine Debris Program director. "We are proud to support them as they work to mitigate impacts and address the damage marine debris has caused." The projects typically last for 24 months and create long-term ecological improvements for coastal habitat, waterways, and wildlife, including migratory fish. The projects were chosen from a pool of 46 applications submitted by non-government organizations, tribes, academia, and local government agencies. The combined request from all applications totaled nearly \$5 million, demonstrating the widespread need to address marine debris across the country. With this program, NOAA has funded 76 marine debris removal projects and removed more than 3,800 metric tons of marine debris from our oceans and Great Lakes since 2006.

## Center to study impact of atmospheric particles from the sea on climate and the environment

Chancellor Pradeep K. Khosla announced a 5-year, \$20 million award from the National Science Foundation to support an innovative program of research and education on how interactions between air and sea alter the chemistry of the atmosphere to influence climate. The grant will support the Center for Aerosol Impacts on Climate and the Environment (CAICE), led by the University of California, San Diego, which will leverage the expertise of top scientists from nine universities to understand how particles released from the ocean influence the environment — from local water supplies to global climate. The center focuses on one of the largest uncertainties in understanding and modeling climate: the role played by tiny particles called aerosols. The chemical complexity of these microscopic bits of salt, carbonaceous compounds, biological molecules, and even microorganisms complicates efforts to understand how they influence atmospheric chemistry and physical properties such as warming.

## Fukushima radioactive plume to reach U.S. in 3 years

The radioactive ocean plume from the 2011 Fukushima nuclear plant disaster will reach the shores of the U.S. within three years from the date of the incident but is likely to be harmless according to new paper in the journal Deep-Sea Research 1. While atmospheric radiation was detected on the U.S. west coast within days of the incident, the radioactive particles in the ocean plume take considerably longer to travel the same distance. In the paper, researchers from the Centre of Excellence for Climate System Science and others used a range of ocean simulations to track the path of the radiation from the Fukushima incident. The models identified where it would likely travel through the world's oceans for the next 10 years. "Observers on the west coast of the United States will be able to see a measurable increase in radioactive material 3 years after the event," said one of the paper's authors, Dr Erik van Sebille. "However, people on those coastlines should not be concerned as the concentration of radioactive material quickly drops below World Health Organisation safety levels as soon as it leaves Japanese waters." Two energetic currents off the Japanese coast — the Kuroshio Current and the Kurushio Extension — are primarily responsible for accelerating the dilution of the radioactive material, taking it well below WHO safety levels within 4 months. Eddies and giant whirlpools — some tens of kilometres wide — and other currents in the open ocean continue this dilution process and direct the radioactive particles to different areas along the U.S. west coast. Interestingly, the great majority of the radioactive material will stay in the North Pacific, with very little crossing south of the Equator in the first decade. Eventually over a number of decades, a measurable but otherwise harmless signature of the radiation will spread into other ocean basins, particularly the Indian and South Pacific oceans.

## Newly discovered ocean plume could be major source of iron

Scientists have discovered a vast plume of iron and other micronutrients more than 1,000 km long billowing from hydrothermal vents in the South Atlantic Ocean. The finding, published online in the journal *Nature Geoscience*, calls past estimates of iron abundances into question, and may challenge researchers' assumptions about iron sources in the world's seas.

"This study and other studies like it are going to force the scientific community to reevaluate how much iron is really being contributed by hydrothermal vents and to increase those estimates, and that has implications for not only iron geochemistry but a number of other disciplines as well," says Mak Saito, a WHOI associate scientist and lead author of the study.

Saito and his team of collaborators — which includes WHOI researchers and a colleague affiliated with the University of Liverpool (U.K.) — didn't set out to find iron plumes in the South Atlantic. They set sail aboard the R/V Knorr in 2007 as part of the Cobalt, Iron and Micro-organisms from the Upwelling zone to the Gyre (or CoFeMUG, pronounced "coffee mug") expedition, which intended to map chemical composition and microbial life along the ship's route between Brazil and Namibia. As the scientists traveled the route, they sampled the seawater at frequent intervals and multiple depths along the way, and then stored the samples for in-depth analysis back on land.

"We need to understand where iron is in the ocean and where it's coming from to understand the role of iron in the marine carbon cycle with any confidence," Saito says.

Saito and his colleagues hope future studies will reveal the exact shape and extent of the plume, and just how much of its iron and other micronutrients persist and rise to the surface. Answering these lingering questions will help researchers truly understand how hydrothermal vents affect the ocean as a whole, Saito says.

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

## Partrac announce completion of marine noise monitoring survey

Partrac Ltd were contracted recently by TSL Contractors to provide marine monitoring services that included acoustic (marine noise) data acquisition prior to and during piling works for the construction of Fishnish Pier, Sound of Mull, Scotland. The sensitive receiver in this project was a salmon farm some 600 m away from the construction site. For the work, Partrac developed a bespoke, stable marine monitoring platform modified to reduce ambient noise that included a

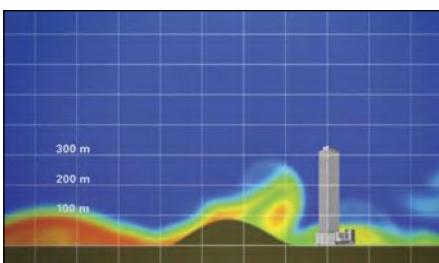
high-end, ultra low noise and wide dynamic range marine hydrophone. The instrument, small enough to be carried around in your hand, is especially easy to use, setup, download, and calibrate, and is particularly suited to longer term monitoring applications. Although not used in this project, the instrument is also capable of being configured to deliver data in real time, 24/7. The instrument delivers both WAV and spectral output, and software was specifically written to analyze the vast amount of data generated and specifically to inspect the data more closely in the peak auditory frequency band.

Regulatory specifications within the License Condition dictated that sound levels should be no more than 79 dB above species (salmon) hearing threshold at or close to the peak auditory frequency (~180 Hz). The results showed unequivocally that piling operations at any point during the monitoring period never created noise levels in excess of the threshold, and thus the works were judged unlikely to cause injuries (e.g., hearing impairment) to the salmon.

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

### Breaking deep-sea waves reveal mechanism for global ocean mixing

Waves breaking over sandy beaches are captured in countless tourist photos. But enormous waves breaking deep in the ocean are seldom seen, although they play a crucial role in long-term climate cycles.



A University of Washington study for the first time recorded such a wave breaking in a key bottleneck for circulation in the world's largest ocean. The study was published online in the journal *Geophysical Research Letters*.

The deep ocean is thought of as dark, cold, and still. While this is mostly true, huge waves form between layers of water of different density. These skyscraper-tall waves transport heat, ener-

gy, carbon and nutrients around the globe. Where and how they break is important for the planet's climate.

"Climate models are really sensitive not only to how much turbulence there is in the deep ocean, but to where it is," said lead author Matthew Alford, an oceanographer in the UW Applied Physics Laboratory. He led the expedition to the Samoan Passage, a narrow channel in the South Pacific Ocean that funnels water flowing from Antarctica.

"The primary importance of understanding deep-ocean turbulence is to get the climate models right on long timescales," Alford said.

Dense water in Antarctica sinks to the deep Pacific, where it eventually surges through a 25-mi gap in the submarine landscape northeast of Samoa.

"Basically, the entire South Pacific flow is blocked by this huge submarine ridge," Alford said. "The amount of water that's trying to get northward through this gap is just tremendous — 6 million cubic meters of water per second, or about 35 Amazon Rivers."

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

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## Scientists confirm existence of largest single volcano on earth

A University of Houston (UH) professor led a team of scientists to uncover the largest single volcano yet documented on Earth. Covering an area roughly equivalent to the British Isles or the state of New Mexico, this volcano, dubbed the Tamu Massif, is nearly as big as the giant volcanoes of Mars, placing it among the largest in the Solar System.

William Sager, a professor in the Department of Earth and Atmospheric Sciences at UH, first began studying the volcano about 20 years ago at Texas A&M's College of Geosciences. Sager and his team's findings appear in *Nature Geoscience*, the monthly multidisciplinary journal reflecting disciplines within the geosciences.

Located about 1,000 mi east of Japan, Tamu Massif is the largest feature of Shatsky Rise, an underwater mountain range formed 130 to 145 million years ago by the eruption of several underwater volcanoes. Until now, it was unclear whether Tamu Massif was a single volcano, or a composite of many eruption points. By integrating several sources of evidence, including core samples and data collected on board the JOIDES Resolution research ship, the authors have confirmed that the mass of basalt that constitutes Tamu Massif did indeed erupt from a single source near the center.

Tamu Massif stands out among underwater volcanoes not just for its size, but also its shape. It is low and broad, meaning that the erupted lava flows must have traveled long distances compared to most other volcanoes on Earth. The seafloor is dotted with thousands of underwater volcanoes, or seamounts, most of which are small and steep compared to the low, broad expanse of Tamu Massif.

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

## New ocean forecast could help predict fish habitat 6 months out

"Being able to predict future phytoplankton blooms, ocean temperatures, and low-oxygen events could help fisheries managers," said Samantha Siedlecki, a research scientist at the UW-based Joint Institute for the Study of the Atmosphere and Ocean.

"This is an experiment to produce the first seasonal prediction system for the ocean ecosystem. We are excited about the initial results, but there is more to learn and explore about this tool — not only in terms of the science, but also in terms of its application," she said.

In January, when the prototype was launched, it predicted unusually low oxygen this summer off the Olympic coast. People scoffed. But when an unusual low-oxygen patch developed off the Washington coast in July, some skeptics began to take the tool more seriously. The new tool predicts that low-oxygen trend will continue, and worsen, in coming months.

"We're taking the global climate model simulations and applying them to our coastal waters," said Nick Bond, a UW research meteorologist. "What's cutting edge is how the tool connects the ocean chemistry and biology."

The NOAA funded the project to create the tool and publish the two initial forecasts.

"Simply knowing if things are likely to get better, or worse, or stay the same, would be really useful," said collaborator Phil Levin, a biologist at NOAA's Northwest Fisheries Science Center. Early warning of negative trends, for example, could help to set quotas.

"Once you overharvest, a lot of regulations kick in," Levin said. "By avoiding overfishing you don't get penalized, you keep the stock healthier, and you're able to maintain fishing at a sustainable level."

The tool is named the JISAO Seasonal Coastal Ocean Prediction of the Ecosystem, which the scientists dubbed J-SCOPE. It's still in its testing stage. It remains to be seen whether the low-oxygen prediction was just beginner's luck or is proof the tool can predict where strong phytoplankton blooms will end up causing low-oxygen conditions, Siedlecki said.

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

## Mercury content in fish will rise, study reports

University of Michigan (U-M) researchers and their University of Hawaii colleagues say they've solved the longstanding mystery of how mercury gets into open-ocean fish, and their findings suggest that levels of the toxin in Pacific Ocean fish will likely rise in coming decades.

Using isotopic measurement techniques developed at U-M, the researchers determined that up to 80% of the toxic form of mercury, called methylmercury, found in the tissues of deep-feeding North Pacific Ocean fish is produced deep in the ocean, most likely by bacteria clinging to sinking bits of organic matter.

The study also confirmed that the mercury found in Pacific fish near Hawaii likely traveled through the air for thou-

sands of miles before being deposited on the ocean surface in rainfall, said U-M environmental scientist Joel Blum. The North Pacific fisheries are downwind from rapidly industrializing nations such as China and India that are increasingly reliant on coal-burning power plants, a major source of mercury pollution.

"This study reinforces the links between mercury emitted from Asian countries and the fish that we catch off Hawaii and consume in this country," said Blum, the lead author of a paper published in *Nature Geoscience*.

"The implications are that if we're going to effectively reduce the mercury concentrations in open-ocean fish, we're going to have to reduce global emissions of mercury, including emissions from places like China and India," Blum said. "Cleaning up our own shorelines is not going to be enough. This is a global atmospheric problem."

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

## Gas flaring and household stoves speed Arctic thaw

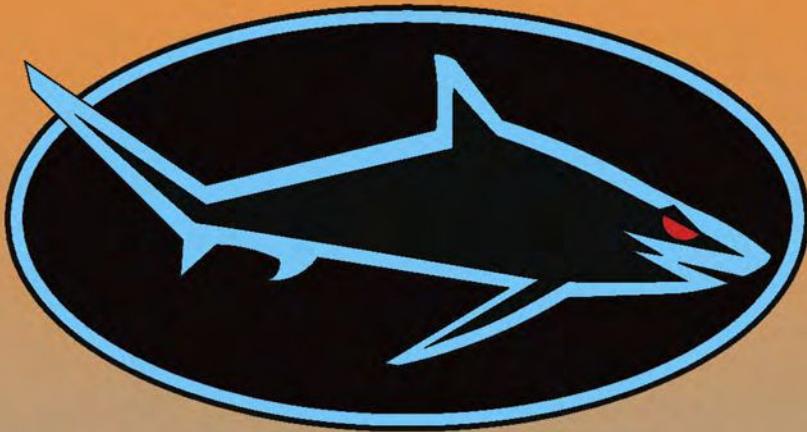
Gas flaring by the oil industry and smoke from residential burning contributes more black carbon pollution to Arctic than previously thought — potentially speeding the melting of Arctic sea ice and contributing to the fast rate of warming in the region.

The new study, published in the journal *Atmospheric Chemistry and Physics* by researchers at IIASA and in Norway, Finland, and Russia, finds that gas flaring from oil extraction in the Arctic accounts for 42% of the black carbon concentrations in the Arctic, with even higher levels during certain times of the year. In the month of March for example, the study showed that flaring accounts for more than half of black carbon concentrations near the surface. Globally, in contrast, gas flaring accounts for only 3% of black carbon emissions.

To conduct the study, researchers used particle dispersion model FLEXPART driven by emissions estimated with the IIASA's GAINS model, combined with measurements of black carbon in the Arctic, made during a research cruise in the Arctic Ocean and research stations located at six sites in Alaska, Canada, Finland, Norway, and Greenland.

The warming effect of black carbon on ice and snow has been suggested as one factor contributing to the relatively fast warming of the Arctic compared to the rest of the world.

For more information, visit [www.iiasa.ac.at](http://www.iiasa.ac.at).



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## BOEM announces potential wind energy research lease off Virginia

The Bureau of Ocean Energy Management (BOEM) has received a second unsolicited request from Virginia's Department of Mines, Minerals and Energy (DMME) for a research lease offshore Virginia. DMME proposes to design, develop, and demonstrate a grid-connected, 12-MW offshore wind test facility on the Outer Continental Shelf (OCS) off the coast of Virginia. BOEM published a "Public Notice of an Unsolicited Request for an OCS Research Lease, Request for Competitive Interest, and Request for Public Comment" in the Federal Register to obtain public input on this research proposal, its potential environmental consequences, and the use of the area in which the proposed project would be located. BOEM is also asking whether there are other entities interested in obtaining a renewable energy lease of the same scale within the same area identified by DMME that would support potential wind energy development. On 12 December 2012, the U.S. Department of Energy (DOE) announced funding awards for seven proposed Offshore Wind Demonstration Projects off the nation's coasts. One of the awards was given to Dominion Resources, Inc., which partnered with DMME and others to establish the Virginia Offshore Wind Technology Advancement Project. This project proposes to build the wind test facility on the OCS to the west of the BOEM-designated Wind Energy Area offshore Virginia. BOEM continues to work collaboratively with DOE in reviewing these projects. Per DOE requirements, the information gained and methodologies established from this project will be shared with stakeholders (such as future developers, non-government organizations, and others) interested in wind energy development offshore Virginia at no cost to them. Before the Virginia Offshore Wind Technology Advancement Project can install any facilities on the OCS, it must obtain BOEM approval. Therefore, DMME submitted an unsolicited nomination to BOEM on 13 February 2013, for a proposal to install and operate two 6-MW turbines, ancillary metocean facilities, a meteorological tower or buoy and associated cabling to shore. DMME has secured U.S. Army Corps of Engineers permits and met U.S. Coast Guard requirements for preliminary work and has initiated wildlife, archaeology, geophysical and geological data collection surveys in the area to inform future agency decisions.

## Statkraft to take over Sheringham Shoal

Statkraft will take over responsibility as Operation and Maintenance (O&M) operator of Sheringham Shoal Offshore Wind Farm in January 2014. The current operator, Scira Offshore Energy Ltd, will remain as the legal entity while employees will be transferred to Statkraft. The joint venture company is owned 50/50 by Statkraft and Statoil. Both owners of Sheringham Shoal Offshore Wind Farm, Norwegian energy companies Statoil and Statkraft have the ambition to be industrial players in the offshore wind business. In order to realize this ambition Statoil and Statkraft have agreed to divide responsibility for operation of the two jointly owned North Norfolk offshore wind projects, Sheringham Shoal and Dudgeon Offshore Wind Farm. While Statkraft will be responsible for operating Sheringham Shoal, Statoil will take on the same responsibility at Dudgeon Offshore Wind Farm which is under development. This will facilitate an efficient transfer of experience from the two projects to other Statkraft and Statoil operated projects. The Norwegian renewable energy company Statkraft will take over operation of the 317-MW wind farm on 5 January 2014 from Scira Offshore Energy Ltd. Scira has been responsible for operation of the new wind farm since earlier this year, and the owners want to transfer the operatorship ahead of next summer's expiry of the warranty period. However, Scira Offshore Energy Ltd will remain as the legal entity. Sheringham Shoal Power Plant Manager Jason Halsey, formerly head of operations in the UK for DONG Energy, and other employees working for Scira at Sheringham Shoal will be transferred to Statkraft.

## GL Garrad Hassan supports wave testing program



GL Garrad Hassan has begun a project for the Hawai'i Natural Energy Institute at the University of Hawai'i (HNEI-UH) supporting the institute's Hawai'i National Marine Renewable Energy Center (HINMREC) wave energy testing program. HINMREC, under funding from the Wind and Water Power Program of the U.S. Department of Energy, is working in collaboration with the U.S. Navy to develop a Wave Energy Test Site (WETS) at the Marine Corps Base Hawaii (MCBH) in Kaneohe, Oahu.

WETS will provide a location for the ocean testing and demonstration of wave energy converter (WEC) devices. WEC technologies seek to convert the energy associated with the oscillatory motion of ocean surface waves into a more useful form — typically electricity. The WETS facility currently has one test berth established in 30-m deep water and is being expanded with two additional berths at 60 m and 80 m depths, with connection to the MCBH electricity grid.

HINMREC's role at the WETS facility includes the evaluation of WEC system performance. To facilitate this responsibility, GL Garrad Hassan's wave energy team will provide wave energy test protocols, support HNEI-UH with processing performance data, and conduct independent numerical model verification exercises for HNEI-UH's WEC operational models over the next 2 years.

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

## Tidal Energy Ltd awards contracts

Tidal Energy Limited (TEL) has announced the completion of the supply chain for its DeltaStream prototype, Wales' first full-scale tidal turbine, with the confirmation of its three remaining contracts:

- Mustang Marine (Wales) Ltd will provide fabrication services, constructing the DeltaStream device at its Pembroke Port headquarters;

- Marine contracting and consulting specialist Keynvor Morlift will install the turbine and will also have responsibility for maintenance through its 12-month trial; and

- Subsea cabling expert JDR Cable Systems will design and manufacture a 1.5-km, double armored 6.6KV high-voltage cable.

The announcement takes the number of businesses collaborating on the project to 21, including industry leaders



Siemens (gear hub), GE Energy (electrical power system), and Designcraft (rotor production). Bridgend-based Raymond Brown Construction Ltd was responsible for the onshore works and Cardiff-based Hyder Consulting (UK) Ltd for the onshore design.

Having finalized all of the contracts needed for the manufacture, installation, and operation of DeltaStream, the company will now begin a robust fabrication and testing process as it prepares for initial deployment of the turbine in Pembroke Port.

Backed by EU funds of almost £8 million, the DeltaStream device will use tidal flows to generate clean electricity for homes in St. Davids when it is installed in 2014 for an initial 12-month test period.

The DeltaStream device comprises three independent 400-kW turbines mounted on a triangular seabed frame that will generate energy from both the flood and ebb of the tide. One 400-kW turbine will be installed in Ramsey Sound early next year, with the potential to it becoming a full-scale device in 2015.

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

#### New wind farm planned off Dutch coast

Northland Power Inc. (NPI), Siemens Project Ventures GmbH (Siemens), HVC N.V., Typhoon Offshore B.V., and Van Oord Dredging and Marine Contractors B.V. will be developing, constructing and operating the Gemini offshore wind park. The share distribution is as follows: NPI 55%, Siemens 20%, Van Oord 10%, HVC N.V. 10%, and Typhoon Offshore B.V. 5%. The total equity capital contributed by the parties amounts close to EUR 500 million. The further required capital will be financed by banks. As majority shareholder NPI is taking a leading role during the phases of further development, construction and operations.

The Gemini wind park will be built

60 km from the coast of Dutch Schiermonnikoog island, an area with excellent wind conditions. The construction of the Gemini wind park will start early 2015. Construction will take place in the period 2015 to 2016, after which the project will be fully operational in 2017. The 600-MW wind park consists of 150 wind turbines, each with a capacity of 4 MW. Following construction, the wind park

will supply electricity to more than 785,000 households.

Van Oord announced that it will be involved in the Gemini project in two ways: as a project shareholder and as an EPC contractor (engineering, procurement and construction) during the building of the wind park. The EPC contract, with a total value of approximately EUR 1.3 billion, involves supplying and installing the foundations, the entire



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electrical infrastructure, including the off and onshore high-voltage stations, the cables and installing the Siemens wind turbines. Van Oord will deploy the dedicated developed offshore wind turbine transport and installation vessel Aeolus for the construction of this wind park. The total Gemini project construction costs amount to EUR 2.8 billion.

The above shareholders are taking steps to come to financial close to the project, which will involve the financing by the banks. The project is expected to reach a financial close in 2014.

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

## Wind/wave generating system to be built in Maine

The University of Maine, Maine Maritime Academy, Sandia National Laboratories, and the National Renewable Energy Laboratory were awarded a \$983,997 energy grant from the National Science Foundation for the creation of a new wind and wave generating system.

It will be a unique, multidirectional system that will consist of a rotating open-jet wind tunnel positioned over a deep-wave basin that will be designed to work together. Using a programmable directional wave maker, wave and wind conditions similar to those in the Gulf of Maine and beyond will be simulated. This type of system is not available anywhere else in the country.

Data collected from the project can be used to develop test standards for floating structures, particularly those requiring wind and wave interaction, such as offshore floating wind turbines.

The system also has the potential to create better understanding of wave and wind effects in the ocean that can help

researchers develop new methods of capturing renewable energy, optimize the performance of existing renewable energy devices, and construct future offshore infrastructures.

Other uses of the equipment include testing by ocean energy developers and those in the offshore oil and gas industry; studying of wave interaction with beaches and structures by coastal engineers; and examination of the wind dispersal of marine pollutants by oil spill management companies.

Krish Thiagarajan, the University of Maine's Alston D. and Ada Lee Correll Presidential Chair in Energy and mechanical engineering professor, is the principal investigator of the project. Co-principal investigators include UMaine engineering professors Habib Dagher, Andrew Goupee and Qingping Zou, as well as Maine Maritime Academy professor Richard Kimball.

The system will be located in the Wave Wind Laboratory, a new addition to the Advanced Structures and Composites Center on the UMaine campus.

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

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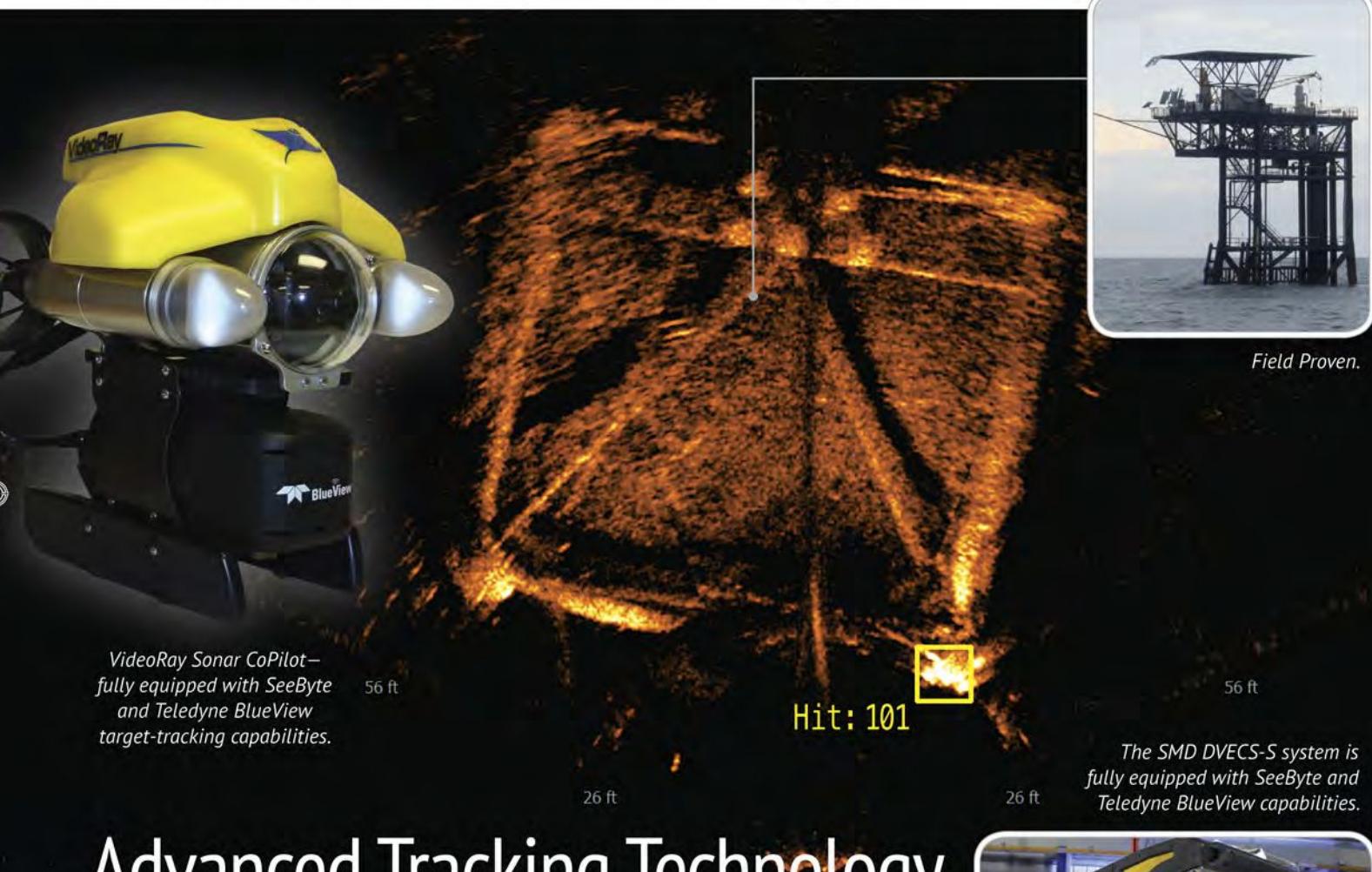
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## Greater Gabbard offshore wind farm inaugurated

RWE Innogy and SSE officially opened the Greater Gabbard offshore wind farm. With 140 wind turbines in water depths between 24 and 34 m and with an installed capacity of 500 MW, Greater Gabbard is one of the largest wind farms in the UK. At the opening ceremony, RWE Innogy and SSE inaugurated the power plant together with Michael Fallon, Minister of State for Energy.

Greater Gabbard is located 23 km off the coast of Suffolk, over an area of 147 sq. km. The 3.6-MW wind turbines are producing enough climate-friendly electricity to supply around 530,000 households. An investment of £1.6 billion and over eight million working hours were spent developing and constructing the project. Around 100 new jobs have been created at the operations and maintenance base at Lowestoft. With this, Greater Gabbard cements the UK's reputation as one of the world-leaders in the offshore renewables sector. Furthermore, the wind park is supporting the local economy.

RWE Innogy is currently building two further offshore wind power plants in Europe. The Nordsee Ost (NSO) offshore wind farm is located around 35 km to the north-east of the island Helgoland in the German North Sea region. With a total output of around 295 MW, NSO will be able to provide approximately 295,000 German households with climate-friendly electricity. Twenty-four of the 48 foundations for the wind turbines have been successfully installed. This week, RWE Innogy has started laying the first inter array cable in the construction area.

Another offshore wind farm, Gwynt y Môr, is being built in Liverpool Bay, off the North Wales coast. At 576 MW, the power plant is RWE's largest offshore wind farm currently in construction. It is a shared investment between partners RWE Innogy (60%), Stadtwerke München (30%), and Siemens (10%).

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

## Orkney pier experiences surge in tidal energy activity

A newly extended pier in Orkney is currently host to more tidal energy technologies than at any other single site in the world. At 385 m, Hatston Pier is now Scotland's longest commercial deepwater berth.

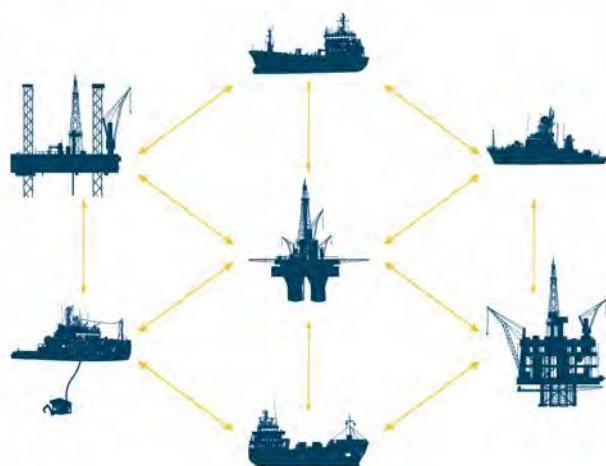
Five tidal energy developers — OpenHydro, Alstom Hydro, Scotrenewables Tidal Power, ANDRITZ Hydro Hammerfest, and Voith Hydro — have all used the new facilities recently, with four devices currently on the quayside. The 160-m extension to the existing 225-m pier was built to provide a major support and logistics base for the marine renewable energy industry and was officially opened earlier this year.

Orkney Islands Council's £8 million project to extend Hatston Pier on the outskirts of Kirkwall attracted £3.2 million in support from the European Regional Development Fund (ERDF).

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

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## Petrofac chosen for North Sea commissioning support

Petrofac has won a €40 million contract from Siemens Energy to provide support during the commissioning phase of two offshore wind converter station platforms in the German North Sea.

It is the first contract win since Petrofac established Petrofac Deutschland GmbH in November 2012 to take advantage of the growing offshore wind market. Petrofac will provide logistics management, platform support services, and maintenance services during the commissioning and testing phase of the two High Voltage Direct Current (HVDC) offshore platforms.

The HelWin1 and BorWin2 platforms, which will have 576- and 800-MW capacity, respectively, are currently under construction and will be situated near the islands of Helgoland (HelWin1) and Borkum (BorWin2). Each will connect several surrounding wind farms to the mainland, in total providing enough transmission capacity to supply about two million German households with clean wind power.

Petrofac will support Siemens with a full range of support solutions tailored

to the demands of commissioning large platforms in the North Sea, including supply and management of jack-up accommodation barges, supply ships, standby vessels, and helicopter transfers. Petrofac will also supply offshore crews to man and maintain platforms during the commissioning period.

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

## Sumitomo to invest in Belgian offshore wind farms

Sumitomo Corp. agreed with Belgian offshore wind energy company Parkwind to take shares in two offshore wind farm projects off the coast of Belgium. Parkwind's shareholders are the Colruyt Group, Korys NV, the investment holding of the Colruyt family, and PMV.

The two offshore wind projects consist of Belwind 1, in operation since late 2010, and Northwind, still under construction. The Belwind project is located on the Bligh Bank in the North Sea, which is about 28.5 mi off the coast of Belgium and has a production capacity of 165 MW.

The Northwind project is also locat-

ed in the North Sea, on the Lodewijk Bank, about 23 mi off the Belgian coast and will enjoy a capacity of 216 MW. The project cost for Belwind 1 was \$850 million, and the project cost for Northwind is expected to be about \$1.1 billion, a total of up to \$2 billion for both wind farms.

Once completed, the two wind farms will compose of over 127 wind turbines manufactured by Vestas. The electricity generated is sold through long-term agreements to Electrabel and corresponds to the needs of about 370,000 households.

Sumitomo will acquire a 39% stake in the Belwind 1 project and a 33.3% stake in the Northwind project through its units following the approval from the European Commission and any other competent competition authority. Parkwind and Sumitomo have also entered into a project development agreement to work together on the development of the Belwind 2 project, a 165-MW offshore wind farm adjacent to the Belwind 1 wind farm.

For more information, visit [www.sumitomocorp.co.jp](http://www.sumitomocorp.co.jp).

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### General Atomics to provide lithium-ion batteries for special operations mini-submarines

General Atomics, San Diego, California, has been awarded a \$12,490,000 firm-fixed-price, indefinite-delivery/indefinite-quantity contract for lithium-ion batteries and associated accessories to be utilized by the dry combat submersible program for the U.S. Special Operations Command. The batteries and accessories will be used on Navy submersible vehicles as primary sources of power. Work will be performed in San Diego, California and is expected to be completed by September 2018. Fiscal 2013 Research, Development, Test and Evaluation funding in the amount of \$12,490,000 will be obligated at the time of award and will not expire at the end of the current fiscal year. This contract was not competitively procured in accordance with the statutory authority of 10 U.S.C. 2304(c)(1) as implemented by FAR 6.302-1; only one responsible source and no other supplies or services will satisfy agency requirements. The Naval Surface Warfare Center, Crane, Indiana is the contracting activity (N00164-13-D-GS12).

### DARPA looking for AUV to deploy drones

The Hydra program will develop and demonstrate an unmanned undersea system, providing a novel delivery mechanism for insertion of unmanned air and underwater vehicles into operational environments. Situated underwater, Hydra will use modular payloads within a standardized enclosure to enable scalable, cost-effective deployment of rapid response assets and will integrate existing and emerging technologies in new ways to create an alternate means of delivering a variety of payloads close to the point of use. The Hydra program seeks to develop and demonstrate initial examples of air and undersea payloads while leaving open the potential for accommodating additional payloads in the future. The rising number of ungoverned states, piracy, and proliferation of sophisticated defenses severely stretches current resources and impacts the nation's ability to conduct special operations and contingency missions. The Hydra program represents a cost-effective way to add undersea capacity that can be tailored to support each mission. Hydra's communications suite could allow synergistic function with manned platforms, thus increasing their effectiveness, or could allow remote control from over-the-horizon. Technologies are intended to be adaptable to multiple delivery options, including airborne, surface, and subsurface. The Hydra program will enable other new capabilities not currently performed from undersea.

### Teledyne Webb Research reaches third milestone of U.S. Navy LBS-Glider program

Teledyne Webb Research (TWR) announced that it has reached the third production milestone in the Littoral Battlespace Sensing — Glider (LBS-G) program with the U.S. Navy. Along with Teledyne Brown Engineering, Inc. of Huntsville, Alabama, TWR has completed the delivery of all gliders specified in the first two Full Rate Production (FRP) contract options to the Navy's Program Executive Office for C4I. TWR has delivered 84 gliders under this program. This FRP Phase Three calls for 32 additional gliders (6, 200-m gliders and 26 1,000-m gliders). Production will begin in September of this year and continue through May 2014. "We are extremely proud that the Slocum glider is now operational with the U.S. Navy as part of this important program. The Slocum glider is a workhorse in many programs. We continue to deliver gliders for both the coastal and open ocean arrays for the Ocean Observatories Initiative (OOI) of the National Science Foundation, which further demonstrates the reputation of the gliders as versatile, reliable, and efficient," said Thomas W. Altshuler, Ph.D., V.P. and group general manager of Teledyne Marine Systems. The Navy is using both deep and shallow water gliders in the LBS-G program to acquire critical oceanographic data that will improve positioning of fleets during naval maneuvers. The gliders are low cost, use minimal power, and can remain at sea for long periods of time. Gliders were first conceived by Douglas Webb, the founder of Webb Research and a former researcher at the Woods Hole Oceanographic Institution. The Slocum G2 Glider is a torpedo-shaped autonomous underwater winged vehicle that measures 2 m in length and uses changes in buoyancy along with its wings and tail-fin steering to move through the water.

## Bollinger delivers the CGC Charles David Jr.



Bollinger Shipyards, Inc. has delivered the Charles David Jr., the seventh Fast Response Cutter (FRC) to the U.S. Coast Guard.

The announcement was made by Bollinger executive vice president of new construction, Chris Bollinger. "We are very pleased to announce another successful on-time and on-budget FRC delivery to the Coast Guard. The Charles David Jr. was delivered to the 7th Coast Guard District in Key West, Florida and will be stationed at USCG Sector Key West. We are all looking forward to the vessel's upcoming commissioning, as well as honoring and celebrating the heroic acts of Charles David, Jr."

The 154 ft patrol craft Charles David Jr. is the seventh vessel in the Coast Guard's Sentinel-class FRC program. To build the FRC, Bollinger Shipyards used a proven, in-service parent craft design based on the Damen Stan Patrol Boat 4708. It has a flank speed of 28 kts, state-of-the-art command, control, communications and computer technology, and a stern launch system for the vessels 26-ft cutter boat. The FRC has been described as an operational "game changer" by senior Coast Guard officials.

The Coast Guard took delivery 16 August 2013 in Key West, Florida and is scheduled to commission the vessel in Key West, Florida in November 2013.

Each FRC is named for an enlisted Coast Guard hero who distinguished him or herself in the line of duty. This vessel is named after Coast Guard Hero, Stewards-Mate First Class Charles W. David, Jr., who was posthumously awarded the Navy and Marine Corps Medal for his bravery. On the night of 3 February 1943, the U.S. Army transport USS Dorchester was torpedoed by a U-Boat off the coast of Greenland in the North Atlantic. The CGC Comanche was on the scene and its crew desperately searched for survivors in the frigid waters. David fearlessly volunteered to leave the safe haven of the Comanche to dive overboard to help rescue the Dorchester's crew. As other crewmen also volunteered to dive in, 93 survivors were rescued out of the freezing waters.

After the last of the survivors were safely aboard, David began to climb the cargo net to the ship's deck. One of David's shipmates, Richard Swanson, was having trouble climbing the net due to his freezing limbs. David descended the net with the help of another crewman and pulled Swanson to the deck out of harm's way. Tragically, David died a few days later from pneumonia.

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

## SeeByte sells five seats of SeeTrack Military to PBP Enamor

SeeByte has announced the sale of five seats of SeeTrack Military MCM Evaluator Software to PBP Enamor Ltd, a Poland-based company that specializes in the supply and provision of services and design of modern ship automation, communication and navigation systems.

The software package, which comes equipped with additional SeeTrack modules such as the Performance Analysis & Training Tool (PATT), Change Detection Tool, and Automatic Target Recognition (ATR), will provide PBP Enamor Ltd with a software solution for rapid on-site analysis and fusion of sensor data for the Polish Navy's fleet of AUVs.

SeeTrack Military is an open-architecture platform solution that can be easily adapted for specific user needs. Developed as a mission-planning, monitoring, post-processing, and reporting tool, this software technology has been successfully deployed on numerous surveys, military and security operations,

and scientific experiments. To date, SeeTrack Military is in use with 16 navies across the globe.

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

## Rolls-Royce unveils new maritime patrol vessel design

Rolls-Royce has unveiled a new design of maritime patrol craft at the Defence & Security Event International (DSEI) in London.

The first of a "protection vessel family" of designs, is a new 55-m craft featuring a range of equipment from Rolls-Royce (stabilizers, thrusters, steering gear, fixed pitch propellers) and MTU (diesels, diesel generators, Callosum IPMS), offering a cost-effective design that can be tailored to mission requirements.

Weighing around 500 tonnes, the new vessel is suited to patrol, search and rescue, and interception duties. A 90-m version of the craft will be on offer by the end of the year, with a 75-m design following in 2014.

Building on its success in the com-



mercial marine market, Rolls-Royce established its Bristol-based naval ship design team last year that is focused on four key naval vessel types — naval auxiliaries, offshore/coastal patrol vessels, fast attack craft, and naval ice-breakers.

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

## OPT deploys Autonomous PowerBuoy® under U.S. Homeland Security program

Ocean Power Technologies, Inc. (OPT) announced the deployment off New Jersey of its innovative autonomous wave energy device, marking an important milestone in the roll-

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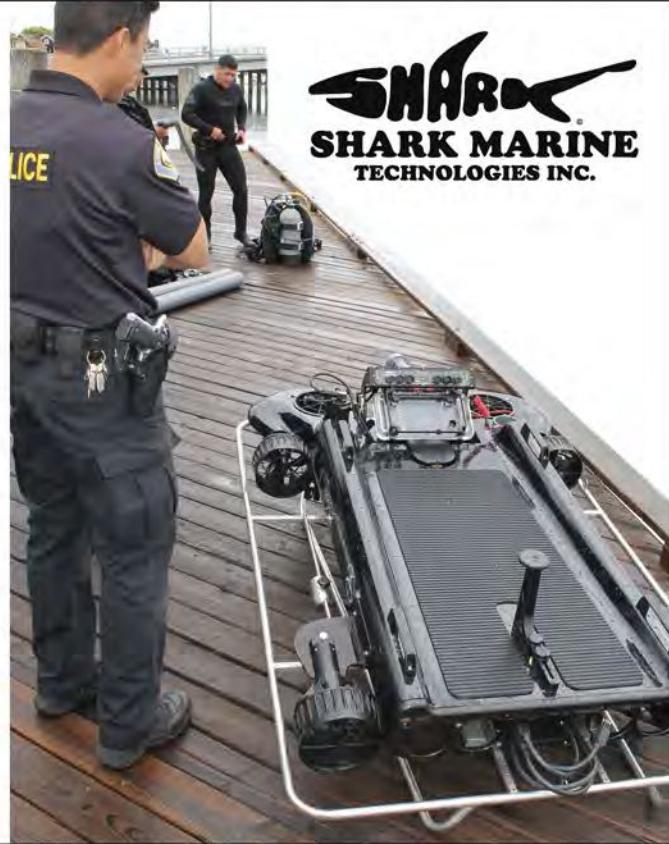
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out of the company's Autonomous PowerBuoy® product line.

This latest deployment, 35 mi off the coast and in 43 m of water depth, is in connection with a previously announced Cooperative Research and Development Agreement (CRADA) with the U.S. Department of Homeland Security (DHS) Science & Technology Directorate (S&T). Under this program, the OPT will perform in-ocean tests on its proprietary APB to further validate the technology's capacity for expanded ocean surveillance.

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

#### **Newport News Shipbuilding redelivers USS Theodore Roosevelt (CVN 71)**

Newport News Shipbuilding (NNS), a division of Huntington Ingalls Industries, redelivered the nuclear-powered aircraft carrier USS Theodore Roosevelt (CVN 71) to the U.S. Navy. The redelivery took place following successful sea trials that tested the ship's systems after its refueling and complex overhaul (RCOH) at the shipyard.

The sea trials, conducted by the U.S. Navy alongside NNS shipbuilders on board, tested the carrier's systems and operations at sea, including high-speed operations. The trials team put the ship through a series of tests designed to prove system performance and demonstrate all the carrier's capabilities at sea.

The RCOH process is performed only once during the ship's 50-year lifetime and involves upgrades to nearly every space and system on the ship. Tanks, the hull, shafting, propellers, rudders, piping, ventilation, electrical, combat, and aviation support systems were repaired, upgraded, and modernized. Work also included defueling and refueling the ship's two nuclear reactors and repairs and upgrades to the propulsion plant.

The fourth Nimitz-class carrier to undergo an RCOH, Roosevelt has had up to 4,000 shipbuilders assigned to her at peak manning periods. USS Abraham Lincoln (CVN 72) arrived at NNS in March and is currently undergoing her RCOH.

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

#### **Austal celebrates keel laying for Cape CCPB 03**

Austal hosted the keel-laying ceremony for the third vessel, Cape Nelson, one of eight 56-m patrol boats that Austal is designing, building, and supporting for the Australian Customs and Border Protection Service.

Keel-laying traditionally marks the first significant milestone in a ship's construction. Historically, this was the "laying down" of the main timber making up the backbone of a vessel. Austal's advanced shipbuilding techniques means fabrication of ship modules begins well before they are actually joined. So, Austal celebrates keel-laying when modules are brought together for final assembly.

Although Austal's design and manufacturing approach is thoroughly modern, the ceremony retained long-held shipbuilding traditions. This includes placing three specially minted coins under a keel block as a symbol of good fortune and to bless the ship.

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



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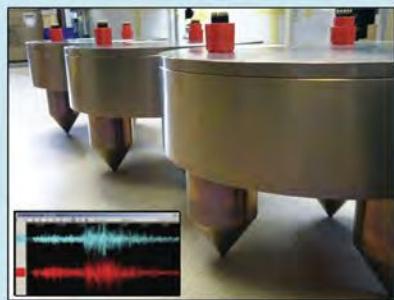
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The OCB is a modular seafloor communications network that is directly connected to the Internet. Clients can provide and control their own sensors and data outputs, or CSnet can provide a suite of sensors from the surface to the seafloor with data 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.



# PRIZING OCEAN SENSORS:

## We Can't Solve What We Can't Measure

*By: Paul Bunje, Senior Director, Oceans, XPRIZE*

October 2013

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Ocean News & Technology

**Rising levels of atmospheric carbon dioxide are causing the oceans to steadily acidify at a rate that has not occurred for millions of years. Ocean acidification could have significant biological, ecological, and societal implications, changing the health of fisheries, coral reefs, and entire ecosystems. It could affect economies and societies on a global scale.**

Recently discovered changes in these fisheries and ecosystems, as a result of the changing ocean chemistry, have already captured the attention of scientists, the shellfish industry, and governments worldwide. But we can't solve what we can't measure. In order to more fully understand and mitigate the effects of ocean acidification, we need better sensing technologies to monitor and collect ocean pH data.

Ocean acidification rises most quickly in cold-water regions and where deep water comes up to the surface. These areas are some of the most productive fisheries in the world. Unfortunately, these are also some of the most understudied areas due to the shortcomings of current sensor technology.

Today's pH sensors are either not accurate enough for use in the open ocean or they are expensive and difficult to use. Affordable, advanced ocean pH sensors that are capable of robust measurement with the accuracy needed to monitor global change have not yet been developed. This is partly because demand is higher for sensors for biomedical, communications, and defense use, offering more active markets for manufacturers.

The free market has so far failed to meet the growing demand for ocean pH sensors and, as a result, there are very

few types available. Most resulted from the repurposing of existing industrial sensors by ocean scientists and may be inaccurate, expensive, and difficult to deploy. We cannot respond to the effects of ocean acidification if we do not have better tools with which to measure its impact in every part of the world's oceans.

### Better sensors through competition

One solution to the free market's failure is the \$2 Million Wendy Schmidt Ocean Health XPRIZE, launched in September 2013, which was designed to inspire innovators from around the world to create tools that can lead to robust knowledge about our oceans. This knowledge will be the first step on the path to improving ocean health.

XPRIZE is committed to solving the grand challenges facing our oceans. This new XPRIZE is a follow-up to the Wendy Schmidt Oil Cleanup XCHALLENGE, which succeeded in improving the efficiency of oil cleanup technologies by a factor of three.

The Wendy Schmidt Ocean Health XPRIZE is a global competition to develop accurate, robust, and affordable pH sensors that will profoundly improve our understanding of

ocean acidification. Over the course of the prize competition, teams will face a series of trials in laboratory, coastal, and deepwater environments that will test the effectiveness of new types of sensors.

The winners of the prize will be the teams whose technologies best demonstrate how to create breakthrough sensors that can achieve an unprecedented level of accuracy, affordability, and stability in demanding ocean environments.

The competition rules are designed to address five critical shortcomings in current ocean pH sensors:

- Accuracy an order of magnitude better than current standards;
- Precision to ensure repeated measurements are valid;
- Stability when deployed for significantly longer time periods;
- Ease-of-use that allows deployment of the thousands of sensors needed in all parts of the world; and
- Affordability that makes these sensors available to a global market

The \$2 million prize is divided into two \$1 million purses that will address the two distinct challenges in measuring ocean acidification.

The Accuracy Purse calls for extremely accurate sensors that will finally give scientists the ability to measure ocean acidification throughout the oceans. The Affordability Purse calls for affordable and easy-to-use sensors that will give anyone the tools necessary to track and respond to ocean acidification.

### Getting under way

The Wendy Schmidt Ocean Health XPRIZE will last for 22 months and will involve four competition phases that will test competing teams' technologies:

- Phase 1 — An Ocean Acidification Solutions Fair will push teams to develop innovative solutions to ocean pH sensing and to educate the public about ocean acidification.
- Phase 2 — Laboratory trials will put teams' technologies through a rigorous 3-month test in controlled conditions that will assess the accuracy, precision, and stability of their sensors.
- Phase 3 — Coastal trials will place the top teams' technologies in challenging coastal conditions to evaluate their performance over the course of a month-long, real-world test.
- Phase 4 — Sea trials will challenge the five finalists for the Accuracy Purse to measure a full ocean depth with unprecedented precision.

### Catalyzing the ocean services industry

The Wendy Schmidt Ocean Health XPRIZE is expected to result in a variety of new, high-quality pH sensors that can better measure the health of our oceans. But in order to bring about significant change, we must also create new markets for sensors and ocean data and catalyze the ocean services industry.



*Wendy Schmidt*

In addition to ensuring that better pH sensors are available and deployed after the prize is awarded, XPRIZE is working with a global network of partners to create new value, understanding, and uses of ocean data. Partnerships with industry, governments, research institutions, and educational and non-profit organizations are growing to ensure that there is an unstoppable community poised to transform our knowledge of the oceans and our ability to tackle threats like ocean acidification. By emphasizing the power of big data and developing post-prize industry programs, we will seed the growth of

new and existing ocean services through the collection, analysis, and distribution of massive quantities of ocean data.

### Engaging a larger, more diverse pool of problem solvers

Innovation often comes from unforeseen sources and perspectives. Traditional research grants often target the same solvers over and over again. These are the safe, known players that may offer little risk of failure but little chance of disruptive change because they are usually conservative in their approaches.

Prizes attract a much larger pool of solvers, many of them unknown to grant administrators. This pool is immense, engaging many fresh minds to drive the innovation race. Outsiders are often more willing to take bigger risks because they are energized by competition.

XPRIZE solves the world's grand challenges by creating and managing large-scale, high-profile, incentivized prize competitions that stimulate investment in research and development worth far more than the prize itself. The foundation motivates and inspires brilliant innovators from all disciplines to leverage their intellectual and financial capital for the benefit of humanity.

Incentivized competitions have succeeded in catalyzing change for centuries. A prize offered by Napoleon in the late 18th century led to the canned food industry; Charles Lindbergh's trans-Atlantic flight was in response to the \$25,000 Orteig Prize in the early 20th century; and the \$10 million Ansari XPRIZE helped inspire today's multi-billion-dollar commercial space travel industry.

### Take the plunge

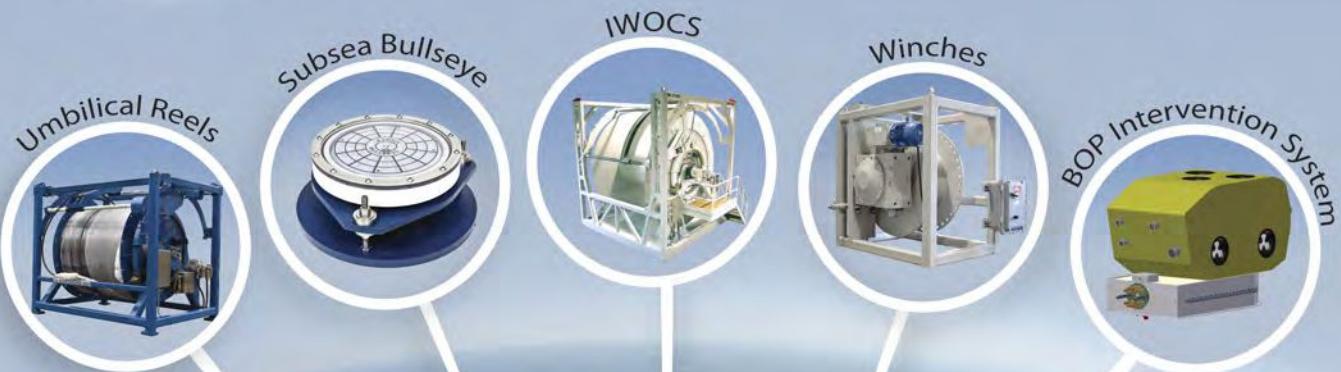
The Wendy Schmidt Ocean Health XPRIZE is open to everyone who has an idea for new pH sensor technology that can help us better understand ocean acidification. Registration is now underway, and you can find more information online at <http://oceanhealth.xprize.org>.

This is an unprecedented opportunity for professionals and amateurs alike to dive in and contribute to solving one of the biggest grand challenges of all time.



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# OFFSHORE INDUSTRY



Natural gas spews from Hercules rig

## U.S. proposes system for tracking 'near-miss' offshore incidents

The Federal government has moved to fill a major gap in overseeing the safety of offshore oil and gas development, by pledging to develop a system for tracking near-miss incidents that could be a harbinger of bigger problems.

The Bureau of Safety and Environmental Enforcement and the Bureau of Transportation Statistics said they would collaborate on the project, with the goal of getting a new confidential reporting system online within a year.

The decision follows a series of incidents at oil and gas facilities in the Gulf of Mexico, including a gas well blowout in July on the Hercules 265 drilling rig and a fatal platform fire last November.

## More offshore UK field start-ups, but production still falling: report

Oil & Gas UK's 2013 Economic Report forecasts record investment on the UK continental shelf (UKCS) this year, as investors gain confidence to develop new fields and redevelop older fields, but overall production continues to decline.

The supply chain now generates sales of \$42.4 billion per year, the report says, including \$10.9 billion in exports. Well services companies are generating revenues of almost \$3.14 billion a year.

There are still large reserves waiting to be developed throughout the UKCS. However, Britain's annual production declined last year by 14.5% to 1.54 mmboe/d and production over the year still looks set to dip to 1.2 to 1.4 mmboe/d, according to the report. Nine fields came onstream in 2012 with combined reserves of 146 mmboe. Oil & Gas UK expects start-ups on 15 fields this year with combined reserves of 470 mmboe. In addition, the shut-in Banff, Gryphon, and Elgin fields will be back online.

## Subsea vessel operations market set for demand increase near term

The subsea vessel operations market is poised to see an increase in demand in the near term with day rates for some vessels set to increase. Between 2013 and 2017, Douglas-Westwood (DW) forecast \$106 billion of expenditure on subsea vessel operations, an increase of 54% over the preceding 5-year period. Global demand is expected to increase 23% compared to the previous 5 years, according to DW. The rate of increase in expenditure is expected to be higher than the growth in vessel days, due to the move towards higher specification vessels to cater for deeper and more complicated development programs. While IRM-related days will continue to account for the majority of the market, field development related activity will see an even faster growth rate, DW said.

## World petroleum use sets record high in 2012 despite area declines

The world's consumption of gasoline, diesel fuel, jet fuel, heating oil, and other petroleum products reached a record high of 88.9 mmbbl/d in 2012, as declining consumption in North America and Europe was more than outpaced by growth in Asia and other regions, according to an updated report compiled by the U.S. Energy Information Administration.

In 2009, Asia surpassed North America as the world's largest petroleum-consuming region as consumption rebounded from its 2008 decline. Between 2008 and 2012, Asia's consumption increased by 4.4 mmbbl/d.

The rapidly industrializing economies of China and India fueled much of Asia's demand increase, growing 2.8 mmbbl/d and 800,000 bbl/d, respectively. If China's use of petroleum continues to grow as projected, it is expected to replace the United States as the world's largest net oil importer this fall.

Petroleum use in North America, which is dominated by consumption in the United States, has declined since 2005. Declines in petroleum consumption in the United States in 2008 and 2009 occurred during the economic downturn. Increased consumption in 2010 reflected improving economic conditions. In 2011 and 2012, higher oil prices and increased fuel-efficiency of light-duty vehicles contributed to reduced U.S. consumption.

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### Technology from Cambridge can detect contamination in real time

UK-based Cambridge Consultants has developed technology that detects contamination in real time and could prove critical to oil production, in some cases preventing irreversible damage to wells. The particle analysis technology will measure, in real time, droplets of oil or particles of sand and wax in produced fluids at offshore and remote production sites, according to the firm.

This has the potential to allow produced water to be safely reinjected into a well or disposed of overboard. Produced water is a sizeable by-product of the extraction of oil and gas. Modern oil wells produce as much as 10 bbl of water for each bbl of oil.

Treating and disposing of this water is a major expense for many operators and, in some cases, production is limited by how much water can be handled.



Frances Metcalfe

"If a well exceeds certain limits, for example due to a failure in processing equipment, particulates can block pores in the rock, causing production to stop — and even render the well beyond economic use," said Frances Metcalfe, associate director, oil and gas, Cambridge Consultants.

"There is, therefore, a real need to be able to analyze very tiny droplets and particles in a pipeline in real time in order to speed up reaction time to correct potential issues."

The patented technology uses a novel combination of optical measurements and signal processing techniques to measure the size distribution of droplets ranging from sub-micron to tens of microns in diameter at typical production flow velocities. The technology uses hardware that lends itself to being deployed online in remote locations, with results sent directly to an operator for immediate attention. Currently, produced water quality is usually assessed by taking a sample and sending it to a laboratory for analysis. This is time consuming. So, by the time an issue has been identified, the well may already be irreversibly damaged.

# OFFSHORE INDUSTRY HEADLINES

Research & Development • Environmental Assessment • Discovery



*Shell's Olympus TLP at the Ingleside, Texas shipyard before heading to production site in deepwater Gulf of Mexico*

## Demand for offshore production facilities surging, led by Brazil

Oil companies are increasingly pursuing offshore resources and that has led to an influx in massive platforms and other vessels according to the International Maritime Association.

There are currently 269 floating production units, such as oil platforms and vessels that can collect oil from deep-sea wells, up 22% from 5 years ago and nearly 80% higher than in 2003, and there are more offshore vessels on the way, the Association said.

Seventy-two floating production vessels are on order with builders and 241 units are in the building or planning stages, the group added.

Some of the largest new vessels are completing construction in Ingleside, Texas, along the U.S. Gulf Coast and one just set up for production in the Gulf of Mexico (see picture above).

If the amount of new production units on order are brought into operation, the floating production unit inventory will grow 27%, the Association said.

"Brazil continues to dominate orders for production floaters — 23 units are being built for use offshore Brazil, 32% of the order backlog," the Association said.

The vessels on order total more than \$11 billion and include a \$3 billion vessel planned for Nigeria.

The backlog of ordered vessels includes 40 floating production storage and offloading vessels, which are large ships that can gather oil pumped up from undersea wells.

Other vessels on order include five tension leg platforms, four spar platforms, one barge, four floating liquefied natural gas vessels, and 12 floating storage and regasification units, the Association said.

## Mexico's Pemex plans expansion in U.S. for deepwater exploration

Mexico's Pemex has decided to expand its business in the United States by setting up a new company by the end of 2013 to explore and develop shale gas and deepwater oil. The new company will represent Pemex's first step in its quest to eventually become an international oil company.

"Pemex will be starting a new company that will work on the shale-gas and shale-oil fields in the U.S. and in the deepwater side of the U.S." Emilio Lozoya Austin, Pemex' chief executive officer, told The Wall Street Journal. "The geology is similar and we can benefit from numerous areas of collaboration with international oil companies."

The move is similar to the energy-overhaul proposed by Mexican President Peña Nieto, which will allow private companies to share in oil profits for the first time in 75 years.

The legislation aims to turn around a reduction in production in Mexico and open up huge untapped hydrocarbon fields in deep waters off the Gulf of Mexico and in shale-rock formations. In the past 10 years, Mexico's oil production has dropped from a high of 3.4 mmbbl/d to 2.5 mmbbl/d, even as the country has quintupled investment spending in Pemex.

## Palmer Petroleum finds potentially big gas field off Papua New Guinea

Privately owned Australian explorer Palmer Petroleum has identified what it claims could be one of the world's largest gas fields offshore Papua New Guinea, chairman Clive Palmer said.

The field had been identified by 3D seismic studies as part of a \$45 million exploration program, Palmer said at a press conference. The work, in Palmer Petroleum's wholly owned PPL 381 permit, was conducted by UK-based oil and gas consultants Robertson, which is part of the CGG Group.



"The analysis conducted by Robertson of the seismic and 3D studies has confirmed one of the world's largest

natural gas fields," Palmer said in a statement. "The evaluation of the 3D seismic surveys identified a significant number of prospects in PPL 381. Robertson estimated that at a P50 level there was approximately 47 tcf in place with 28 tcf being in the recoverable category."

Palmer added, "The results of the studies are extremely favorable and show this new Papua New Guinea gas region could possibly be as significant a resource area as the Northwest Shelf in Western Australia."

The new region is located on the northern end of the Gulf of Papua and is close to ExxonMobil's LNG project, which is nearing completion and scheduled to start up in 2014.

In addition, U.S.-listed junior InterOil is pursuing plans to develop its Elk and Antelope gas fields either in partnership with ExxonMobil or as a standalone LNG project, and Australia's Horizon Oil is eyeing a mid-sized LNG project.

## Western Gulf of Mexico lease sale high bids total more than \$102M

Western Gulf of Mexico Lease Sale 233 drew more than \$102 million in high bids for 53 tracts on the Outer Continental Shelf. Bids covered 301,006 acres of the nearly 21 million on offer.

"While this sale was not eye-popping and may be closer to a yawn, it shows that interest in deepwater tracts remains strong," National Ocean Industries Association president Randall Luthi said in a statement.

Last November's Western Gulf offering netted nearly \$134 million, \$32 million more than the 28 August Western Gulf sale. Just 12 companies participated in the recent sale. There were 61 bids.

The highest bid on a single tract was \$30,583,560 by ConocoPhillips for Alaminos Canyon block 475. ConocoPhillips also submitted the highest total amount in bonus bids, \$50,323,180 on 29 tracts.

Chevron USA, Inc. submitted the next two highest bids: \$19,102,687 and \$13,111,191 for East Breaks blocks 499 and 500, respectively. Chevron submitted the second highest total amount at \$32,323,180 with just three bids, while Maersk Oil Gulf of Mexico placed third at a total of \$6,823,281 in seven bids.

This sale offered all unleased and non-protected areas in the Western Gulf of Mexico planning area, including 3,864 tracts from 9 to more than 250 mi off the coast, in depths ranging from 16 ft to more than 10,975 ft. The Federal government estimates the lease sale could result in the production of 116 to 200 mmbbl of oil and 538 to 938 bcf of natural gas.

## IADC striving for universal well control standard through WCI

The International Association of Drilling Contractors (IADC) recently announced the formation of the Well Control Institute (WCI), a new industry body that will provide the drilling industry with a single, universal well control training and assessment standard. The WCI is expected to be fully operational by mid-2014.

"Preventing the unwanted release of hydrocarbons is the primary process safety concern at all stages of a well's life cycle," said Stephen Colville, IADC's president and chief executive officer. "Proper personnel training is an essential element in preventing unwanted releases."



*Stephen Colville* develop a professional and consistent approach to ensuring competence and credentials of everyone involved in all aspects of well control," he added.

The WCI brings together all sectors of the drilling community to define and implement a new well control standard, which will build on the recommendations of the OGP Wells Expert Committee, IADC's Well Control Advisory Panel, and other industry stakeholders.

The training and assessment standard developed by WCI will focus on learning and learning retention and will provide rig-role-directed learning objectives with an emphasis on kick-detection and well shut-in. It will focus on the use of realistic simulation in a team environment and provide a reliable, secure, and trusted testing process.

The flexible curriculum will cover all well construction disciplines and specialized practices and will offer continuous opportunities for new learning with an enhanced frequency of assessment.

"Existing well control training systems, including IADC's WellCAP program, were originally based on decades-old regulatory frameworks," said Steve Kropla, IADC group vice president of operational integrity.

"The WCI presents a unique opportunity to rethink what needs to be focused on for effective well control training and to modernize the industry's training efforts through new methods and technology." For more information, contact Amy Rose at Amy.Rose@iadc.org.

## Levant Basin altering energy dynamics of E. Mediterranean

Offshore natural gas discoveries in the Levant Basin have the potential to significantly alter energy supply dynamics in the Eastern Mediterranean region. However several outstanding issues, including armed conflict, territorial disputes, and macroeconomic uncertainty, could limit the viability of those supplies in the short term, according to a study compiled by the U.S. Energy Information Administration (EIA).

The Eastern Mediterranean region, defined in this report as Cyprus, Israel, Jordan, Lebanon, Syria, and the Palestinian Territories, is currently undergoing changes to its energy landscape. With expected economic growth and the population of the region forecast to grow from 45.3 million in 2010 to between 58 and 62 million in 2030, energy demand should increase noticeably over the next two decades. At present levels of consumption, regional oil and natural gas reserves are unlikely to last for more than a few decades.

Fortunately, recent discoveries of large hydrocarbon resources, particularly natural gas, in the offshore Levant Basin significantly alter the supply-side forecasts for the region. These discoveries have the potential to provide the necessary energy supply to meet growing regional demand and possibly even spur exports, according to the EIA.



There are several issues facing the region that could significantly affect how quickly and how successfully such changes occur. Among the major issues in the region, physical and economic security as well as offshore hydrocarbon development will have the most influence on the region's energy sector. Unrest in Syria and Egypt and territorial disputes between several of the countries in the Eastern Mediterranean will impact regional energy production, consumption, and trade.

Further, negative economic developments in the region, influenced by issues such as the Cyprus debt crisis and the war in Syria, could undermine demand, interrupt production, and trade and threaten the viability of several energy infrastructure projects, EIA said, adding that "overcoming these challenges is critical to the success of the region's energy future."

## CHC Super Puma crash kills four North Sea rig workers off Shetland

CHC Helicopter temporarily suspended all of its Super Puma AS332L2 flights worldwide following a late August crash that killed four oil rig workers offshore the Shetland Islands in the North Sea. In the last 4 years, there have been five major incidents involving Super Puma helicopters in the UK offshore industry.

In the most recent incident, a Super



*CHC Super Puma helicopter*

Puma L2, made by EADS unit Eurocopter, was carrying 16 passengers and two crew, and was operated by CHC Helicopter for France's Total, CHC said. The helicopter reportedly lost contact with air traffic control and crashed into the sea as it approached Sumburgh airport on the coast of Shetland, a cluster of islands more than 100 mi off the northeastern tip of mainland Scotland.

The dead include three men and one woman. The crash victims were identified as Duncan Munro, 46, from Bishop Auckland; Sarah Darnley, 45, from Elgin; Gary McCrossan, 59, from Inverness; and George Allison, 57, from Winchester. The cause of the accident was not known and a full investigation was being carried out in conjunction with the UK Air Accident Investigation Branch. In 2009, 16 persons died when a Super Puma crashed on the east coast of Scotland on its way back from BP's Millier oil platform.

# A Balancing Act: Saving Valuable Space and Time While Maintaining Performance

By: Alan McBride, Vice President Drilling and Syntactic Products – Trelleborg Offshore & Construction

*Renowned for constantly pushing the limits, the offshore oil and gas sector is increasingly looking for ways to exploit even harsher reservoir environments in new locations around the world, making it one of the most extreme and high risk industries. And while safety and reliability will always be key priorities, cost efficiency is inevitably a driver too, particularly in these tough economic times.*

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This has resulted in a drive from the industry to save space, time, and weight on the rig in order to increase performance and improve the bottom line. This is because space on a modern day drilling rig is at a premium and an increasing amount of equipment is now required to drill down to new extreme depths.

So, while it is important for offshore operators to look at ways to reduce space and time on rigs, it is critical that they don't do this at the expense of safety and reliability and that they ensure the solutions they employ are designed to help them minimize risk and maximize operations.

## Material matters

Critical to delivering onboard operations offshore is the drill riser, which provides a conduit for the drill string and drilling fluids from the ocean floor to the rig; however, they are significantly heavy in weight.

Compared to commonly used materials, such as steel and fiberglass, high performance polymer-based materials have an extensive temperature range and exceptionally high pressure resistance. They provide a high level of flexibility and can efficiently damp, seal, and protect as well as offer an extremely long lifetime. Replacing metallic solutions for the protection of risers with polymer-based ones, for exam-

ple, can go a significant way to increasing performance while improving safety.

The primary benefit of polymer-based riser protection is its ability to manage weight, as the base materials used are effectively neutrally buoyant, ensuring that no additional strain is put on the riser string.

## Subsea support

Trelleborg has invested in R&D and innovation to provide a comprehensive selection of subsea products that offer superior support and protection.

An example of innovation in riser protection is Trelleborg's range of high performance RiserGuard®. Providing a bare/slick riser protection system, each RiserGuard® includes a series of two-piece polyethylene half shell moldings, each fixed in position by purposely engineered straps and AISI 316L pensioners.

Each protector half shell in RiserGuard® is manufactured as a root-molding from linear medium-density polyethylene and with a nominal shell thickness of 12 mm. Each yellow-colored shell provides protection for the riser joint against impact damage during deployment and recovery from the vessel. Each pair of half shells range from 4 to 7 ft in length, and this is primarily dependent on clamp spacing on the riser joint.

Compared to a metallic assembly, this polymer-based design offers complete protection of bare riser joints and external lines during handling, storage, and drilling operations. They are purposefully designed to protect the drilling riser from impact when running or retrieving through the moonpool or during handling operations from the riser storage bay.

This is because if a single riser joint in a riser string fails, resulting in a need for immediate maintenance, an entire riser string may have to be retrieved and rerun, which can prove extremely costly. In deepwater operations, it may take 2 or more days to run or retrieve a marine riser and, given the approximate rate of well which can stand at over \$500,000 per day, such a scenario would cost an operator over a million dollars just to establish communication with the subsea well.

### Taking the pressure off

Furthermore, this innovative technology provides lightweight protection to decrease riser running and retrieval time and can be run/retrieved at the same speed as buoyant joints. This is imperative as marine risers are subjected to impact loads, unexpected side loads, and environmental loads, which can damage fragile electronics. Therefore, the less time spent running, the less damage can be done to the system.



Associated environmental parameters can include wave height and period, water depth, current, wind, and tides. For example, in the subsea environment, hydrostatic pressure can reach 4,500 psi in current deepwater areas and could possibly reach 5,500 psi within a few years, while seawater temperatures can be as cold as 30°F/-1°C. The most critical component of environmental loads is generally the current load directly imparted on the riser string.

Vessel-induced loads include the applied top tension necessary to maintain the optimum shape for a riser string and those imparted by the marine riser string due to motion of the vessel as it is subjected to wave, wind, and current loading.

As well as saving time, this next generation RiserGuard® has been developed to provide a solution for rigs with limited storage space. By allowing the stacking of mixed dressed riser joints while still offering the same high protection, this solution allows offshore operators to store multiple riser joints while saving valuable space.

These stackable joints can be stacked alongside buoyant riser joints in the same deck storage area due to strategically placed protective sections spaced within the DRBM that accept and transfer loads between the joints and deck storage area.

### Awarded for innovation

In addition to RiserGuard®, Trelleborg has spent the last 15 months investing significantly in its research and development center in Houston. This focus on innovation and technology has resulted in recruitment of high-caliber talent and upgrading of critical equipment, with advances including new testing systems and the introduction of customized automation in the manufacturing processes.

As a result of Trelleborg's approach to innovation and years of engineering expertise, the company has recently been awarded its largest single order of Drill Riser Buoyancy Modules (DRBM) to date. In the region of USD \$50 to 60



million depending on the final scope, the order is to be delivered from 2014 to 2015 to one of the leading drilling companies in the world.

### Conclusion

As the industry continues to strive for more from oil and gas exploration, the need for safe, high-performance products has never been greater. Add to this the need to save space and time on modern rigs and solutions such as RiserGuard® stackable slick joint protection system — which provide an efficient, economic, and safe solution for current and future drilling rigs — become paramount.

**Island Offshore receives UKCS service contract**

UK-based Premier Oil awarded a contract to Island Offshore and North Sea RLWI Alliance for a new LWI service on the UK continental shelf. The scope of contract covers wireline services — a core Island Offshore competence — with work to be carried out by Island Constructor, a 120-m, 8,200-ton Ulstein-built X-Bow vessel. A team of engineers from both companies based in Aberdeen, Scotland will work on completing tasks outlined in the contract. The contract from Premier Oil follows on the back of Island Offshore's successful acquisition of a number of North Sea well intervention services contracts earlier in 2013.

**Wärtsilä to supply propulsion systems for IHC vessels**

Finland-based Wärtsilä has won a contract to supply propulsion solutions for six new offshore pipe laying vessels being built by IHC Merwede. The scope of supply for each ship comprises six, eight-cylinder Wärtsilä 32 engines, two transverse thrusters, two retractable thrusters, and three steerable underwater de-mountable thrusters. Plans are underway to start delivering the systems in February 2014 and deliver the remaining products at 4-month intervals. All six new vessels will be deployed to serve the Brazilian offshore market by Petrobras and are scheduled to be delivered in two phases, during the first half of 2015 and the second half of 2016. Out



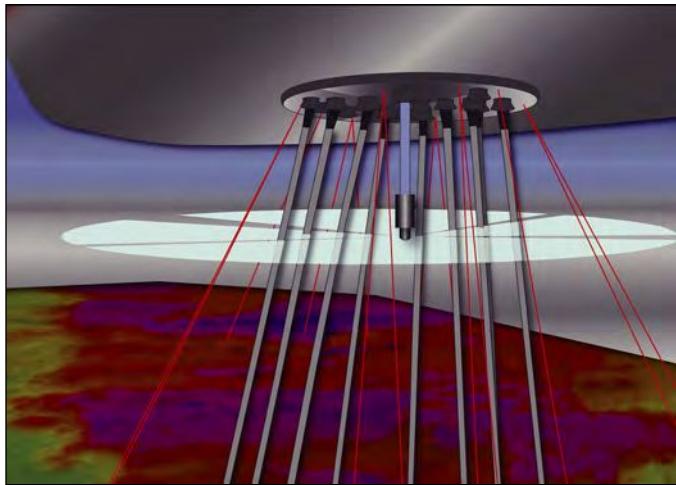
*Offshore pipe laying vessel built by IHC Merwede*

of six ships, three are to be built for Subsea 7 and the remaining are for Seabras Sapura. In the second quarter of 2013, the company received the first vessel contract, with the remaining orders coming in the third quarter.

**AGR to manage three offshore well campaigns**

AGR Well Management has won contracts for three drilling programs offshore West Africa and Australia. The company will provide well management services for Svenska Petroleum's upcoming exploration drilling campaign on blocks 2 and 5A offshore Guinea Bissau. AGR's scope includes drilling engineering and planning services, supply chain management, and operations support for programs, which starts later this year. It involves a minimum of one firm well with an option for two further wells, dependent on results and rig availability. The term could last from 45 days to up to 180 days. Offshore northern Australia, AGR's Perth-based division is working on behalf of an unnamed Indian operator drilling a single exploration well. The contract scope includes provision of full well management, including drilling engineering, planning, procurement, regulatory requirements, and operational support, with a total estimated value of around \$3.56 million. Off northwest Australia, AGR is providing a similar range of project management services to Hunt Oil in support of an exploration well in the WA-425-P permit to be drilled by the semi-submersible Stena Clyde. Drilling is expected to start some time during the fourth quarter of 2013 to the first quarter of 2014.

## RAMS to monitor mooring lines, risers below FPSO



*Graphic representation of Tritech's RAMS deployment*

Tritech says it was awarded "a contract of substantial importance" for its real-time riser and mooring line monitoring system RAMS beneath an FPSO off the west coast of Shetland.

Following a competitive and detailed bidding process, Tritech said it was selected by Single Buoy Moorings Inc. (SBM), designer and supplier of Turret Mooring Systems (TMS), to supply the primary safety tool for real-time mooring line failure detection and riser monitoring for the new build FPSO, or floating production storage and off-loading unit, for the BP Quad 204 development.

"The level of interest and research into FPSO monitoring systems and asset integrity management has heightened among operators as the number of FPSOs in operation has grown. This has shown an increased requirement for a real-time monitoring solution which can actively monitor the asset," said Angus Lugsdin, Tritech's business development manager for RAMS.

The RAMS technology will provide constant real-time simultaneous monitoring of the presence and precise position of all sub-sea targets beneath the FPSO. Tritech is to supply a full hardware and software solution to comply with detailed project specification, including DNV high availability and redundancy requirements.

In addition to the software's ability to assign user-defined alarms for early warning failure detections, data gathered from the RAMS system's continuous real-time monitoring will be analyzed for asset fatigue studies.

The 270-m Quad 204 FPSO is designed to produce 130,000 bbl/d and 2.2 mmcm/d of gas.

The RAMS system will be deployed through dedicated deployment chutes in the FPSO turret, following its anchoring approximately 100 mi off the west coast of Shetland, in a water depth of 350 to 450 m. Tritech contracted Subsea 7 IAS team to design, develop, and supply the deployment system.



*BP's Quad 204 FPSO*

## SBM Offshore to supply FPSO for Stones development

Shell Offshore has contracted SBM Offshore to supply and lease an FPSO for the Stones development in the Gulf of Mexico. The initial contract is for 10 years with options to extend the agreement to 20 years. The total asset value of the FPSO will be about \$1 billion. When installed, the Stones FPSO will be the deepest such development in the world.

The converted Suezmax FPSO will have a turret with a disconnectable buoy to allow it to weathervane in normal conditions and disconnect from the FPSO upon the approach of a hurricane. The buoy turret mooring will be configured with steel lazy-wave risers, a first for a disconnectable FPSO. The mooring system will also incorporate the ability to adjust line tension during operations by use of an in-line mooring connector.

The Stones development is in 9,500 ft of water about 200 mi offshore Louisiana in the Walker Ridge area.

Meanwhile, Shell awarded Technip a significant engineering, procurement, and installation contract for the development of subsea infrastructure for the Stones field. Technip will be in charge of installation of the subsea production system and Stones lateral gas pipeline.

## Cobalt contracts newbuild drillship Rowan Reliance

Cobalt International Energy has contracted the Rowan Reliance drillship for 3 years at a rate of \$602,000/d to operate in the Gulf of Mexico.

The drillship is under construction by Hyundai Heavy Industries in Ulsan, South Korea. Expected delivery to Rowan Co. from HHI is the end of October 2014, with contract drilling to start in the first quarter of 2015.

The Reliance is one of four ultra-deepwater drillships under



Rendition of the deepwater drillship Rowan Reliance

construction at HHI for Cobalt.

The DP-3 compliant, dynamically-positioned drillships will be equipped with retractable thrusters, dual-activity capability, five mud pumps, dual mud systems, and a maximum hook-load capacity of 1,250 tons. Each will be equipped with a seven-ram blowout preventer (BOP) incorporating full acoustic backup control and storage and handling facilities for a second BOP.

The drillships feature hull integration with below-deck riser storage, four million pounds riser tensioning, main load path active-heave drawworks with crown-mounted compensation, three 100-ton knuckle boom cranes, an active-heave 165-ton crane for simultaneous deployment of subsea equipment, a variable deck load capacity of 20,000-ton and accommodations for 210 personnel.

The new Rowan drillships will be of the GustoMSC P10,000 design, capable of drilling wells down to depths of 40,000 ft in waters up to 12,000 ft.

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## Are bulky subsea hydraulic rack-n-pinion or scotch yoke rotary valve actuators creating space and weight problems for you?

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## Chevalier Floatels' DP Galyna christened at Holland Shipyards

Another fast-track delivery to Chevalier Floatels has enabled the company to deliver its third vessel for service support operations in the 2013 season.

The DP Galyna is a high-spec service support vessel, measuring 70.1 m in length, 13.4 m in width, with a draft of 3.1 m. It is powered by a diesel-electric plant, with five generators of 600 kW. With an integrated Ampelmann transferring system, the operational window is increased up to 90% during the season.

This, in combination with DP capabilities, a heave-compensated crane, and ample deck space for stores, allows for greater mobility in the field. The vessel also provides facilities for multi-beam operations and other support activities.

Accommodating 60 persons in total with a crew of 16, the chartering party has an availability of 44 single cabins. Alternatively, 90 persons can be accommodated, in which case some cabins will be double cabins.

The interior offers passengers a wide range of amenities, including a fitness area, hospital, restaurant, laundry, lounge, and smoking lounge. To further increase passenger comfort, special attention was



*DP Galyna is a service support vessel*

paid to vessel movement during the conversion, the company said. An even faster delivery time was realized than with DP Galyna's sister vessel DP Gezina. While DP Gezina was delivered in just 24 weeks, DP Galyna was delivered in 19.

## Kuwait National Petroleum Co. contracts Golar LNG for services

Kuwait National Petroleum Co. (KNPC) has contracted Golar LNG for floating storage and regasification (FSRU) services. The newbuild FSRU Golar Igloo, due to be delivered this fall, will service the contract by supporting KNPC's LNG import operations at Mina Al Ahmadi.

The contract starts next March and has an initial 5-year period. Golar LNG expects to provide portside FSRU services for 9 months of the year together, leaving the vessel free over the other 3 (winter) months to be deployed on spot carrier and other short-term contracts. Golar LNG estimates the value of the 5-year term at \$213 million.

## Dragon secures more offshore rigs for Caspian Sea campaign

Dragon Oil has signed a memorandum of understanding with BKE Shelf to use jack-up drilling capacity in the Caspian Sea over 3 years. The Neptune jack-up is expected to be available for 9 months of drilling starting later this summer, while the Mercury is expected to be available in the fourth quarter of 2014 to serve the remainder of the 3-year term.

Dragon's newbuild jack-up Caspian Driller is in a Kazakhstan shipyard undergoing final completion and preparation for commissioning. This is expected to take up to 3 months. At the end of this year, it should be mobilized to the Cheleken Contract Area in the Turkmen sector and start drilling in the first quarter of 2014.

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## Dual-role well containment vessel leaves Dubai for Gulf of Mexico

Drydocks World has completed Eagle Texas, a tanker also designed to serve as a modular capture vessel (MCV) in the Gulf of Mexico. In this alternate role, it would provide containment services following a deepwater well control incident in the U.S. Gulf region.

Drydocks World converted the vessel from an AFRA max tanker for Singapore-based shipping group AET. The latter has a 20-year agreement to provide two MCVs to Marine Well Containment Co. (MWCC), the consortium comprising Anadarko, Apache, BHP Billiton, BP, Chevron, ConocoPhillips, ExxonMobil, Hess, Shell, and Statoil.

In total, Drydocks World fabricated 2,789-tons of steel for the construction program with 12.3 mi of pipes and 181 mi of electrical cables.

The MCV will have 700,000 bbl of liquid storage capacity and can process, store, and offload liquids to shuttle tankers. Modular, adaptable process equipment on the vessel will connect to the riser assembly that directs flow from the subsea components.

The process equipment will then separate the liquids from gas, safely store the liquids, and flare the gas. Thereafter, the liquids will be offloaded to shuttle tankers for transport to shore.

In Dubai, the work scope of the shipyard included installing four retractable azimuth thrusters, one tunnel bow thruster, new machinery spaces, diesel generator sets, and associated tanks, auxiliaries, switchboards, and electrical distribution equipment.

The main engine was modified for CPP operation and a control system was added for dynamic positioning, power management, and equipment monitoring. Structural support stools and foundations were added for future installation of topsides processing modules, a turret, flare tower, communications equipment, and control facilities.

In addition, the ship's systems were modified to provide services to topsides processing equipment as well as hydraulic systems for the CPP, thrusters, cargo valve control, and fire pumps. A new main deck central pipe rack was fabricated and piping was installed to support topsides processing equipment.

The living quarters were also upgraded to accommodate more than 65 persons. The program included mechanical completion, pre-commissioning, commissioning, testing, and sea trials of the converted vessel were also carried out.



*Well containment vessel Eagle Texas*

## Damen delivers World Peridot, second PSV 3300 vessel, to owner

Damen Shipyards Galati has delivered the platform supply vessel World Peridot to Norwegian owner World Wide Supply. The 263-ft, 1,653-ton deck capacity DP2 vessel is of the PSV 3300 design. Features include a wave-piercing bow, slender hull lines, and diesel electric propulsion with azimuth stern drives to optimize sea-keeping and fuel efficiency. Damen recently delivered sister vessel World Diamond to the same owner.

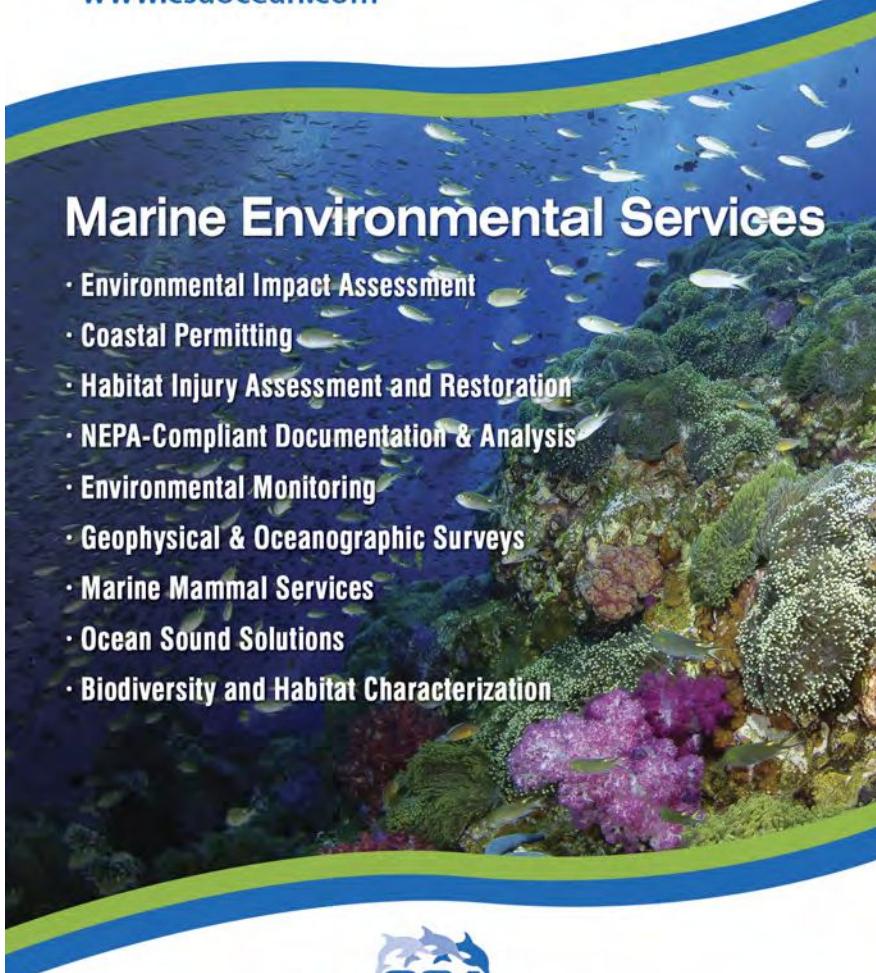


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### Trinity secures drilling rigs for two wells this fall offshore Trinidad

Trinity plans to spud two exploration wells this fall offshore Trinidad.

One will be on the El Dorado prospect in shallow water off the west coast in the PCB acreage where Trinity has a 70% interest. The WS-152 mat-supported jack-up will drill the well on an undrilled fault block on the west flank of the producing Brighton field, also operated by Trinity. The well is to be drilled vertically to 6,138 ft targeting stacked pay in three main horizons, with a further three secondary objectives.

Trinity estimates prospective resources in El Dorado to be 13.4 mmbbl based on primary recovery only. The company is investigating the use of waterflood to double the resource potential.

Rowan's Gorilla III jack-up will drill the GAL-25 prospect on the Galeota license (Trinity 65%) targeting a north-east extension of the producing Trintes field, again operated by Trinity. This well will be drilled vertically to 6,500 ft to test nine stacked reservoir sands. The three primary reservoirs targeted are the M, N, and O sands — all said to be high-quality sandstones offering potential for high-recovery factors. The GAL-25 well tar-



Rowan's Gorilla III jack-up rig

gets 31.9 mmbbl of potential reserves.

"These exploration prospects are close to Trinity-operated producing infrastructure and, as such, can be brought onto production rapidly once successful. In addition the availability of rig options creates operational flexibility to drill additional wells during 2014," said Monty Pemberton, Trinity's chief executive officer.

### Marathon discloses first deepwater pre-salt discovery offshore Gabon

A pre-salt Diaman-1B exploration well offshore Gabon has encountered 160 to 180 ft of hydrocarbon pay in the deepwater pre-salt play, Marathon Oil Corp. said, adding that preliminary analysis suggests that the hydrocarbons are natural gas with condensate content, pending results of ongoing analyses of well data.

The Diaman-1B well was drilled to a depth of 18,323 ft in approximately 5,673 ft of water in the Diaba License G4-223, Marathon said.

The Diaman-1B successfully confirms the existence of a working petroleum system and is the first discovery drilled in the deepwater portion of the pre-salt play. Diaman-1B is located over 60 mi away from the nearest other pre-salt commercial discovery.

The operator and partners are currently evaluating the well results and incorporating them into an overall evaluation of the Diaman-1B discovery.

The well will be temporarily abandoned pending further analysis of the data, Marathon said. Marathon holds a 21.25% non-operated working interest in the Diaba License.

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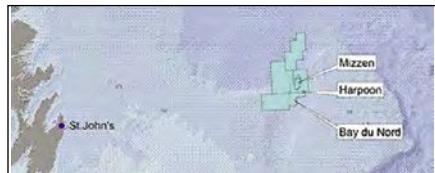
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## **Statoil strikes oil again in Flemish Pass Basin offshore Newfoundland**

Statoil has made a third discovery of crude oil in the Flemish Pass Basin, offshore Newfoundland.

"The success of Bay du Nord is the result of an ambitious and targeted drilling campaign in the Flemish Pass Basin," said Tim Dodson, Statoil's exploration executive vice president. "This discovery is very encouraging."

Dodson explained that as the volumes of both the Bay du Nord and Harpoon wells continue to be evaluated, Statoil is developing a greater understanding of the geology and potential of the basin.



"The Flemish Pass Basin is a strategic part of Statoil's global exploration portfolio. We are now planning to return to the area for further appraisal drilling in the future," Dodson said.

The Bay du Nord and Harpoon wells were drilled by the semi-submersible rig West Aquarius, both in approximately 1,100 m of water.

Bay du Nord is located about 20 km south of Statoil's Mizzen discovery. The Mizzen discovery, announced in 2010, is estimated to hold between 100 to 200 mmbbl of oil. Statoil is the operator of Bay du Nord and Harpoon with a 65% interest. Husky Energy has a 35% interest.

## **Australia's Otto Energy wins exploration permit off Philippines**

Australia-based Otto Energy was awarded a new offshore exploration permit by the Philippines government under a Service Contract 73 (Area 7) in the Mindoro basin. The company, through its local unit NorAsian Energy Philippines, won the bid for Area 7 during the 4th Philippine Energy Contracting Round launched in 2011.

The company will now start reprocessing existing seismic data with a minimum budget of \$500,000 within an initial period of 18 months.

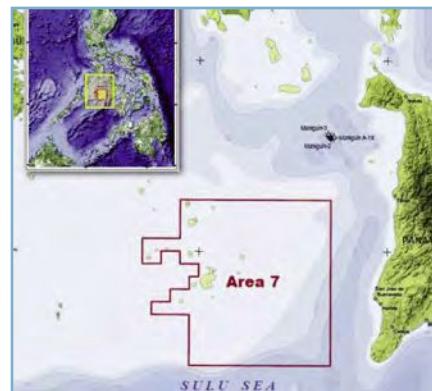
The SC 73 offshore block covers around 3,259 sq. mi with water depths ranging from 328 ft to 4,265 ft.

There is an existing 2D seismic data set of more than 1,864 mi covering the block. In 1994, oil was discovered near the block at the Maniguin wells, flowing at a rate of 200 bbl/d during production tests.

Gregor McNab, Otto's chief execu-

tive officer, said the addition of the new exploration acreage is consistent with company's strategy to build an integrated exploration, development and production company focused on southeast Asia and East Africa. "Service Contract 73 has the potential to restock our existing, high impact, exploration prospect inventory," McNab added.

In October 2008, Otto transformed from sole explorer to an explorer-producer with production commencing at the Galoc oil field in the Philippines.



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## Clair Ridge jackets safely installed west of Shetland

BP and its co-venturers, ConocoPhillips, Chevron, and Shell, have confirmed the safe installation of the Clair Ridge platform jackets, a major milestone in the Clair Ridge project. Clair Ridge is a \$6.97 billion investment in the second phase of development on the Clair field, which lies 75 km to the west of the Shetland Islands.

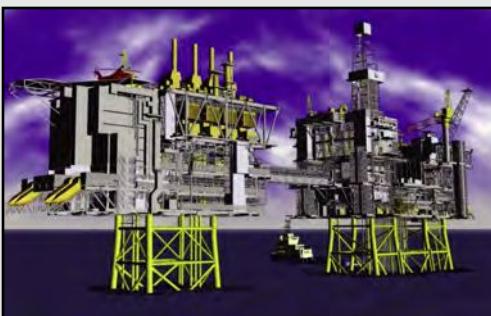
The project will comprise two new bridge-linked platforms, as well as new pipeline infrastructure to connect to processing facilities on Shetland. The next major milestone is the installation of the topsides, scheduled in 2015, with production expected to commence in late 2016.

"Less than 2 years ago we announced our decision to invest in the giant Clair Ridge project," said Trevor Garlick, regional president for BP's North Sea business. "The safe installation of the two jackets in to the sea bed is a fantastic achievement by the project team, and is a very visible sign of our commitment to maintaining a successful long-term business in the UK."

The Clair Ridge development will have the capability to produce an estimated 640 mmbbl of oil over a 40-year period, with peak production expected to be up to 120,000 bbl of oil per day. The project is headquartered in London, where over 750 people are currently employed. Approximately half of the Clair Ridge investment is occurring in the UK, with over 80 British companies providing engineering design and support services, hook up and installation services, manpower, and a wide range of engineered equipment.

Clair Ridge, which was originally discovered in 1977, is the first sanctioned large-scale offshore enhanced oil recovery (EOR) scheme using reduced salinity water injection LoSal® EOR to extract a higher proportion of oil over the life of the field.

To reduce the environmental impact of the project, the platforms will be powered using dual-fuel power generators, incorporating waste heat recovery technology. Vapor recovery will also be used to capture and recycle low pressure gas for use as fuel or for exporting to shore.



*Model of the finished Clair Ridge platform*

### RasGas completes well drilling for Barzan gas project in Qatar

Qatar's RasGas has completed drilling of 30 offshore wells for the \$10.3 billion Barzan gas project. The operation took 4,740 days, three jack-up drilling rigs, and more than 300 employees to complete. The company will now start connecting the wells to subsea pipelines that will supply gas to shore.

The development wells, which cover more than three offshore wellhead platforms and have a total length of around 138 km, will reach more than 3,000 m below the sea's surface.

Once the two trains are in operation, RasGas's facilities, which will include liquefied natural gas and pipeline sales gas, will have a total production capacity of around 11 billion standard cu. ft of gas per day, equivalent to almost 2 mmbbl/d.

The next significant step will be to

connect the project pipelines running from Ras Laffan to the wells located 80 km off the coast of Qatar. The shareholders of the project, Qatar Petroleum and ExxonMobil, appointed RasGas to execute the Barzan gas project and operate the facilities.

### Ca Ngu Vang joint venture offshore Vietnam enters new drilling phase

The HVJOC joint venture has received approvals from the Vietnamese government of an updated full-field development plan for the Ca Ngu Vang project. The CNV field is in block 9-2 in the Nam Con Son basin offshore southern Vietnam.

According to partner SOCO International, the new program includes drilling of the CNV-7P development well, which will access the previously undrilled southwestern corner of the field. Drilling

should start in the second quarter of 2014, with the well coming onstream as a producer in the third quarter.

In block 16-1, the HLJOC joint venture spudded the TGT-10X exploration-appraisal well in mid-June on H5, the main undrilled fault block in the Te Giac Trang field. The location is 3.7 mi south of the H4 wellhead platform.

During drilling into the Oligocene D2 section, the well encountered higher formation pressure than predicted, SOCO said. Due to difficulties running a liner over the Miocene and Oligocene reservoir horizons, the partners agreed to re-drill the reservoir section in which the liner was to be run.

Although this extended the program, the fresh hole section reduced the risk of issues arising during the testing phase, SOCO added. Testing is under way and will comprise three separate tests: one on the Oligocene, in two parts, with two further tests on the Miocene. To date, the first test over a 623 ft section in the Oligocene C has flowed 41.1° API.

### Nong Yao oil development in Gulf of Thailand gets partner financing

KrisEnergy and Mubadala Petroleum have agreed on the final investment decision and will go forward with the Nong Yao oil discovery development in the Gulf of Thailand. The initial phase development concept calls for 23 wells, a well-head processing platform, and a minimum facility wellhead platform with the export of crude oil via an FPSO.

The production capacity will be up to 15,000 bbl/d of oil and 30,000 bbl/d of fluids. KrisEnergy acquired a 25% working interest in G11/48 in 2009. Mubadala is the operator of the block and holds 75%. G11/48 covers 2,622 sq. mi over the southern margin of the Pattani basin and the northwest margin of the Malay basin in water depths of up to 246 ft.

### Foster Wheeler to coordinate Perla construction campaign in Venezuela

Cardon IV, an Eni-Repsol joint venture, has contracted Foster Wheeler to provide project management for the new production facilities for the Perla field in the Gulf of Venezuela. These will comprise offshore structures, trees, controls, offshore processing, subsea flowlines, export pipelines, the shore approach, and utilities facilities from the wellheads to an onshore gas plant, and tie-in to an existing gas and condensate pipeline system. First gas is planned at the end of 2014. Contractors in more than 15 countries are involved in fabrication and construction of the equipment and materials.

## Woodside recommends FLNG technology for Browse gas fields

Australia's Woodside said it will recommend Shell's floating LNG (FLNG) technology and its offshore development expertise to Browse Joint Venture participants to develop the three Browse gas fields. Browse joint venture participants will need to approve the development concept before progressing to the basis of design phase.

Shell's Prelude FLNG vessel, which is being developed with an investment of \$5 billion, is still under construction and will not be ready for production until 2017. The project includes construction of an FLNG facility, which will be used to develop Shell's Prelude and Concerto gas fields, situated in the Browse Basin, off the shore of Western Australia.

The Prelude FLNG facility will feature a double-hulled steel body and will be 488 m long, 74 m wide and weigh about 600,000 tons. It will comprise of 0.26 tons of steel, with a deck area longer than four football fields.

The decision follows the assessment of alternative development models for Browse after the announcement in April 2013 not to proceed with the onshore development at James Price Point.



*Woodside will use Shell's Prelude FLNG vessel for Browse gas fields*

Participants include Woodside as operator, and other partners Shell, BP, Japan Australia LNG, and PetroChina. The Browse gas fields, Torosa, Brecknock, and Calliance, are located in offshore Western Australia, about 264 m north of Broome.

"Through this review, a compelling case has emerged for floating LNG as the best option for early commercialization of the world-class Browse resource," said Peter Coleman, Woodside's chief executive officer.

Other development concepts considered included a pipeline to existing facilities in the Pilbara and a modified option in the Kimberley.

## Second Golden Eagle development jacket set for UK central North Sea

Heerema Fabrication Group (HFG) has completed the 6,400-ton production utilities quarters jacket for Nexen's Golden Eagle development in the UK central North Sea, the company said.

In May, the 6,500-ton wellhead jacket for the same project sailed from Heerema Vlissingen to its offshore destination where it was installed on 10 June.

Nexen contracted HFG for parallel fabrication of the two jackets and piles in October 2011, and construction started in February 2012. Both jackets are 426 ft long with a footprint of 147 ft by 147 ft.

"Building two jackets simultaneously of this size is a logistic challenge to get everything prepared and on schedule," said Wim Matthijssen, Heerema Fabrication Group's chief operating officer. "Jacket construction requires a lot of hoisting, and building in parallel results in increased lifting activities on our Vlissingen yard."

The \$3 billion Golden Eagle development is designed to produce 140 mmboe over an 18-year period. First production is scheduled for late 2014 at an initial rate of up to 70,000 boe/d.

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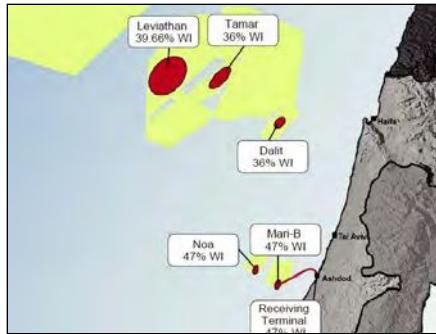


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### Tamar gas production facility off Israel now fully operational: Noble

U.S.-based Noble Energy said the Tamar production complex offshore Israel became fully operational during the second quarter of 2013, with up-time reliability of more than 99%.

Israel's gross gas production averaged 676 mmcf/d, with Tamar contributing 636 mmcf/d, with a single-day production high of 784 mmcf/d during the period.

There are plans to expand the Ashdod onshore reception terminal, which handles Israeli gas produced offshore.

Noble estimates resources at this year's offshore Karish discovery in the

1.6 to 2 tcf range. Total gross mean resources in the Levant Basin now stand at around 38 tcf. Offshore neighboring Cyprus, Noble started appraisal drilling this spring on the deepwater Aphrodite gas discovery and expects to complete the well this summer.

### PAR says abandonment near for Azurite field offshore Congo

The Murphy Oil-operated Azurite field offshore the Republic of Congo (Brazzaville) has reached its economic limit, according to partner PA Resources (PAR). Following the final shipment of oil, abandonment will start later this year.

In the Mer Profonde Sud exploration area in the same region, a farm-out offer process is under way. PAR has an 85% operating interest. The partners have secured an extension of the license until November to complete subsurface studies and to attract one or more partners for continued exploration. The concession carries a single-well commitment.

Earlier this year, the company exited a Greenland permit and is looking to farm out a 40% stake in its Danish North Sea 12/06 license (PAR 64%), which contains the Lille John discovery.

### Sri Lanka government invites bids for ultra-deepwater blocks

The Sri Lankan government has invited oil companies to bid for new six ultra-deepwater blocks, which are available across areas of between 18,000 sq. km and 26,000 sq. km each around the country's coastline, the government said.

Sri Lanka's oil and gas regulatory body, the Petroleum Resources Development Secretariat (PRDS), said these six blocks will be awarded outside the current bid round and will be based on the experience and capability of the applicant, along with their proposed work commitment. The basic framework for the agreement is a 2-year period of exclusivity for data acquisition, processing and interpretation, followed by a further 1 year for discussions with the PRDC on potential next steps.

On 29 August, PRDS was to conduct a pre-bid clarification meeting in Colombo to discuss the format for submission of bids, data purchase requirements and availability of new data, among other matters. PRDS, which launched the offshore tender in first half of 2013, extended the deadline for 2 months for the submission of bids.

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### Iranian Offshore Oil Co. targeting production stimulus from fields

Iranian Offshore Oil Co. (IOOC) plans to step up water injection to improve oil recovery from fields in the Persian Gulf. Currently, 400,000 bbl/d of water are injected into the IOOC-administered fields. This figure is expected to reach 500,000 to 530,000 bbl/d this Iranian calendar year to March 2014.

Simultaneous water and gas injection into the offshore Doroud oil field, close to the island of Kharg, should enhance the recovery rate from 23% to 33%.

IOOC bases its projections on a 25% recovery factor from 106 Bbbl of in-place oil in Iranian waters of the Persian Gulf and Caspian Sea, of which 96 Bbbl are in the Persian Gulf.

### Energean drilling campaign to lift oil production offshore Greece

Energean Oil & Gas has inaugurated a new drilling campaign offshore Greece, with the main aim of increasing production from the Prinos and Prinos North fields. Energean has committed \$60 million to the program, which involves drilling four wells in 2013 with the following objectives: one injection well (PB-23) to increase pressure in the Prinos oil field; two infill production wells (PB-34 and PB-37) in the Prinos field; and one horizontal extended reach well (PNB-H4) in the Prinos North field.

The jack-up GSP Fortuna should take 6 months to drill the wells, which are expected to increase production from the current 2,000 bbl/d to 4,500 bbl/d. In 2014, Energean plans development drilling on the offshore Epsilon field.

### Total produces first gas from Dutch K-quad subsea tieback

Total E&P Nederland has produced first gas from the K4-Z field in the Dutch North Sea. The field is in license K4a, 87 mi northwest of the port of Den Helder. The project, a 50-50 partnership with EBN, has potential to deliver around 11,500 boe/d.

K4-Z was discovered in 1974, but remained undeveloped until the Dutch government introduced a marginal field policy and an accelerated depreciation measurement in 2010. A two-well subsea completion has been installed, 10.6 mi west of the K5 Central Complex, in a water depth of 118 ft. The subsea facilities are linked to the K5-A platform.

Gas is exported through the WGT trunkline to the Den Helder gas terminal. EBN will sell its share under an existing gas sales agreement.

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#### **Statoil uses hybrid drill bit for first time in deepwater U.S. Gulf**

Statoil has used the Hughes Christensen Kymera drill bit for the first time in the deepwater Logan field in Gulf of Mexico. A 26-in. Kymera hybrid bit with 19 mm cutters and premium metal face seals was used to drill the 26-in. vertical section through sediments and salt to

section total depth, enabling 22-in. casing to be set 450 ft deeper than the well's original objective.

The Kymera technology achieves a rate of penetration of 57 ft per hour through 1,995 ft of salt, as well as 123 ft per hour through 1,131 ft of sediments. Overall, the rate of penetration was improved by 26% compared to the nearest offset. The Kymera bit is a hybrid that combines PCD and roller cones.

#### **Exxon licenses alternate path technology to Weatherford**

Mobil Upstream Research has awarded Weatherford International a limited international license to use the alternate path gravel packing cased and open hole completion technology.

The license allows Weatherford to produce and deploy alternate path technology for ExxonMobil affiliates around the world and for ventures in which ExxonMobil participates.

Alternate path is a patented technology developed by ExxonMobil to improve the reliability of wells completed in sand-prone reservoirs. It provides alternate flow paths, called shunt tubes, in the downhole tool used for packing gravel in

the producing sections of a well. Shunt tubes enable the alternate path packing operation to continue when sand prematurely blocks the well annulus, which would stop a conventional packing operation. The shunt tubes divert the gravel slurry around sand blockages and through distributed portholes to fill voids in the annulus until a complete pack is in place.

#### **PetroSA opens 'state-of-the-art' geoscience center in South Africa**

PetroSA has become the first company to establish what it terms a "state-of-the-art" geoscience collaboration, visualization, and technology center in South Africa. The \$1.45 million Ulwazi (Knowledge) Collaboration and Visualization Centre presents seismic and geological data in detailed, 3D views of subsurface formations. All disciplines of PetroSA's upstream asset teams use the facility to assist exploration and development of oil and gas prospects. The complex will be used on a daily basis to monitor and guide drilling operations for PetroSA's Project Ikhwezi, an initiative to secure additional feedstock reserves from South Africa's southern offshore gas fields to sustain the Mossel Bay gas-to-liquids refinery.

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# Can the Supply of Skilled Workers Meet the Demands of the Offshore Industry?

By: Paul Cave, Managing Director, Seatechs

Offshore construction is a massive industry in every sense. Worth billions of pounds to the global economy, employing tens of thousands of people worldwide, and involving projects in some of the planet's deepest waters, it's not hard to see why it's becoming the career of choice for skilled workers who are seeking steady and financially rewarding employment.

So it should stand to reason, therefore, that the supply of personnel can meet the growing demand of the offshore and renewable energy companies, who for each project they undertake can rely on a ratio of 50% direct employees and 50% agency workers.

However, that isn't necessarily the case, and there are a number of reasons why.

My company, Seatechs, which currently has around 10,000 people internationally on its database, receives dozens of CVs on a daily basis from people who are keen to begin a career in the offshore industry. The problem is many of them simply don't have transferrable skills so we can't use them. I've been contacted by bricklayers, carpet fitters, and even a prison officer who for one reason or another want to try their hand working offshore. But they can't offer anything to a company that is drilling for oil miles out to sea. There's no doubt they have a wealth of experience in their own fields, but they're not what the companies we supply to are looking for.

We've definitely noticed an increase in the number of calls and emails we receive from people who want to know more about the opportunities within the offshore industry, and I suspect that's largely in part due to the fact so many more people are out of work and have a family to support and bills to pay.

It's also fair to say that working offshore isn't for everyone. You're away from home a lot, 6 months of the year when you add all the weeks up. Of course, the flip side of that is you have 6 months off, but when you are away from home it's an endless cycle of sleeping, eating, and working. I've known some people who go away on a project and last a week because they discover it's just not for them. And these are hard working people who for years have been employed as perhaps an electrical engineer or catering professional onshore, but realize very quickly the change of lifestyle just isn't for them. They like the money, but not the demands that come with it.

Another issue that affects the industry is access to hands-on training, which enables potential employees to take the next step to becoming fully equipped offshore workers. And when I talk about potential employees, I don't mean people who are completely unskilled. They are fully qualified in

their particular field, but applying those skills offshore is very different to everyday working.

For them to be ready, they need to be able to train properly and the only way to do that is on board a vessel. This is where the major obstacle arises. Running an offshore project comes with massive costs, so the vessels involved only have the beds they need to sleep the crew on a shift basis. There just isn't the capacity to dedicate beds to trainees, and the companies paying for them don't have, or can't justify, the additional investment that would be needed for a bigger vessel.

Of course, having worked in the industry for 25 years and travelled across the world, I can understand why the companies involved have to work in this way. Every bed costs money, and it just doesn't make sense financially to have beds for people who aren't in a position to work at full capacity.

But equally that presents a longer-term problem to the industry because I'd say, currently, the average age of offshore workers is around 48. And in a job that's as physically and emotionally demanding as working offshore is, you wouldn't expect people to work much beyond 50.

So how do we ensure that as those workers retire, people at the other end of the career ladder are ready to step up to replace them?

Simulated training would seem the obvious solution, but there aren't many companies that provide this type of training. A couple of our clients do, but they can only extend this to a few people at any one time as, again, it's a drain financially. Simulated training is also no substitute for the real thing.

It is a difficult situation, and I can see it from both sides. Companies who manage the projects need to protect themselves financially so they need the best people working for them. But to ensure that is the case in the long term, training has to be available for people who have the skills that the industry needs and are ready to step up.

There certainly won't be a quick fix to this problem, and it's something that all interested parties need to work on together. If they do this and come up with a solution that benefits everyone, the supply of skilled workers certainly will meet the demands of the offshore industry.

## About the author

Paul Cave is managing director of offshore recruitment specialist Seatechs, which supplies high calibre contract personnel for offshore oil and gas, telecom, and renewable energy projects across the globe. He set the business up in 2007 after 25 years working in the offshore industry. Based in Hartlepool, Seatechs currently has 10,000 members on its worldwide database and last year saw its turnover increase to more than £8 million.

## Phoenix successfully demonstrates its AUV deepwater search capabilities in search and recovery of F-15

Phoenix International Holdings, Inc. (Phoenix) deployed its 4,500 m depth capable AUV in August 2013 to successfully search for and locate a U.S. Air Force F-15 aircraft lost in 3,000 m of seawater, 70 m east of Okinawa. A Phoenix team operated the 21-in. Bluefin AUV during the 2-day search mission, covering 40 sq. km of seafloor in 20 hrs of bottom time. Side-scan sonar data were downloaded from the AUV following each dive and processed into a mosaic to locate and identify the F-15 aircraft debris field, which measured 60 m by 800 m.

Following the location and mapping of the debris field, the Phoenix team shifted into recovery mode, deploying a company owned 6,000 m depth capable ROV, Remora III, to verify the wreckage and identify items of interest. Over the next several days, the Remora ROV recovered a number of priority items as directed by the investigation team to assist



them in determining the cause of the accident.

This search and recovery effort was conducted under Phoenix's multi-year Undersea Operations contract with the NAVSEA's Office of the Supervisor of Salvage and Diving. All search and recovery operations were conducted from USNS Salvor (T-ARS 50), which was mobilized in Okinawa, Japan. The successful search and recovery project served as an AUV capabilities demonstration that proved the effectiveness and efficiency of the Phoenix

AUV to conduct deepwater reconnaissance surveys. Additional data collection technology demonstrated on the AUV included multi-beam sonar and sub-bottom profiler operations. Phoenix also demonstrated the ability to rapidly deploy the AUV and ROV systems internationally, mobilize onto a vessel of opportunity, and perform combined ROV and AUV operations with a small, integrated crew.

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

## Kongsberg reveals Munin compact offshore survey AUV

Kongsberg Maritime has presented Munin, an AUV for offshore survey, during Offshore Europe 2013 which was held from 3 to 6 September 2013 in Aberdeen (UK). Kongsberg Maritime's Subsea Division has designed the Munin AUV to collect high-resolution sonar data georeferenced by a survey-grade positioning system. Capable of providing the same high-level performance and survey accuracy of the rest of the Kongsberg AUV family, Munin is an efficient, compact vehicle design, providing for easier launch and recovery and the possibility of using smaller launch vessels.

Munin features a modular structure that provides the ability to install extra batteries to extend operational scope for missions lasting up to 24 hrs at depths up to 1,500 m. The Munin weighs in at less than 300 kg in air, is 34 cm in diameter, and its length is between 3 and 4 m depending on configuration.

Munin is capable of carrying a complete subsea survey payload. It features an advanced new rigid design that integrates the navigation systems and acoustic payload sensors in a single mechanical housing, which is factory calibrated and requires no re-alignment after transport or re-mobilization.

The IHO special order (S-44) compliant sensor payload includes a custom version of the EM2040 multi-beam echo sounder, 200 to 400 kHz, 1° x 1° beam width, swath 120° in addition to an EdgeTech side-scan sonar 230/540 kHz and forward looking sonar with advanced terrain following and collision avoidance. Also included is an NBOS conductivity and temperature (CT) sensor while a sub-bottom profiler and still image cameras can be specified.

Munin's communications and navigation systems feature Kongsberg Maritime's cNODE acoustic command and data link, WiFi and Iridium. The Kongsberg Maritime NavP aided inertial navigation system (AINS) with Honeywell HG9900 inertial measurement unit (IMU) feature within the navigation system alongside cNODE and HiPAP (option), which offer precise, reliable acoustic positioning.

In Norse mythology, Munin (Muninn) and Hugin (Huginn) are a pair of ravens that fly around the world of Midgard, collecting information for Norse God Odin.

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



## Falcon for rigs, wrecks, and reefs

Bound for tasks at the southernmost tip of Chile, Chilean diving and ROV operator, Nautilus, has added a Falcon ROV to its Saab Seaeye fleet of ROVs.

Francisco Ayarza, who founded Nautilus in 1959, bought his first Seaeye ROV in 1991 — and it is still in operation today, some 22 years later. Then he added a Boxer and a Tiger, and continues to expand his fleet with the top-selling Falcon.

It will be deployed throughout the Magellan Strait — the important navigational channel between the Atlantic and Pacific oceans — and also further afield in the South Atlantic and Antarctica where some of the most hostile environments in the world can be found.

Missions will range from offshore support for the Chilean and Argentinean oil industries, wreck exploration, and marine science studies amongst the reefs and waters of the region.

The Falcon will also examine salmon fishery production centers and inspect wastewater outflow pipelines, outside as well as inside.

Nautilus has already deployed the Tiger for work at the marine wastewater outfall at Puerto Montt city, where it



assisted in severing an 800-mm diameter outfall line at 130 m depth by positioning a tungsten steel cutting wire and monitoring the process throughout.

Francisco Ayarza chose the Falcon for its versatility. It is small and light enough to be manhandled overboard, even from a small boat. Although it has the power to operate a wide range of robust tooling and sensors for oil industry work with plug-and-go simplicity, it has a delicate touch that can collect fragile samples for marine science studies and carefully remove artefacts from wrecks.

Five powerful, multi-directional thrusters with velocity feedback drive the Falcon's fingertip maneuverability and keep the vehicle steady, even in strong crosscurrents, while undertaking precision tasks or filming.

Nautilus' 300 m-rated Falcon comes with manipulator and rope cutter, front and back facing cameras, an Imagenex sonar, altimeter, cathodic probe, and cleaning brush.

Valuable dive time can be saved by first sending down the ROV to locate the dive site and preview the area for hazards before allowing the diver to swim directly and safely to the point of interest. The ROV can also save diver time by transporting tools and objects back and forth to the surface.

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

## Seatronics Ltd announces global representative agreement with Zetechtics Limited

Seatronics Limited, an Acteon company, and Zetechtics Limited have signed a global representative agreement for the Jupiter range of subsea ROV intervention control systems and associated products.

The agreement includes the provision of rental equipment that will be held in all Seatronics' locations: Brazil, Singapore, Australia, and the UK. In addition to extensive pools of rental equipment, each location will hold a substantial sales stock, thereby offering a flexible and rapid response to all client requirements.

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David Currie, managing director, Seatronics, says: "Seatronics is a market leader in the rental and sale of marine electronic equipment and continues to offer the finest products and solutions to the subsea services sector. The Zetechtics agreement demonstrates our commitment to widening our portfolio of specialist ROV equipment and will further complement the Seatronics range. Both companies embody the quality-driven, market-leading approach demanded by customers in today's subsea oil, gas, and renewables sectors. The global coverage, in-house knowledge, and enhanced value-added services that Seatronics can provide will, I am sure, lead to an increased level of interest in the Zetechtics product range."

Tim Overfield, managing director, Zetechtics, says: "This agreement provides professional worldwide availability of Jupiter products and services. As a result of the agreement, Seatronics and Zetechtics clients can expect enhanced service and support across the entire range of Jupiter products."

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

### **Johns Hopkins University Applied Physics Laboratory orders a second Iver2 AUV**

OceanServer Technology, the leader in shallow water AUV technology, announced that the Johns Hopkins University Applied Physics Laboratory (APL) has agreed to purchase another Iver2 AUV for delivery this summer. This second system provides additional capability for APL's general research, including the development of underwater sensor systems. Founded in 1942, APL is a not-for-profit center for engineering, research, and development and solves complex problems that present critical challenges to the nation.

Johns Hopkins APL will be taking delivery of an Iver2 EP42 platform that includes a second (user) CPU and intuitive API. The AUV will be equipped with the new EdgeTech 2205 (400/900 kHz) high-resolution side-scan sonar. The Iver's "open" software architecture and defined hardware interfaces allow researchers and OEMs to quickly adapt the Iver for a variety of applications. The EP42 vehicle includes OceanServer VectorMap Mission Planning and Data Presentation tool, which provides geo-

registered data files that can be easily exported to other software analysis tools. The VectorMap program can input any geo-referenced chart, map, or photo image, allowing the operator to intuitively develop missions using simple point-and-click navigation.

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

### **Klaipeda Harbour seabed mapped with GeoSwath Plus**

The Lithuanian Coastal Research and Planning Institute (CORPI) has recently completed the first ever 100% coverage survey of Klaipeda Harbor using the Kongsberg GeoAcoustics GeoSwath Plus COMPACT multibeam echo sounder system.

This EU-funded project was carried out during the implementation of the Sustainable Management of Contaminated Sediments (SMOCS) Project, developed under the framework of the Baltic Sea Region Programme 2007-2013.

The work focuses on the mapping of contaminated sediments in the modern port development area. Full-scale, shallow water multibeam, side-scan sea

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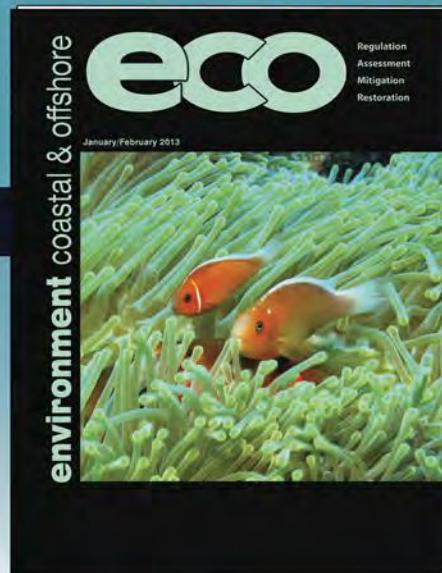
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#### **EDITORIAL CONTACT:**

Greg Leatherman  
772-219-3069  
[editor@eco-tsc.com](mailto:editor@eco-tsc.com)

#### **CORPORATE CONTACT:**

MJ McDuffee  
772-219-3027  
[mj@tscpublishing.com](mailto:mj@tscpublishing.com)

floor imagery, and seismic mapping were carried out by CORPI's staff in order to gain a full understanding of the morphology and distribution of the seabed sediments. This project has special significance as it provides new information for ongoing dredging work and for future harbor developments that, relying on these new data, can now be developed right up to the maximum possible depths. For sustainable future development this highly dynamic environment needs to be fully understood, with proper recognition of the seabed morphology and sedimentary patterns of superficial deposits essential.

For more information, visit [www.smocs.eu](http://www.smocs.eu).

#### R/V Falkor employs advanced MacArtney LARS to handle HROV

In June 2013, a dedicated team of oceanographers and astrobiologists onboard the Schmidt Ocean Institute research vessel, R/V Falkor, set sail on the two-leg Oases 2013 cruise to explore the Mid Cayman Rise.

Widely recognised as one of the deepest and slowest spreading mid-ocean ridges on Earth and as one of the



deepest points in the Caribbean Sea, the Mid Cayman Rise is home to a diverse and remarkably abundant hydrothermal venting phenomenon.

Empowered by the Nereus — a Woods Hole Oceanographic Institution hybrid ROV, scientists searched for life and geochemical phenomenon in this extreme seafloor environment. The one-of-a-kind Nereus, which in 2009 visited the deepest parts of the Mariana Trench, allowed scientists to extend their investigations throughout the very depths of the Mid Cayman Rise, which reaches to more than 6,500 m deep.

During the entire cruise, the crew of the R/V Falkor made good use of the powerful and versatile MacArtney Articulating A-frame to successfully launch and recover the Nereus. Mounted on the research vessel's stern, the MacArtney A-frame makes up a vital element of the launch and recovery capabilities of the R/V Falkor.

Using the A-frame and a MacArtney fiber optical ROV winch system from the UNOLS East Coast Winch Pool, the Nereus was effectively deployed on multiple dives during the cruise — in AUV as well as in ROV configuration. The articulating capacity of the A-frame made launch and recovery as well as on-deck maintenance and reconfiguration of the Nereus easier, more convenient, and safer for the Falkor ROV operator team. In essence, the articulating A-frame system provides easy access to the top of the frame, enabling operators to prepare the Nereus for launch, while working at deck level.

Beyond the deployment of the Nereus, R/V Falkor supported a broad variety of scientific operations during the cruise, including multibeam mapping, chemical and physical data collection at vent sites, interactive research at vent sites, observation, and sampling of associated biological communities, satellite telepresence with shore-side scientists, and multiple CTD casts. CTD casts performed during the Oases cruise were undertaken using a special MacArtney CTD winch system.

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

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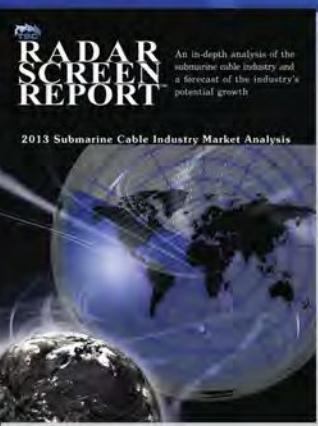
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## COM DEV completes testing for M3MSat

COM DEV International Ltd. announced that the Maritime Monitoring and Messaging Microsatellite (M3MSat) has completed final testing at the Canadian Space Agency's David Florida Laboratory in Ottawa, Ontario. The satellite is being prepared for shipment to Russia for a launch by Roscosmos from the Baikonur Cosmodrome launch facilities in Kazakhstan in December 2013. The M3MSat low-earth orbit microsatellite is a project of the Canadian Space Agency (CSA) and Defence Research and Development Canada (DRDC), an agency of Canada's Department of National Defence (DND). COM DEV is the mission prime contractor for the project. The satellite bus and payload were designed, developed, built, and tested by COM DEV. COM DEV along with its subsidiary exactEarth co-invested in the M3MSat spacecraft to enhance its capabilities and performance. The M3M microsatellite will carry two payloads. The primary payload is an advanced Automatic Identification System (AIS) for detecting vessels. The secondary payload is a Low Data Rate (LDR) communications package that will receive and retransmit data from isolated earth-based transmitters. DND has granted a license to exactEarth to commercialize the AIS data collected from M3MSat and integrate it with the data collected from the rest of the exactEarth constellation. COM DEV built both payloads and the satellite bus and integrated the complete spacecraft at its facilities in Cambridge and Ottawa, Ontario.

## MTN continues partnership with Mano Cruises

MTN Communications will continue to be the communications provider of choice for Mano Cruises, the leading cruise company in Israel. Mano has increased its connectivity services in conjunction with deploying MTN's Internet and crew calling solutions. This effort will further increase the scope of communications for guests and crew sailing throughout Europe. The MTN solution allows Mano to fully localize its Internet experience in Hebrew, enabling guests on board to surf the Internet in their native language. Ten other languages are also available through a simple language selection option to meet the needs of Mano's diverse passenger base. The deal allows Mano to continue to offer a quality communication experience to guests as they explore Europe. The strategic partnership with MTN will help improve customer loyalty and increase repeat cruises as well as provide crew with a reliable means to stay connected while away from home.

## RigNet installs iDirect hub in Brazil

VT iDirect, Inc., a company of VT Systems, Inc., announced that RigNet, Inc. has deployed an iDirect Series 51F Universal Satellite Hub in Guaratiba, Brazil. This current installment will enable RigNet to accelerate its penetration of the region's growing oil and gas and energy maritime markets. iDirect is a world leader in satellite-based IP communications technology. Based on the network expansion, RigNet will offer a managed service for energy, deepwater maritime, and remote applications such as VoIP, Internet, video-conferencing, and video services. The network delivers Ku-band bandwidth over iDirect's Evolution iDX 3.1 software and X5 remote. This deployment follows RigNet's recent expansion of iDirect services into the Asia Pacific and Middle East regions.

The goal of these deployments is to provide regional TDMA services for the energy maritime sector and build seamless Ku-band services on a global scale. Expanding its coverage to the Latin American market is a strategic move for RigNet as the region continues to grow and demand greater satellite connectivity. The continued investment in the iDirect platform enables RigNet to offer managed services to both onshore and offshore energy maritime, oil and gas, and other markets, connecting remote and central locations to improve operational efficiencies.

## Ultra ORION provides integrated maritime communications



Ultra Electronics TCS has introduced a new radio system providing multi-channel, high-capacity connectivity for maritime applications.

The Ultra ORION radio solves many problems for maritime organizations, both in the defense and public safety sectors. It is suitable for a wide variety of missions such as anti-piracy, counter-terrorism and border or coastal security.

Paul Zweers, vice president, business development & strategy, Ultra Electronics TCS, stated, "One of the main issues facing smaller maritime platforms, such as patrol boats, is lack of connectivity to the Common Operating Picture. Currently, these platforms cannot send or receive video or large map files and have very limited interoperability with other vessels, agencies, and shore-based headquarters. The addition of an Ultra ORION data node on each platform will greatly enhance mission effectiveness."

With the Ultra ORION radio system, maritime assets will be able to deliver high-definition video exchange, increased situational awareness, sensor fusion, and relay capabilities to support beyond-line-of-sight operations.

Ultra ORION is the 4th generation of high-capacity, line-of-sight (HCLOS) radio manufactured by Ultra Electronics, TCS. This multi-channel, multi-band radio system performs the role of high-capacity backhaul for tactical networks interconnecting C4ISR elements. It can also act as a backhaul repeater, range extension node, an aggregation/distribution and access point, a WLAN or a remote station at the network's edge.

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

## SMSGlobal CrewCommCenter installations surpass 3,000 vessel milestone

SMSGlobal Ltd. announced that the number of vessels now equipped with its CrewCommCenter has reached 3,000. CrewCommCenter creates an on-board Internet Café, allowing seafarers to stay in touch with family and friends without interfering with the ship's official business communications.

The milestone is doubly significant as SMSGlobal marks its tenth year in the maritime industry. Today, around the



globe, more than 120,000 seafarers use CrewCommCenter to exchange approximately 2,200,000 messages with over 1,300,000 friends and loved ones onshore each month.

For ship owners, the significance of crew retention has been growing rapidly the last decade, so much so that crew welfare is now a key focus on the mind of any shipping operator. This is especially true in this age with quicker port turnaround times, more often less than a day, and longer stretches out at sea, sometimes 30 days straight. Crew access to personal communications and the ability to correspond with their loved ones and friends back home is widely acknowledged as the most crucial of all crew welfare initiatives.

In the past, affordability of personal communications has always been a big challenge. Seafarers typically spend at least \$100 per month on personal communications, which for some is already a tidy sum. Privacy and confidentiality of personal communications is also an ongoing concern for seafarers.

CrewCommCenter provides the seafarer convenient, affordable, private communications with their loved ones and friends, enabling them to send and receive e-mails and SMS, read news from home, ship manager announcements, converse through low data Instant Messaging, and browse the Internet.

At the same time, CrewCommCenter also addresses the shipowners concerns, including cost and usage controls, ship operations security and IT compromises, support, maintenance and administrative hassles, and costly initial investments or capital outlays. It allows operators to set limits for sending and receiving messages, establishes fixed monthly charges for each module ensuring that costs are predictable, and provides security by imposing restrictions on access, enabling content control and allowing owners to create white and blacklists.

CrewCommCenter offers simple, industry standard protocols and interfaces for system management. Remote configurations improve ease of maintenance and administration is guaranteed. As CrewCommCenter is a software-based solution, there is no need for costly capital outlays for additional hardware.

For more information, visit [www.smsglobal.net](http://www.smsglobal.net).

## Inmarsat helps Volvo Ocean Race set new standard

Inmarsat has been selected as the official Satellite Communications Partner of the Volvo Ocean Race 2014-15, providing global communications for the fourth consecutive edition. The 2014-15 marathon will be the most digitally connected, around-the-world race in history, featuring the first purpose-built, one-design racing boat geared to deliver 24/7 satellite communications to an audience of tens of millions.

Inmarsat's award-winning I-4 global satellite network will be responsible for delivering safety services, vessel tracking capabilities, audio and video communications, and access to social media during the 9-month, around-the-world competition.

Each of the eight competing yachts will have a trained Onboard Reporter (OBR), who will be responsible for delivering multiple hours of broadcast and digital content during the course of the race.

For the 2014-15 edition, Inmarsat will supply the network and satellite services for the FleetBroadband 500 (FB500), FleetBroadband 250 (FB 250), and Inmarsat C safety services and tracking devices on board the new one-design Volvo Ocean 65 race yachts. FleetBroadband 500, Inmarsat's flagship maritime service, delivers an always-on connection of up to 432 kbps for applications such as email, Internet access, real-time electronic charts, and weather reporting.



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#### **907-GEM Expandable Gigabit Ethernet (GbE)**

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It also features Streaming IP with guaranteed connection rates of up to 256 kbps available on demand for live applications such as high-definition video streaming. In addition to Inmarsat C safety services and tracking, each of the race yachts will carry an IsatPhone Pro satellite phone in their liferaft packs.

Onshore, support teams will be equipped with Inmarsat's BGAN terminals, enabling them to set up a full broadband communications suite at every port the race visits.

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

### Batelco Radio MOC providing vital services for regional shipping

Bahrain Telecommunications Company Maritime Operating Centre (Batelco MOC) has been recognized by the ITU (International Telecom Union), IMO (International Maritime Organisation), and all countries in the Middle East region as the main Maritime Station for the Middle East region for coordinating all safety and distress messages, for over 80 years.

Batelco MOC has been providing advanced marine communications to the shipping industry and is globally recognized for its excellence. The MOC, located at Batelco Telegraph House in Salmaniya, is equipped with radio communications systems and provides direct linkage to the outside world through sophisticated networks.

At Batelco MOC, proficiently trained engineers and technicians monitor operations around the clock 365 days a year. Distress messages can be picked up from vessels not only in the Gulf waters but also far beyond Bahrain territorial waters. Batelco staff responds instantly by informing the relevant authorities in the area closest to the distress signal — ranging from medical emergencies, technical problems and other urgent situations.

If the situation occurs in Bahrain territorial waters, Batelco informs the Harbour Master, Coast Guard, and Bahrain Navy among other relevant authorities who then immediately react, instigating a relevant rescue plan.

MOC staff monitors all distress calls from the time they are received until the subsequent rescue operation is complete to ensure that everything that can be done has been done. Without this invaluable service, which never takes a day off, many lives could be lost at sea.

A wide range of emergencies have been dealt with over the years from ships impacted by cyclones, men overboard and fires on board, to mention a few.

In addition to monitoring distress signals, the MOC broadcasts weather reports twice a day at 7am and 7pm, which can be accessed by all regional shipping. Receiving such information is a valuable service for those at sea whose safety depends on knowing if severe weather is forecast, for example.

Furthermore, navigational warnings are issued every 4 hours throughout the day and night. Radio navigation information is issued to all shipping in the area, including hazards to navigation, reports of ships in distress and urgent navigational information required by the captain at sea and broadcasted by Bahrain Radio (Batelco).

Mariners are requested to inform Bahrain Radio (Batelco) immediately on the discovery of new dangers or suspected dangers to navigation and changes or defects in aids to navigation noticed in Sub-Navarea IX- Arabian Gulf and its approaches.

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

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## KEYNOTE SPEAKERS

Tuesday Nov. 12th



**Don Ross**

Integrity Management  
Specialist & Surveyor  
Petrobras America Inc.

As a Project Surveyor for Petrobras America, Don Ross is working on the Cascade and Chinook Project, and is a member of The Cascade and Chinook Integrity Management Team. Mr. Ross is a Texas Registered Professional Surveyor, is a Certified Hydrographer from the American Congress on Surveying and Mapping, and a Certified Project Management Professional from the Project Management Institute.

Tuesday Nov. 12th



**R. Michael Haney**  
Director  
Douglas-Westwood

R. Michael Haney founded Douglas-Westwood's Houston office in 2012 and has more than a dozen years' experience consulting for energy and chemicals clients with Accenture, Arthur D. Little and Booz Allen Hamilton. Mike has completed consulting projects for most of the IOC's, many NOC's, and several oilfield service clients, working on projects around the world.

Wednesday Nov. 13th



**Pierce Cohen**  
Subsea Specialist  
Chevron Energy  
Technology Company

Pierce is a member of the Subsea Survey and Positioning team at Chevron, and currently serves as the project manager for their AUV Development Program. Pierce began his career with Chevron Energy Technology Company after graduating from the University of Texas with a B.S. in Mechanical Engineering.

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# PRELIMINARY TECHNICAL PROGRAM

Monday

12:00 - 7:00 PM	Setup & Registration
6:30 - 8:00 PM	Ice Breaker Reception

Tuesday

8:00 AM	Registration opens
9:00 AM	Keynote Speaker - <i>Don Ross – Petrobras America, Inc.</i>
9:30 AM	Keynote Speaker - <i>Michael Haney – Douglas-Westwood</i>
10:00 AM	Exhibit Hall Opens
10:00 AM	Break in Exhibit Hall

Track 1

Track 2

11:00 AM	<b>Subsea Inspection of Vibration and Acoustic Noise</b> - <i>Justin Curry, Geir Instanes, Audun O. Pedersen and Øyvind L. Rørtveit - Clampon</i>	<b>Approach to Subsea Integrity Management (IM) in Ultra Deepwater</b> - <i>Ade Ogungbire - Genesis - a subsidiary of Technip</i>
11:30 AM	<b>ROV and Diver-less IRM Work on Risers</b> - <i>Christian Hagen - LBO</i>	<b>Wireless Integrity Management: Using Subsea Wireless to Optimize Asset Life and Performance</b> - <i>Ian Crowther - WFS</i>

12:00 - 1:30 PM	Lunch in Exhibit Hall
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Track 1

Track 2

1:30 PM	<b>Advances in AUV Pipeline Inspection</b> - <i>Lou Dennis - Lockheed Martin</i>	<b>Data Harvesting from Seafloor Sensors for Reservoir Production Monitoring using an Acoustic Modem on a Liquid Robotics Wave Glider</b> - <i>Captain Virginia Anne Newbern - Liquid Robotics Oil &amp; Gas - A joint venture with Schlumberger</i>
2:00 PM	<b>Bluefin AUVs: Modular Survey Platforms for Effective Offshore Operations (Specifically for Pipeline Survey)</b> - <i>Omer Poroy and Nic Fisher - Bluefin Robotics, and Ioseba Tena - SeeByte, Inc.</i>	<b>The Importance of GIS in Greenfield and Brownfield AUV Surveys (A Case Study)</b> - <i>Sean Halpin - DOF Subsea USA, Len Rickets and Andy Docherty - DOF Subsea S&amp;P UK</i>
2:30 PM	<b>Reduced Survey Costs and Increased Data Resolution using Advanced WROV Control System</b> - <i>Dr. Mahesh Menon - SMD, and Ioseba Tena - SeeByte, Inc.</i>	<b>Large Unmanned Underwater Vehicle for the Oil and Gas Industry</b> - <i>Gregory Gregoriades - Battelle</i>

3:00 PM	Break in Exhibit Hall
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Track 1

Track 2

4:00 PM	<b>Demonstration of Pipeline Inspection using C-Surveyor AUV</b> - <i>Pete Alleman - C&amp;C Technologies</i>	<b>Sabertooth a Seafloor Resident Hybrid AUV / ROV System for Long Term Deployment</b> - <i>Jan Siesjo - Saab Seaeye</i>
4:30 PM	<b>Subsea Survey IMMR Inspection Standards in the Gulf of Mexico</b> - <i>Travis Cummins - Wood Group Integrity Management</i>	<b>Where are we now? (Low Logistics AUV Positioning)</b> - <i>Bob Melvin - Teledyne Gavia and Trevor Hughes - UTEC Survey</i>
5:00 PM	<b>Inspection Methods, Equipment and Software Needed to Reach Deep Energy Reserves</b> - <i>George Steir - Technical Industries, Inc.</i>	<b>Safer, Effective and Efficient Decommissioning</b> - <i>Graham McKay - Unique</i>

5:30 - 7:00 PM	Exhibitor's Reception in Exhibit Hall
7:00 PM	Exhibit Hall Closes

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## SURVEY • INSPECTION • MAINTENANCE • MONITORING • REPAIR

Wednesday		
8:00 AM	Registration Open	
9:00 AM	Exhibit Hall Opens	
9:00 AM	Keynote Speaker - Pierce Cohen - Chevron Energy Technology	
9:30 AM	Break in Exhibit Hall	
Track 1		Track 2
10:30 AM	Seeing Through the Environment: Real-time 3D Imaging for Subsea Projects - Jesus Zertuche III - Fugro Chance, and Blair Cunningham - Coda Octopus Products	Cost Effective Method to Achieve Significant Expansion of Open Ocean Seismic Survey Coverage Area Using Low Cost Sonobuoys - Seibert Murphy and Neal Baitcher - Guide Star Engineering, and Ken Powell - Reliability Engineering
11:00 AM	Unique Uses for 3D and Multibeam Sonar - Chuck Webb - Tetra Technologies, Inc.	Sparse LBL aided INS - Edd Moller - Sonardyne
11:30 AM	AquaPix - A Low-Cost Interferometric Synthetic Aperture Sonar for AUVs - David Shea, Peter Crocker, Jeremy Dillon, and Sean Chapman - Kraken Sonar Systems	Technical Overview of a Safe, Configurable, Pressure Tolerant, Subsea Lithium Ion Battery System for Oil and Gas Deep Water Fields - Leon D. Adams - Southwest Electronic Energy Group
12:00 - 1:30 PM	Lunch in Exhibit Hall	
Track 1		Track 2
1:30 PM	A Video Revolution in Subsea 3D Inspection - Patrick Raymond and Arnauld Dumont - DimEye	TBD - Jens Steenstrup - R2Sonic
2:00 PM	Acoustic Beamforming Methods for Sub-Bottom Imaging - Gary Dinn - PanGeo Subsea	TBD
2:30 - 3:30 PM	Break & Drawings in Exhibit Hall	
Track 1 & 2		
3:30 - 5:00 PM	Panel Session: Vehicles for Oil & Gas Applications Moderator: Donna Kocak, Advanced Programs Engineer, Harris Corp.	
5:00 PM	Conference Ends	

The Subsea Survey IMMR Preliminary Program is subject to final confirmation.

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## Caley Ocean Systems targets Brazilian market

Offshore handling systems company Caley Ocean Systems Ltd and Brazilian company LIG Global Services Ltda have announced the formation of a new company to supply locally produced marine equipment to the Brazilian power, telecommunications, and oil and gas industries. Called OSS Sistemas Offshore Ltda, the new company will supply a wide range handling systems for cable laying and subsea umbilicals, risers and flowlines (SURF) projects. The company's first project will be to build a US\$1 million expandable 1,000-ton carousel system that will be delivered in the fourth quarter of 2013.

## BTC selects Huawei Marine for BDSNi upgrade

Huawei Marine Networks Co., Ltd. announced that the Bahamas Telecommunications Company (BTC) has selected Huawei Marine Optix BWS 1600S to upgrade the Bahamas Domestic Submarine Network International (BDSNi). The BDSNi system links more than 20 sites between the Bahamas and Haiti, and stretches across about 3,500 km, the longest section of which is 343 km. It has played an important role in ensuring a robust telecommunications network to meet the expanding requirements of e-Commerce, e-Education, e-Trade, and e-Government on these islands. Huawei Marine will enable BDSNi to deliver more flexible and cost-effective services with the implementation of this upgrade capacity, providing 640 Gbps through the application of proven enhanced Raman technology. This connectivity and the ability to implement the new services between the main islands of the Bahamas and Haiti will provide a future proof platform to enable BTC to service expanding regional demand. The application of the Optix BWS 1600S with in-service upgrades and a compact footprint will enable BDSNi to capitalize on a small footprint, thus providing further operational benefits.

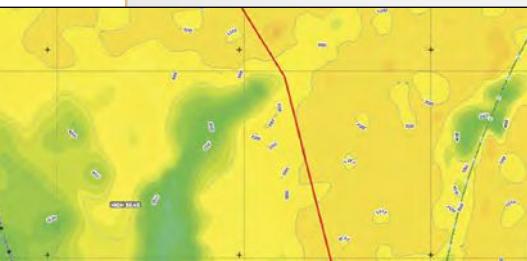
## Montserrat looks to build new cable

Almost 20 years after the island of Montserrat lost its only submarine fiber optic cable connection to the eruption of the Soufrière Hills volcano, the government of Montserrat is looking into building a new cable. In 1995, Montserrat's link to the Eastern Caribbean Fibre System (ECFS), along with the capital of Plymouth, was destroyed by the cable. Since then, the island, a British Overseas Territory, has been forced to rely on a microwave link to Antigua. Now the government of Montserrat, while continuing a rebuilding process that includes a new port, is considering options for a new cable system, with the support of the United Kingdom Department for International Development. Possible options under consideration are links to Antigua, Guadeloupe, Nevis, and St. Kitts.

## SubPartners announces capacity agreement

SubPartners Pty Ltd has signed a Memorandum of Understanding (MOU) with a major Asia Pacific telecommunications provider for capacity on the company's planned APX-West submarine cable system connecting Perth to Singapore. Under the terms of the MOU, the customer will acquire a quarter pair of optical spectrum on the APX-West system, which is expected to go live late 2014. The latest MOU signing is on the back of SubPartners signing a MOU with Telstra Corporation Limited for a fiber pair on APX-West in March of this year. The company said that it expects to announce additional signings in the near future. APX-West will deliver low-latency, diverse capacity between Australia, Indonesia, and Singapore and beyond

(through numerous interconnection possibilities). APX-West is predominantly a four-fiber pair cable using the latest state-of-the-art, ultra-long-haul design delivering much needed capability and resiliency to the region.



## Sri Lankan carrier to participate in BBG



Sri Lankan carrier Dialog Axiata PLC has entered into an agreement with the Bay of Bengal Gateway (BBG) Consortium to land a high-capacity submarine fiber optic cable at a cable landing station (CLS) to be located in Colombo, Sri Lanka. Dialog's investment in the new high-speed submarine cable will trigger the single largest infusion of international bandwidth to Sri Lanka to date.

Dialog recently led Sri Lanka's telecommunications sector into the 4G era, with the country's first fixed 4G-LTE network being commissioned in the latter part of 2012 and South Asia's first mobile 4G-LTE network going live in April 2013.

Dialog's international cable landing station will be commissioned in the fourth Quarter of 2014 signaling an era of abundant availability of international bandwidth to Sri Lanka's ICT industry and broadband consumers alike. The BBG cable will link Sri Lanka and the region (spanning from Singapore to Oman/UAE) to high-capacity Internet hubs in Singapore and India and to onward submarine cable pipes to Europe and the USA. Other investors in the BBG consortium include Telekom Malaysia Berhad, Vodafone Group, Infotel Telecom Limited-India, Oman Telecommunications Company S.A.O.G-Oman, and Emirates Telecommunications Corporation.

Dialog operates one of Sri Lanka's largest international gateway infrastructures connecting Sri Lanka's telecommunications networks and consumers to the world via a network of over 120 Tier 1 and Tier 2 global partners for voice and connectivity services. Dialog's entry into the international telecommunications arena in 2003 following the liberalization of gateway operations triggered an exponential increase in affordability and usage of IDD services, a market success the company followed up with the introduction of high-speed global Internet connectivity via global IP-MPLS infrastructure and peering relationships with Tier 1 partners including PCCW, Cable & Wireless, Deutsche Telekom, and Telstra. The expansion of Dialog's international gateway operation to include a cutting edge CLS connecting a submarine cable based on the very latest 100 G coherent DWDM technology will signal a quantum enhancement to Sri Lanka's international connectivity infrastructure.

For more information, visit [www.dialog.lk](http://www.dialog.lk).

## NEC wins Papua Cable System in Indonesia

NEC Corporation and PT. NEC Indonesia have signed a contract with PT Telekomunikasi Indonesia, Tbk (PT Telkom) to construct the Papua Cable System, a high-bandwidth optical submarine cable system that will connect Indonesia's Papua provinces on the island of New Guinea.



The Papua Cable System, measuring 2,000 km, is the first optical fiber submarine cable system to connect the Papua provinces of Indonesia and is expected to help bridge the country's digital divide. It is designed to carry transmission speeds of 40 and 100 Gbps, aiming to complete PT Telkom's nationwide optical fiber networks in Indonesia.

"NEC is honored to be selected by PT Telkom as the supplier of the most advanced optical fiber submarine cable system to connect the eastern Indonesian provinces. We are proud that NEC has contributed to PT Telkom's network diversification since first providing the company with an optical fiber submarine cable system in 1991," said Naoki Yoshida, general manager, submarine network division, NEC Corporation.

The Papua Cable System is slated for completion by the end of 2014.

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

#### Fujitsu, Trident announce partnership for new cable

Fujitsu Australia Limited and Trident Subsea Cable System Pty Ltd have entered into a working agreement to develop and agree to arrangements and associated commercial detail for the design and delivery of a state-of-the-art fiber telecommunications network between Perth, The Pilbara and into South East Asia.

It is both parties intent that Fujitsu will become a strategic delivery partner within Trident's operations for the proposed underwater South East Asia link to connect Perth, via Onslow in the Pilbara and Jakarta in Indonesia, to Singapore. The new network is expected to boost competitive telecommunications connectivity in Western Australia and in particular the Pilbara Region.

The Pilbara and North West Shelf areas boast some of the world's largest resource industry operations and capital expenditure projects. Each project has extensive infrastructure and telecommunications needs. The \$400 million fiber optic network project will build Australian efficiency in the highly competitive global oil, gas and resources market by meeting the substantial demand for

resilient, cost-effective, high volume data transmission.

Trident Subsea Cable recently unveiled its plans as the Beijing Construction and Engineering Group, with the support of the China Development Bank, signed a \$320 million financial commitment with the company towards the project.

Western Australia's Commerce Minister, Michael Mischin, welcomed a new \$400 million private sector proposal to establish an international subsea cable

that will boost competitive telecommunications connectivity in the State and, in particular, the Pilbara region. Mischin said the State Government recognized the need for increased telecommunications infrastructure, capacity and competition in Western Australia and had engaged with industry to explore a range of options.

"The Government supports any proposal to improve telecommunications infrastructure, particularly in Western Australia's North-West, as the region is

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significantly important to the State's economy and to Australia," he said. "Trident's project will support the increasing bandwidth and international connectivity needs of the numerous multinational companies now operating out of Western Australia. It will also be beneficial for the State's planned involvement in global projects, such as the Square Kilometre Array International Telescope."

For more information, visit [www.mediastatements.wa.gov.au](http://www.mediastatements.wa.gov.au) or [www.tridentsc.com.au](http://www.tridentsc.com.au) or [www.au.fujitsu.com](http://www.au.fujitsu.com).

## High speed broadband goes live in Tonga

The World Bank Group, the Asian Development Bank (ADB), Tonga Cable Corporation (TCC), media, and others joined the Government of the Kingdom of Tonga at a ceremony at the Tonga Cable Limited building to celebrate the arrival of high-speed Internet in Tonga.

At the ceremony, from the station's control room, the King of Tonga, Tupou VI, in the presence of the Prime Minister, Lord Tu'ivakano, officially commissioned the service with the click of a mouse, which delivered high-speed Internet to the people of Tonga for the first time ever.

The US \$32.8 million Pacific Regional Connectivity Project financed the development of a submarine cable system that is now delivering the broadband service. It is being supported by the World Bank Group, ADB, and TCC.

"This marks a historical occasion for Tonga and the beginning of a new era, as the Kingdom for the first time connects to high-speed Internet which has been a dream of Ha'a Moheofo," said Prime Minister Lord Tu'ivakano. "Faster Internet speed and higher bandwidth at cheaper and more affordable prices is a real opportunity for Tonga."

"The social and economic benefits of the new high-speed Internet service will be many," said Adrian Rutherford, regional director of ADB's South Pacific subregional office at the ceremony. "The people of Tonga will be better connected to the rest of the world, the new service will help businesses to expand, creating jobs and will facilitate access to remote health and education services."

The 827-km fiber optic cable system linking Tonga to Fiji via the Southern Cross Cable — the main trans-Pacific link between Australia and the United States — will provide Tonga's population of 100,000 with affordable and accessible information and communica-

tion technology services.

"The advent of high-speed Internet is a landmark event for Tonga," said Franz Drees-Gross, country director for the World Bank in Papua New Guinea, Timor-Leste and the Pacific Islands. "The cable will make it faster and easier for Tongans to communicate, which will bring profound benefits to development."

The arrival of high-speed broadband is the latest milestone of the project that will boost Tonga's international connectivity.

The Tonga Cable Limited building was constructed to withstand extreme weather events, with the equipment that facilitates the Internet service stored on the top floor in a temperature controlled room in case of flooding.

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

## Arctic Fibre completes study of potential landing points

Arctic Fibre has completed the identification of seven cable-landing points across Nunavut as part of its 15,700-km submarine fiber optic network through the Northwest Passage between London, England and Tokyo, Japan. The Arctic Fibre project also enables the construction of a local broadband network that can serve the 52% of Nunavut's population living in communities adjacent to the backbone network.

Recently, a seven-person team consisting of Arctic Fibre staff and the company's consultants and contractors travelled 4,150 mi to visit the communities of Iqaluit, Cape Dorset, Hall Beach, Igloolik, Taloyoak, Gjoa Haven and Cambridge Bay.

Information sessions and consultations were well attended, with representatives of the Federal and territorial governments, hamlet councils, hunters and trappers associations, community land and resource committees, Kitikmeot Inuit Association, Qikiqtani Inuit Association, local businesses, telecommunications carriers, and local residents.

In most instances, the company confirmed the engineering studies that had been undertaken over the past 2 years. Some modifications were made, based on local input, to the landing locations in Cape Dorset, Igloolik and Taloyoak to spots better suited to avoid ice scour, wave action and not interfere with local activities.

Arctic Fibre also modified its terrestrial crossing of the Boothia Peninsula based on the physical inspection by two of its surveyors, supported by local guides. The revised route will now par-

allel the northwest shorelines of Middle and Angmaluktok Lakes before rising through the hills and entering Lord Mayor Bay.

Arctic Fibre will now submit its landing plans to all appropriate bodies and seek approvals for a subsea marine survey in 2014 that will be one of the most comprehensive ever undertaken in Nunavut waters. Company officials will also work with the appropriate agencies to ensure that its network does not interfere with any historical or archaeological sites. Installation of the cable is expected to be undertaken in 2015.

Arctic Fibre seeks Government of Canada financial participation for a secondary network that can be constructed off the backbone that will serve 98% of the combined Nunavut and Nunavik population.

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

## Vodafone Iceland multiplies capacity with Emerald Express

Vodafone Iceland (Fjarskipti hf) signed a contract for capacity on the new Emerald Networks submarine cable system, known as Emerald Express, which is a new-build system connecting North America to Europe, with a branch to Iceland. The cable brings significant new capacity to Iceland and allows Vodafone to handle current — and more importantly — future demand faster.

The system is scheduled to be ready for service in the third quarter of 2014, and Vodafone Iceland plans on using it for communications for at least the next 15 years. Vodafone is the first Icelandic company to sign a contract with Emerald Networks.

The Emerald Express Cable system uses the most advanced next generation submarine fiber optic cable technology, offering low-latency and utilizing superior digital technology. The cable is based on an open-network architecture platform that is agnostic and enables upgrades with a range of new technologies.

The cable landing station in Iceland is in the vicinity of Grindavik, and Emerald will provide backhaul to Reykjavik and on the Reykjanes Peninsula. The Icelandic investment company Thule Investments manages financing of the project in Iceland.

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

## GlobeNet opens fastest U.S.-Brazil IP traffic route

GlobeNet has extended its low latency network into Equinix's MI3 International Business Exchange(TM) (IBX(R)) data center in Boca Raton, Florida. GlobeNet's expansion into Equinix's MI3 data center opens the fastest IP traffic route from the United States to Brazil.

Specifically designed to link Latin America with the rest of the world, Equinix's MI3 facility serves as a carrier-neutral network access point for GlobeNet to connect its low-latency submarine fiber optic cable route from Equinix's SP2 facility in Sao Paulo, Brazil. This new connectivity between North and South America allows network service providers around the world to be able to tap into economic opportunities stemming from emerging commercial centers in Latin America.

Explosive growth in mobile, content delivery, video streaming, tele-presence, social media, and cloud-based data traffic offers tremendous revenue opportunities for high-margin corporate and retail services such as Ethernet and

MPLS. To remain competitive, network operators are expanding their infrastructures to meet demand for these new services — and are turning to "retail data centers" that not only offer all the network-to-network connectivity of a telehouse, but also act as aggregation points for concentrations of customers in network-centric industries.

Roughly 75% of all network traffic emanating from Latin America is coming into the United States via Miami. Globally, MI3 has the sixth highest Internet capacity and is a key hub location for domestic and international traffic routes. As a result, Equinix and its Brazilian subsidiary ALOG are perfectly positioned to serve high-bandwidth events, such as the upcoming 2014 FIFA World Cup and 2016 Summer Olympics in Brazil.

The North America-South America capacity market is heavily dependent on three privately owned geographic ring networks, one of which is GlobeNet. With numerous telecommunications carrier facilities, fiber loops, international cable landings and multiple power grids, MI3 is an ideal location for GlobeNet to

meet the connectivity demands of wholesale and network service providers and other Internet-related businesses looking to expand their business.

GlobeNet owns and operates over 22,500 km of subsea cable network specifically engineered for the shortest, lowest latency routes. Built upon advanced Dense Wave Division Multiplexing (DWDM) technology, GlobeNet's carrier class network is leveraged by wholesale providers and carriers around the world.

Equinix is seeing strong demand from customers looking to leverage MI3 for fast access to Latin America. MI3 offers a number of benefits to customers, including direct connectivity to the leading Latin American network operators for reduced latency and close proximity for serving Latin American markets while maintaining infrastructure within the U.S. customers that are deploying at MI3 include Allied Fiber, Cogent Communications, Fiberlight, Inteliquest, Neutrona Networks, Lightower Fiber Networks and tw telecom.

For more information, visit [www.globenet.net](http://www.globenet.net).

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**Rutgers Findings May Predict the Future of Coral Reefs In a Changing World**  
Study is first to pinpoint how coral make their mineral skeletons; process also works in more acidic water

Rutgers scientists have described for the first time the biological process of how corals create their skeletons - designed to become limestones - which form massive and extensive coral reefs in the world's oceans. [More>>](#)

**Ocean Specialists Inc. Achieves Major Milestone in Gulf of Thailand Offshore Fiber Network**  
Ocean Specialists Inc. (OSI) reports that 11 major oil and gas company offshore platforms located in the Gulf of Thailand are now connected to shore via a submarine fiber optic network. This caps a six-year groundbreaking involvement by OSI in developing the initial technical feasibility and then the detailed

**WEEKLY INDUSTRY NEWSFEED**

Published every week, this electronic industry resource will keep you updated on current events, technology, and opportunities in the global oceans marketplace.

## Cable laying begins at Nordsee Ost

RWE Innogy has started laying the first inter array cable in the construction area of the Nordsee Ost offshore wind farm. By mid-2014, 64 km of cable will have connected the 48 wind turbines with the offshore transformer substation. The Dutch company Visser & Smit Marine Contracting (VSCM) is leading this work.

After 24 of the 48 foundations for the wind turbines were successfully installed, the cable laying process began. First, the cables are placed on the seabed by the cable-laying vessel Normand Flower and later they are buried by the Deep Cygnus. As soon as the remaining foundations are installed, this work will be repeated until the complete inter array cable laying process is finished by next summer.

All 48 wind turbines of the Nordsee Ost wind farm will be connected via the so-called inter-array cables and then to an offshore transformer substation — the wind farm's nerve center. This is where the 33 kV power generated by the wind turbines is converted into a transmission voltage of 155 kV.

The 33-kV submarine cables have a diameter of up to 16 cm. An extremely robust coating protects the high-performance electricity connectors from extreme conditions, which, in particular, may occur during high sea installation procedures. At the same time, they guarantee maximum energy transmission over large distances.

Once complete, Nordsee Ost will have an installed capacity of 295 MW and will be able to supply the equivalent of approximately 310,000 German households annually with climate-friendly electricity. Equipped with the currently most powerful turbines, Nordsee Ost is one of the largest commercial wind power projects off the German coast.

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

RWE Nord Ost image.jpg

## ABPmer to prepare EIA for Guernsey cable

ABPmer has been commissioned by Guernsey Electricity Limited to undertake the environmental scoping studies in support of future submarine power cable projects. The company is seeking to install two submarine power cables between Guernsey and Jersey and Guernsey and France.

In order to achieve consent for the proposed cables, it is necessary to satisfy the

relevant regulatory bodies that the installation, operation, and decommissioning of the cables will not result in unacceptable adverse impacts on the marine or terrestrial environment. To inform this process, the environmental scoping exercise will be carried out to provide a preliminary characterization of the baseline environment and to identify the issues to be addressed within the Environmental Impact Assessment (EIA).

The scoping for the two cable routes will be carried out in parallel to form part of the wider feasibility studies being prepared for the development. The purpose of the scoping document is to identify the breadth of the EIA by providing a summary of issues for consideration, including significant effects associated with cable installation.

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

## JDR project awarded funding by Department of Energy and Climate

JDR has been awarded funding by the Department of Energy and Climate Change (DECC) for new research into high-voltage array cabling that will help make offshore wind a more cost-effective and competitive source of power and support the future growth of the industry.

The project, which will commence in 2013 and is expected to be completed in 2015, represents a significant investment by JDR into new power cable technologies. It will benefit offshore wind developers as they look to use array cabling at higher voltages in a number of Round 3 UK wind farms. The funds awarded by the Department of Energy and Climate Change will encompass up to 25% of the total project costs to a maximum of £1 million and have been awarded to JDR as one of the winners of the second call of the Offshore Wind Components Scheme.

JDR will use its extensive knowledge of inter array cables to perform materials research, development, and design of new types of power core and produce prototype cable lengths with the aim of delivering qualified new cable designs. It is intended that these will be designed without the need for lead extruded innovative barrier layers that not only address the environmental concerns footprint associated with the processing and use of lead materials, but reduce the cost of offshore wind.

JDR has a strong track record in offshore renewable projects, including Greater Gabbard, the world's largest

offshore wind farm to date and the Wave Hub, wave energy test center. JDR is ideally positioned to provide, engineering, manufacturing and installation services for the growing international market for alternative and sustainable energy, which is particularly strong in Europe.

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

## Reef Subsea secures West Africa contract

Reef Subsea's undersea services division, based in Bergen, Norway, has secured a third subsea construction contract in West Africa and is now sending a second vessel to the region. The project, for regional offshore contractor Stapem Offshore, will include cable lay duties on Palanca Cable Lay Campaign in Block 3, Angola.

The Reef Despina subsea construction vessel will transit to West Africa for a 30-day firm charter to provide operational support during the installation of five subsea electrical cables in water depths between 40 and 100 m. The vessel will be equipped with a cable lay spread and will provide ROV and craneage assistance during the cable installation workscope.

The Reef Despina will join its sister vessel, Reef Larissa, who transited to West Africa earlier this year. The Reef Larissa has been undertaking ROV and survey operations, structure installation, and commissioning support on two projects for major oil & gas operators. Both vessels are designed for worldwide service and are outfitted with 150-ton active heave compensated cranes and two workclass ROVs capable of operation down to 3,000 m.

With a further vessel in the region, Reef Subsea is dedicated to building its key competence in West Africa as well as offering a prime service delivery to its customers.

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

## Pharos acquires 1200HP subsea cable trencher

Pharos Offshore Group has acquired an SMD-built 1200HP cable burial tool. The Universal Trenching Vehicle (UTV 1200) is a unique low and wide ROV specifically designed to bury submarine power cables.

Modifications to the 1200HP UTV 1200 are underway. The enhancements will facilitate more effective post lay/installation burial and improve the

handling and stability of the vehicle. Post-modification of the vehicle will provide an extremely stable platform and retain both jetting and hard ground cutting capability. The system has available 2 x 400HP directly driven electric motor/pump sets for jetting operations and a single 400HP subsea HPU. If required, the system has an additional 400HP subsea HPU that can be utilized as necessary for cutting operations.

The overall vehicle height will be reduced to 3.7 m, improving handling ability, drag profile in strong currents, and operations on inclined sea beds. The on-board jetting assembly will be relocated to allow more effective vehicle steering and improved turning radius, making the system ideal for shorter runs on wind farm inter-array cables. The modifications will improve the operating parameters of the vehicle and provide clients with an effective tool for shallow water work.

This further strengthens Pharos' efforts to advance offshore cable installation technology along with the development of the ITAT 1000, which is currently in-build at its facility in

Harthill, Scotland. The UTV 1200 and full operational crew with proven track record will be available very soon for offshore projects.

Pharos delivers engineering solutions for subsea cable installation, maintenance, and repair by combining state-of-the-art technology with knowledge gained from real operational experience.

Pharos develops subsea cable handling and burial solutions, including vehicle and handling systems, with a proven track record in taking projects from concept design, delivery, and testing to completion with on-going support.

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

#### **Intertek supports French offshore wind farms**

Intertek Energy & Water Consultancy Services (formerly Metoc), is providing marine advisory services for offshore surveys and export cable installation to Réseau de Transport d'Électricité (RTE) for two French offshore wind projects. RTE is the French electricity transmission services operator and an independent subsidiary of the

French utility company, EDF.

France is now entering the installation phase of the Government Tender 1 offshore wind projects, the first stage of their offshore wind program. The developers have recognized a clear need for advice from experts within the marine consultancy sector to help reduce risk through the development and in the supply chain.

Intertek is providing marine consultancy for ongoing risk management, drafting specifications for the procurement of geotechnical and geophysical works, supporting RTE for contract works, and providing procurement support for the cable installation and protection phase of the developments.

The agreement, which includes the 480-MW St. Nazaire and the 500-MW St Brieuc offshore wind farm projects, will enable RTE to ensure that its connections to the French grid are completed to the highest standards, helping reduce project risk and mitigating against any unforeseen delay.

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



# MCE DEEPWATER DEVELOPMENT 2014

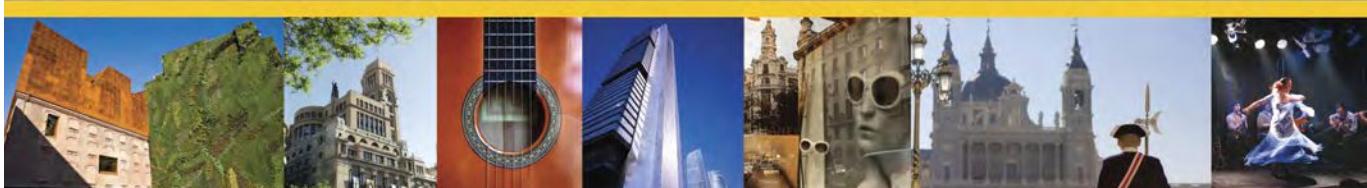
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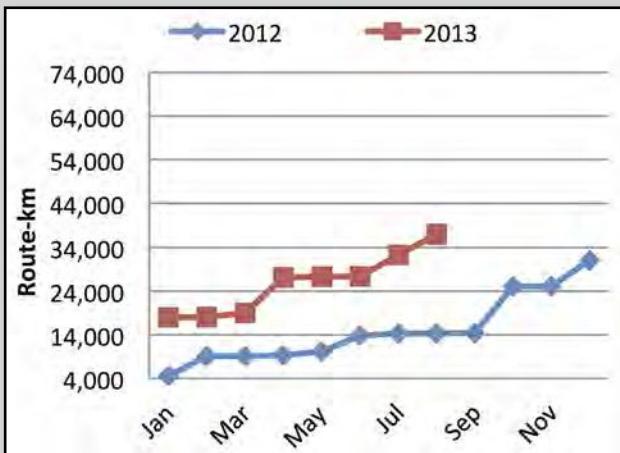
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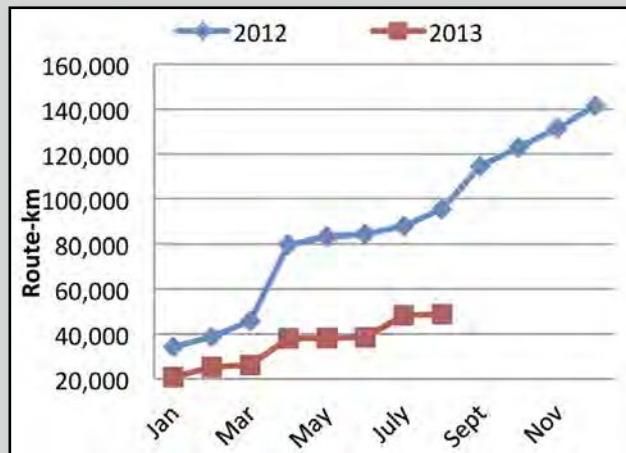


# Subsea Telecom & Power Cable Data

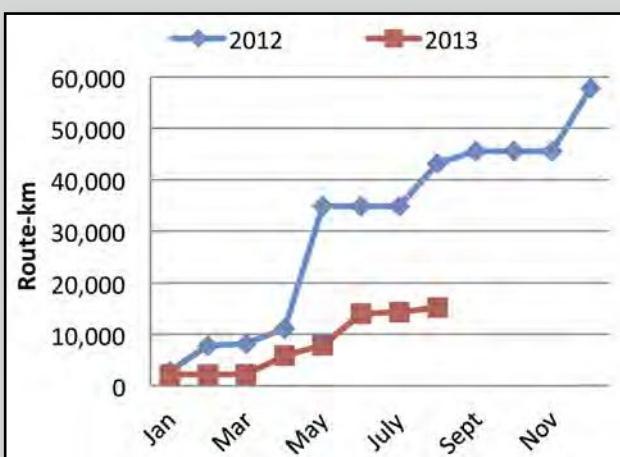
**FO Cable Awards by Month**



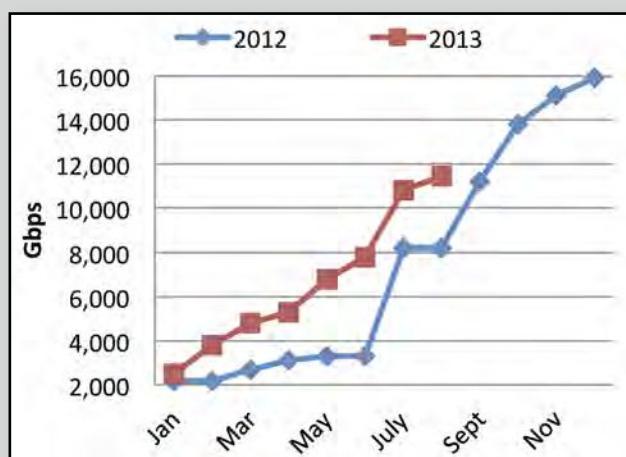
**FO Cable Announcements 2013**



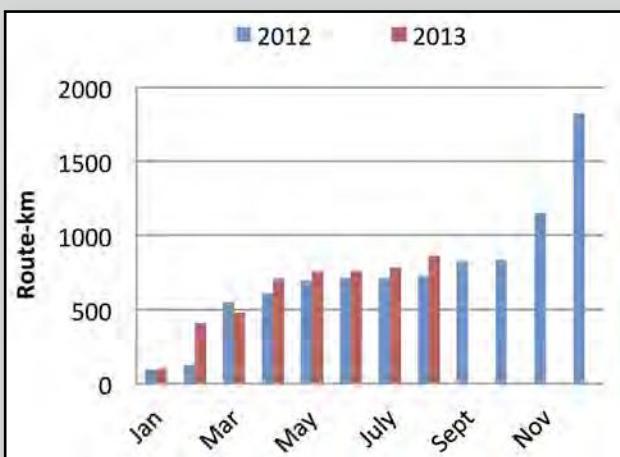
**Submarine FO Cables Entering Service 2013 in Route-km**



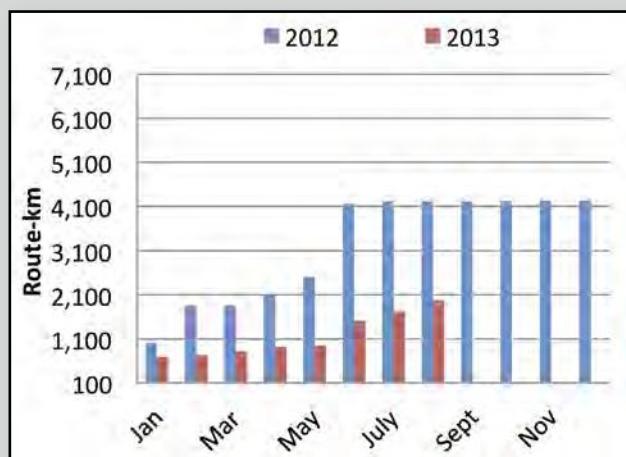
**Upgrades of Existing Cable Systems in Gbps**



**Submarine Power Cable Awards 2013 in Route-km**



**Submarine Power Cable Announcements 2013 in Route-km**



# Gulf of Mexico Data

## Current Deepwater Activity

Operator	OCS Area	Block	Lease	Rig Name	Prospect Name	Water Depth (ft)
Petrobras America, Inc.	WR	425	G16987	VANTAGE TITANIUM EXPLORER	Chinook	8,843
Petrobras America, Inc.	WR	206	G16965	ENSCO DS-5	Cascade	8,147
Statoil Gulf of Mexico LLC	WR	970	G26420	MAERSK DEVELOPER		7,438
Shell Offshore, Inc.	MC	393	G26254	T.O. DEEPWATER NAUTILUS	White Ash	7,371
Noble Energy, Inc.	MC	699	G33169	ENSCO 8501	Toro	7,285
BP Exploration & Production, Inc.	GC	743	G15607	T.O. DEVELOPMENT DRILLER II	Atlantis	6,824
Anadarko Petroleum Corp.	KC	875	G21444	ENSCO 8500	Lucius	6,809
Chevron USA, Inc.	KC	736	G22367	T.O. DISCOVERER INDIA	Moccasin	6,537
Chevron USA, Inc.	KC	829	G25814	T.O. DISCOVERER CLEAR LEADER	Buckskin	6,428
Exxon Mobil Corp.	WR	282	G33364	T.O. DEEPWATER CHAMPION		6,354
BP Exploration & Production, Inc.	MC	778	G14658	THUNDER HORSE PDQ	Thunder Horse South	6,040
Shell Offshore, Inc.	WR	95	G31943	NOBLE GLOBETROTTER	Yucatan North	5,847
Eni US Operating Co., Inc.	MC	214	G24059	T.O. DEEPWATER PATHFINDER		5,815
BP Exploration & Production, Inc.	MC	777	G09867	T.O. DISCOVERER ENTERPRISE	Thunder Horse South	5,613
LLOG Exploration Offshore, LLC	MC	816	G33178	ENSCO 8502		5,528
Cobalt International Energy, LP	GC	896	G31765	ENSCO 8503	Ardennes	5,510
BP Exploration & Production, Inc.	GC	743	G15607	T.O. DEVELOPMENT III	Atlantis	5,405
Anadarko Petroleum Corp.	GC	768	G21817	ENSCO 8505	Ticonderoga	5,256
BP Exploration & Production, Inc.	KC	93	G25780	SEADRILL WEST CAPRICORN	Gila	4,853
Anadarko Petroleum Corp.	GC	683	G16783	T.O. DISCOVERER SPIRIT	Caesar	4,485
Shell Offshore, Inc.	MC	899	G09896	CAL-DIVE Q-4000	Crosby	4,393
Hess Corp.	MC	725	G22898	STENA FORTH	Tubular Bells	4,328
Chevron USA, Inc.	GC	640	G20082	T.O. DISCOVERER INSPIRATION	Tahiti 2	4,298
Chevron USA, Inc.	GC	640	G20082	T.O. DISCOVERER DEEP SEAS	Tahiti 2	4,292
BP Exploration & Production Inc.	KC	57	G25777	SEADRILL WEST SIRUS		4,065
Chevron USA, Inc.	GB	973	G32911	PACIFIC SANTA ANA		3,960
Shell Offshore, Inc.	MC	809	G05868	NOBLE DON TAYLOR	Princess	3,845
Shell Offshore, Inc.	MC	894	G24122	NOBLE DANNY ADKINS		3,787
Shell Offshore, Inc.	MC	721	G33171	NOBLE JIM DAY		3,688
Eni US Operating Co., Inc.	GC	385	G25142	DIAMOND OCEAN VICTORY	Pegasus	3,585
BHP Billiton Petroleum (GOM) Inc.	DC	726	G32014	T.O. DEVELOPMENT DRILLER I		3,567
Shell Offshore, Inc.	VK	956	G08475	COIL TUBING UNIT (N.O. DIST)	Ram-Powell	3,214
Shell Offshore, Inc.	VK	956	G08475	NABORS 202	Ram-Powell	3,214
Shell Offshore, Inc.	MC	762	G07957	NOBLE BULLY I	Deimos	3,147
Shell Offshore, Inc.	GC	158	G07995	H&P 202	Brutus	2,985
Shell Offshore, Inc.	GC	245	G05916	NOBLE DRILLER	Olivella	2,908
Shell Offshore, Inc.	GB	427	G07493	NOBLE JIM THOMPSON	Cardamom	2,719
Chevron USA, Inc.	VK	786	G12119	NABORS 87	Petronius	1,754
Dynamic Offshore Resources, LLC	GC	65	G05900	H&P 206	Bullwinkle	1,353
Stone Energy Corp.	MC	109	G05825	HYDRAULIC WORKOVER UNIT N	Amberjack	1,030
SandRidge Offshore, LLC	EB	110	G02650	NABORS S.D. IV	Tequila	660

Deepwater prospects with drilling and workover activity: 41

Current Deepwater Activity as of Monday, 26 August 2013

### Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,603	35,196	2,637
201 to 400	116	1,117	20
401 to 800	296	863	10
801 to 1,000	389	575	9
1,000 & above	3,466	1,863	26

### Rig Activity Report 13 September 2013

Location	Week of 9/13	Week +/- Ago	Week +/- Ago	Year Ago
Land	1682	0	1682	-112
Inland Waters	21	1	20	2
Offshore	65	0	65	14
U.S. Total	1768	1	1767	-96
Gulf of Mexico	63	1	62	13
Canada	380	-9	389	26
N. America	2148	-8	2156	-70
				2218

Activity by Water Depth Information current as of Monday, 9 September 2013

Maximum number of rigs operating in the deepwater Gulf of Mexico. The rig unit includes platform rigs operating on deepwater production facilities in addition to the MODU's. The numbers do not distinguish between rigs drilling and those in service for completion and workover operations.

Information provided courtesy of the U.S. Bureau of Ocean Energy Management

# Monthly Stock Figures & Composite Index

Industry Company Name	Symbol	Close(Mid) September	Close(Mid) August	Change	Change %	High	52 week	Low
<b>Diversified, Production Support and Equipment Companies</b>								
Baker Hughes, Inc.	BHI	50.45	47.01	3.44	7.3%	50.72	39.44	
Cameron Intl. Corp.	CAM	59.06	55.75	3.31	5.9%	67.42	47.62	
Drill-Quip, Inc.	DRQ	114.74	103.58	11.16	10.8%	114.85	65.16	
Halliburton Company	HAL	49.79	47.32	2.47	5.2%	49.86	29.83	
Tenaris SA	TS	47.18	46.20	0.98	2.1%	47.83	36.01	
Newpark Resources, Inc.	NR	11.99	11.61	0.38	3.3%	12.88	6.29	
Schlumberger Ltd.	SLB	87.77	81.03	6.74	8.3%	87.80	66.85	
Superior Energy Services, Inc.	SPN	26.25	25.38	0.87	3.4%	29.22	18.00	
Weatherford International, Inc.	WFT	15.15	14.58	0.57	3.9%	15.80	8.84	
Deep Down, Inc.	DPDW	2.65	2.23	0.42	18.8%	2.65	1.00	
FMC Technologies	FTI	56.03	53.06	2.97	5.6%	59.27	39.25	
<b>Total Diversified, Production, Support and Equipment.....</b>	<b>521.06</b>	<b>487.75</b>	<b>33.31</b>	<b>6.8%</b>	<b>538.30</b>	<b>358.29</b>		
<b>Geophysical / Reservoir Management</b>								
Dawson Geophysical Company	DWSN	36.30	36.00	0.30	0.8%	40.86	21.89	
Mitcham Industries, Inc.	MIND	14.83	17.00	-2.17	-12.8%	18.41	11.51	
Compagnie Gnrale de Gophysique-Veritas	CGV	25.30	25.23	0.07	4.5%	34.84	20.00	
<b>Total Geophysical / Reservoir Management.....</b>	<b>76.43</b>	<b>78.23</b>	<b>-1.80</b>	<b>-2.3%</b>	<b>94.11</b>	<b>53.40</b>		
<b>Offshore Drilling Companies</b>								
Atwood Oceanics, Inc.	ATW	57.30	56.99	0.31	0.5%	59.49	43.21	
Diamond Offshore Drilling, Inc.	DO	65.10	65.40	-0.30	-0.5%	76.85	63.05	
ENSCO International, Inc.	ESV	56.07	55.66	0.41	0.7%	65.82	51.01	
Nabors Industries, Inc.	NBR	16.27	15.88	0.39	2.5%	18.24	12.75	
Noble Drilling Corp.	NE	39.03	38.21	0.82	2.1%	42.34	33.02	
Parker Drilling Company	PKD	5.92	5.97	-0.05	-0.8%	6.42	3.61	
Rowan Companies, Inc.	RDC	38.52	35.29	3.23	9.2%	39.40	30.05	
Transocean Offshore, Inc.	RIG	47.16	47.02	0.14	0.3%	59.50	43.65	
<b>Total Offshore Drilling.....</b>	<b>325.37</b>	<b>320.42</b>	<b>4.95</b>	<b>1.5%</b>	<b>368.06</b>	<b>280.35</b>		
<b>Offshore Contractors, Services, and Support Companies</b>								
Helix Energy Solutions Group, Inc.	HLX	27.11	25.98	1.13	4.3%	27.15	15.54	
Gulf Island Fabrication	GIFI	23.39	23.33	0.06	0.3%	27.70	18.76	
McDermott International, Inc.	MDR	7.50	7.34	0.16	2.2%	13.48	6.68	
Oceaneering International	OII	84.02	79.68	4.34	5.4%	84.63	50.87	
Subsea 7 SA	SUBCY.PK	21.19	20.46	0.73	3.6%	25.48	17.05	
Technip ADS	TKPPY.PK	29.99	29.22	0.77	2.6%	30.12	24.46	
Tetra Technologies, Inc.	TTI	12.32	11.76	0.56	4.8%	12.97	5.35	
Cal Dive International, Inc.	DVR	2.04	2.00	0.04	2.0%	1.00	2.38	
<b>Total Offshore Contractors, Service, and Support.....</b>	<b>207.56</b>	<b>199.77</b>	<b>7.79</b>	<b>3.9%</b>	<b>222.53</b>	<b>141.09</b>		
<b>Offshore Transportation and Boat Companies</b>								
Seacor Holdings, Inc.	CKH	88.69	85.42	3.27	3.8%	100.00	71.59	
Gulfmark Offshore, Inc.	GLF	50.32	49.19	1.13	2.3%	52.22	27.17	
Bristow Group	BRS	70.03	67.60	2.43	3.6%	70.24	48.10	
PHI, Inc.	PHII	35.66	36.00	-0.34	-0.9%	36.55	23.43	
Tidewater, Inc.	TDW	58.49	55.36	3.13	5.7%	62.38	42.33	
Trico Marine Services, Inc.	TRMAQ.PK	0.04	0.04	0.00	0.0%	0.11	0.01	
Hornbeck Offshore	HOS	57.43	56.45	0.98	1.7%	59.10	31.96	
<b>Total Offshore Transportation and Boat .....</b>	<b>360.66</b>	<b>350.06</b>	<b>10.60</b>	<b>3.0%</b>	<b>380.60</b>	<b>244.59</b>		

October 2013

Ocean News &amp; Technology

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# Monthly Stock Figures & Composite Index

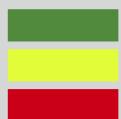
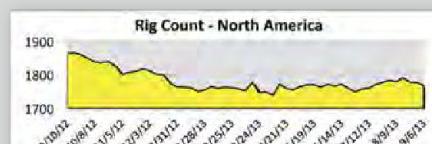
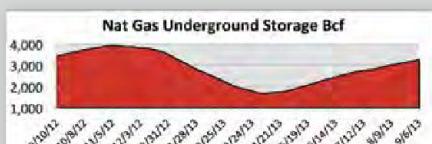
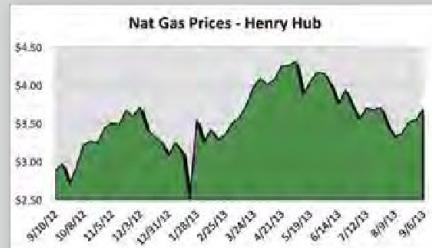
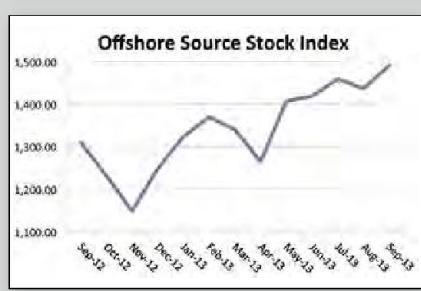
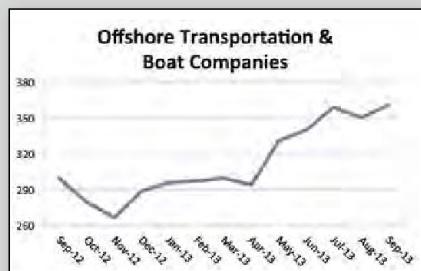
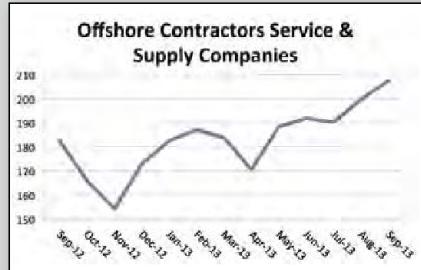
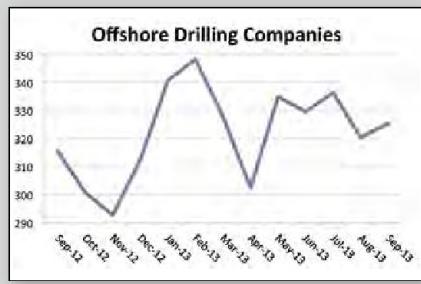
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Diversified, Production Support & Equipment Companies						
Total Diversified, Production, Support and Equipment	521.06	487.75	33.31	6.8%	538.30	358.29
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Total Offshore Contractors, Service and Support	207.56	199.77	7.79	3.9%	222.53	141.09
Geophysical & Reservoir Management Companies						
Total Offshore Transportation and Boat	360.66	350.06	10.60	3.0%	380.60	244.50
Total Offshore Source Index	1,491.08	1,436.23	54.85	3.8%	1,603.60	1,077.72

## 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**

## Sustainable lubricants help ship owners meet EPA regulations

December 2013 marks the renewal of the Environmental Protection Agency's (EPA's) Vessel General Permit (VGP) for commercial vessels and implementation of the new Small Vessel General Permit (sVGP) for craft under 79 ft. To help protect the nation's waters from ship-borne pollutants, the new regulations include updated conditions for mechanical systems that can potentially leak lubricants. PANOLIN America offers environmentally considerate Greenmarine lubricants that are 100% VGP and sVGP compliant.

The new EPA standards require that vessel operators document their use of "environmentally acceptable lubricants" in all oil-to-sea interfaces in official reports. This includes use in equipment and machinery such as stern tubes, thrusters, stabilizers, deck cranes, actuators, and gear boxes as well as wires and cables subject to immersion.

In fact, the permits' required reports specifically ask, "Did your vessel use environmentally acceptable lubricants for oil to sea interfaces?" and require the listing of the brand used. According to EPA definitions, compliant lubricants are "biodegradable," "non-toxic," and are not "bioaccumulative." This requirement applies unconditionally to vessels constructed on or after 19 December 2013 as well as to existing vessels unless technically infeasible to do so. In such cases, documentation is required for reporting noncompliance.



Vessel owners and operators can easily comply with VGP and sVGP requirements for environmentally acceptable lubricants at no extra cost over the time in use and without sacrificing performance. The PANOLIN Greenmarine line of environmentally considerate lubricants offers solutions for every part of a vessel. Its range includes heavy-duty gear oil, production line control fluid, and hydraulic fluids as well as various lubricants for stern tubes, gear boxes and cables and sliding parts.

Readily biodegradable according to OECD 301B/ASTM D 5864, Greenmarine lubricants produce negligible toxicity to aquatic life. PANOLIN's unique technology employs 100% saturated synthetic esters and special additives to create lubricants that produce no bioaccumulation. All comply with VGP and sVGP requirements.

Ship owners will appreciate the fact that PANOLIN Greenmarine products reduce CO<sub>2</sub> emissions by decreasing the frequency of oil changes and enhancing machine operating efficiency. Field tests document that these synthetic lubricants also have a much longer life than comparable mineral oil products.

The Greenmarine line is backed by PANOLIN's 25-year focus on producing economical, biodegradable, and non-toxic lubricants and more than 60 years of successful Swiss oil technology.

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

## Okeanus takes delivery of deepwater box cores



Okeanus Science and Technology LLC (Okeanus) is pleased to announce the addition of custom-designed, deepwater box cores to its catalog of equipment available for lease. As part of its suite of equipment, Okeanus offers clients a variety of box cores sizes. The most recent additions to Okeanus' box core line are the largest class offered for leasing and have openings measuring 50 cm x 50 cm with a depth of approximately 60 cm. Fully laden by weights, the new box core design weighs nearly 1,200 lbs. The design of this box core allows single increments of up to 20, 35-lb weights to be easily added or removed from the frame. This ability to adjust the weights helps manage the penetration depth of the box core and increases the chance of obtaining an acceptable box core sample in a variety of sediment densities.

By combining a box core and a winch spooled with synthetic line, Okeanus can provide clients with a superior deepwater sediment sampling package. The addition of an Ultra Short Baseline System (USBL) and navigation package allows for exact geographic recording of where the box core makes contact with the seafloor and may be used to steer the box core to a preselected location. For biological sampling efforts, Okeanus carries custom-designed infaunal sieving stations that greatly cut down on the time required to process a sample.

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

### Seakeeper gyros in testing on wind farm support vessels

Seakeeper recently shipped M21000 units for testing with Hvide Sande Skib & Baadebyggeri (HSSB). The gyros will be used aboard 25-m and 34-m monohull wind farm support vessels for DONG Energy, a Danish leader in offshore wind farm development and construction.

In a sector previously dominated by catamarans, Seakeeper gyros now create exciting opportunities for mono-hulls and builders such as HSSB in wind farm support segments. The powerful righting force delivered by a gyro, up to 80% roll reduction, creates greater safety and stability for crew transfer onto wind power stations and more comfort while in transit.

Seakeeper's M21000, its most powerful gyro, generates 21,000 Newton meter seconds of angular momentum by spinning a steel flywheel inside a vacuum. Its unique design has a power draw of just 3 kW and a compact, lightweight package for retrofit or new build applications.

The company already has successful military installations, such as on torpedo recovery craft and an unmanned surveillance vessel. Seakeeper gyros are available in an M8000 model for craft up to 35 tons displacement and the M21000, rated for typical displacements up to 90 to 100 tons.

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



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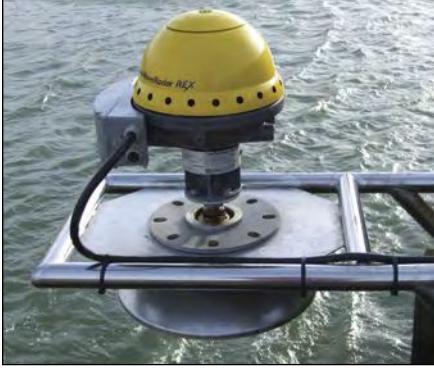
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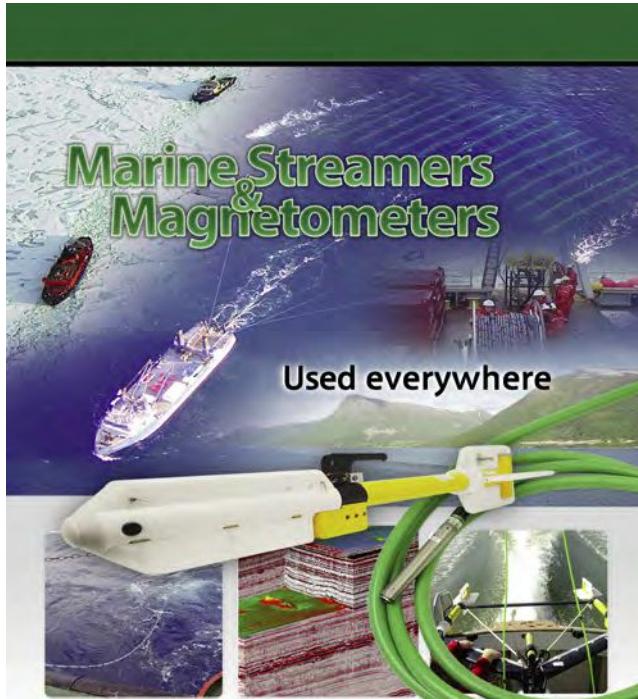
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## PRODUCT NEWS

### 500th WaveRadar shipped

Hampshire, UK-based RS Aqua Ltd celebrated a significant milestone during the first week of July when they despatched their 500th WaveRadar wave and sea-level sensor. This particular unit was one of a set of four heading out to Indonesia for installation aboard a new offshore oil platform.

WaveRadar Rex, to give the current version its full title, is a microwave-based system that was first introduced to the offshore energy market in 1995 following a collaborative development program involving Shell, Saab Marine (nowadays Rosemount), and RS

Aqua. The product, which is fully certified for hazardous zone operation, is a customized version of one of the Rosemount range of market leading TankRadar products, used to achieve precise level gauging in the petrochemical industry. Over the years, there has been a gradual increase in market awareness of the capability, reliability, and accuracy of WaveRadar resulting in sales rising from a handful per annum in the early days to the current level of circa 75 pa.

In recent years, the market usage has also migrated from the still dominant offshore oil & gas sector into coastal monitoring and offshore wind farms.

WaveRadar maintains a proud position as the product of choice for structure-based wave measurements in the harsh offshore energy sector and, via innovative collaborative projects with system integrators, is nowadays also commonly used for directional wave and air-gap studies.

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

### BIRNS develops new ABS-certified optical penetrators

BIRNS, Inc. was recently called upon to develop a unique set of ABS-certified fiber optic penetrators for a manned submersible. BIRNS, an ISO 9001:2008 certified global leader in the development of high-performance connectors, custom cable assemblies, penetrators, and lighting systems for the subsea market, engineered the exclusive penetrator design that included six single mode optical fibers. The robust penetrators were custom overmolded in BIRNS' NAVSEA PRO-020 certified molding facility and feature low insertion loss of <.2 dB and high return loss of >35 dB.

The certification for optical penetrators was new territory for ABS, so the organization worked with BIRNS to develop rules for witnessing the testing of the new design. While the two optical penetrators called for a 1,000-m depth rating, BIRNS can design the line with ratings to 6,000 m, along with options for a range of fiber counts.



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

# PRODUCT NEWS

## Meridian gyros achieve China type approval

The Meridian Standard and Meridian Surveyor gyro compasses manufactured by Teledyne TSS have been given type approval by the China Classification Society. The approval was granted after the Society inspectors completed a detailed study of the gyros, their performance and reliability, and the manufacturing processes and quality control methods employed at the Teledyne TSS factory in Watford, UK. The approval will now open the Chinese shipbuilding and offshore survey markets for these products where it is expected that their performance and pricing will be welcomed.



The need for commercial shipping to carry type-approved mechanical gyro-compasses has maintained a demand for the high-quality products manufactured by Teledyne TSS. The company has responded to this demand by pursuing a sustained development program that has resulted in a range of products that set benchmarks for performance while being built to the highest standards of precision engineering. The Meridian range is already IMO, Wheelmark, and Russian Maritime Register of Shipping approved and includes versions

with High Speed Craft certification.

The Meridian Surveyor is positioned at the top of the Teledyne TSS range and is a high-precision gyrocompass capable of providing dynamic heading accuracies of  $\pm 0.2^\circ$  even in extreme sea conditions. With a settle time of 40 min, the Meridian Surveyor is a British-built precision instrument capable of maintaining heading accuracies through turn rates as high as  $200^\circ$  per second. By using state-of-the-art digital electronics and advanced manufacturing processes, exceptional reliability is built in by Teledyne TSS so that users can benefit from a Mean Time Between Failures (MTBF) of more than 30,000 hrs.

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

## Class 7 subsea verification unit

Seanic announced they recently designed, built, and delivered a Class 7 Subsea Verification Unit to a major pipeline operator in the GoM. Matt York, VP engineering, said, "With subsea applications going deeper and the growing demand for API Class 7 torque applications, our customers wanted assurance they are getting accurate torque output at depth. Our Class 7 subsea verification unit, which was modeled after our popular Class 1-4 subsea verification unit, accomplishes that; it is easy to use, accurate, and a cost-effective tool."



Along with the delivery of the class 7 Verification Unit, Seanic also delivered their ninth Class 7 Torque Tool adapter and a Class 4 to Class 7 run up tool adapter to the same client.

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

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## EvoLogics simplifies system integration of underwater acoustic communication and positioning systems

EvoLogics GmbH now offers free access to EvoLogics communication and positioning emulator immediately after a purchase order for hardware.

EvoLogics communication and positioning emulator is a hardware-free framework that allows to configure and run a network of virtual underwater acoustic modems on EvoLogics server. It can be accessed remotely, so customers that purchased EvoLogics devices can get accustomed to modem controls and start system integration of the hardware before its actual delivery.

The tool emulates all features of the modems' data-link layer and includes a physical layer simulator. Code written and tested on the emulator can be later run on the communication and positioning devices without any modifications.

The emulator can simplify implementation of the customer's solutions, as training and coding can start immediately after placement of the purchase order. It is a great tool for planning, refining, and testing the code while the hardware is being produced.

The communication and positioning emulator has been used by EvoLogics academic partners for testing and debugging custom underwater networking protocols and received great feedback as a time- and cost-saving solution.

It is also available as a standalone, subscription-based product for protocol developers who do not need the actual hardware at early development stages.

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

## Nortek releases Signature75 next generation ADCP

After years of pioneering the industry's sleekest and most power-efficient ADCPs, Nortek introduces Signature75, with a specified range of 800 m. Built on the new AD2CP hardware platform and offering novel, user-inspired capabilities, Signature75 ushers in the next generation of current profilers.

Signature75, just 0.4 m in height, features newly designed Piezo-composite transducers, which optimize efficiency while increasing directivity of the acoustic beams. Signature75 allows download of 1 GB in 6 min and connects directly to a network with its modern Ethernet interface, while also maintaining traditional serial interfaces.



The AD2CP hardware platform stores every ping, allowing meticulous data QA/QC. This true broadband AD2CP reduces power consumption and allows users to set up different sampling regimes for one deployment. The telemetry option allows users to average subsets of velocity data and output via serial line or store for later retrieval.

Signature75's advanced on-board sensors store raw magnetometer and accelerometer data when the compass direction is read, allowing data calibration for hard iron effects in post-processing. Signature75 profiled 200 m more than a WH 75-kHz system deployed alongside during open-ocean testing.

Signature75 was released August 2013, with a lead time of 8 weeks. Nortek representatives worldwide are pleased to discuss Signature75 for your projects.

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

## CARIS releases HIPS and SIPS 8.1 featuring a new SIPS engine

CARIS is pleased to announce the release of CARIS HIPS and SIPS 8.1. The latest release of the leading hydrographic data processing system, which offers a single solution for bathymetry, seafloor imagery, and water column data processing, includes significant improvements to the SIPS processing engine for side-scan sonar data.

The latest enhancements included in the release of HIPS and SIPS 8.1 will drastically change the user experience processing side-scan sonar data using the SIPS engine. With on-the-fly corrections and the exclusion of GeoBaR creation prior to a mosaic, users will notice reduced processing times and enhanced quality.

"In HIPS and SIPS 8.1, we have essentially overhauled the SIPS engine for side scan," said Burns Foster, product manager for HIPS and SIPS. "We've redesigned the engine from the ground up for speed and efficiency without sacrificing the quality of the

imagery. Some of our clients have already been using the new SIPS engine, and they have been really impressed with how quickly they can process the data. We're talking in order of magnitude."

The SIPS processing engine has been upgraded to reduce processing times and improve the quality of the resulting imagery.

- For most formats, conversion to HIPS and SIPS no longer down-samples the imagery to 8-bit. The quality of the source format is maintained throughout processing.

• Corrections in Side Scan Editor are now visualized on-the-fly in the display instead of each intermediate step being written to disk. Final corrections are applied only when creating GeoBaRs or a mosaic.

• Slant Range Correction is now calculated automatically to maintain the best resolution.

• GeoBaRs are no longer required before creating a mosaic. A mosaic can be created directly after conversion with minimal configuration. The GeoBaR workflow is still supported for clients requiring line-by-line corrections.

• A Catalogue Editor has been introduced to HIPS and SIPS. This editor allows a user to modify an existing HIPS file catalog or to create a template catalog that can be re-used for all new HIPS files.

• Users can add custom attributes to a HIPS file. These attributes can then be added to any existing HIPS object, including track lines, critical soundings, and SIPS contacts.

• User-defined SIPS contact objects can be added to a HIPS file.

• Catalogue Editor includes a template catalog that can be used for all new HIPS files created by the application and can be modified and shared between workstations. This enables all users to start from a custom HIPS file catalog for new projects.

• The Show Rejected function has been replaced with a Display Filter that applies to all HIPS and SIPS Editors.

• When active, the display is filtered for only the types selected in the filter (e.g., Rejected and Designated).

• When inactive, all types are displayed (e.g., Accepted, Designated, Outstanding, and Examined).

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

## developics releases new HAM.Base modem

developics HAM.Base hydroacoustic modem enables new applications not possible with offline data logging — especially when it is combined with developics satellite and RF telemetry system R.COM.

In the past, the information was already out-dated when it became available for analysis — often system malfunction was not detectable until the subsea sensor platforms were recovered. Now, the remote data link allows immediate reaction — and often replacement of malfunctioning equipment is not even necessary as the telemetry systems allow online system reconfiguration and optimization for most oceanographic sensors with digital interfaces.



HAM.Base is a powerful and reliable underwater communication system designed to meet the requirement of research and exploration. It is the replacement and improved compact version of developics HAM.NODE hydroacoustic modem.

Flexible modulation and coding, a wide variety of available transducers in different frequency bands, high maximum transmit power, power efficiency, and flexible interfaces ensure a powerful solution for demanding subsea communication tasks.

The hydroacoustic modem covers nearshore shallow water applications, long range (up to 30,000 m) horizontal communication, and real deepwater applications (tested down to 6,200 m) due to its various configuration possibilities.

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

## Morgan Advanced Materials launches new high-performance piezoelectric material

Morgan Advanced Materials is extending its material portfolio with the launch of a new piezoelectric material. PZT5K1 is suitable for applications in the fields of scientific instrumentation, maritime, medical, energy harvesting, and general industry.

This new material is suitable for a wide range of demanding and challenging applications in both emerging and existing technologies. Its high density and low porosity mean the material can be used for machining 1-3 composite structures in highly sensitive sonar and

medical ultrasonic transducers as well as high-performance actuators, specialist sensors, and energy harvesting devices.

Using an innovative new core process, Morgan manufactures the material to offer optimized voltage charge coefficients. Its high d33 rating improves the electrical charge generated in energy-harvesting applications, while its high d31 coefficient enhances the levels of displacement in actuators.

PZT5K1 components can be manufactured in a wide range of geometries and dimensions, with Morgan offering the capability to tailor solutions to meet individual requirements. Bimorph components are available in a variety of sizes and shapes: as squares, rectangles, and discs. Sizes range from 6 to 74 mm in length and 1 to 43 mm in width. Discs and components up to 254 mm in diameter can be manufactured in an extensive range of thicknesses, between 3 and 35 mm.

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

## New Veripos GNSS Mobile for offshore positioning

Veripos, the leading supplier of high-precision GNSS positioning services to the world offshore industry, has extended its range of integrated mobile receiver units with introduction of a new multi-frequency system featuring GNSS heading, L-band positioning and wireless communication capabilities, the LD7.

Compatible with both GPS and Glonass networks, the fully ruggedized 272-channel system includes an additional processor for on-board configuration and customized applications separate from its GNSS engine. Integral wireless options include Bluetooth connectivity in addition to an optional full-band UHF radio modem for transmission and reception of RTCM or RTK corrections.

With 2 GB internal memory and provision for remote Ethernet access, the LD7 also features an extended range of interface facilities for data output, timing, and event marks in addition to a second antenna port for GNSS heading.

Commenting on the development, Veripos executive vice-president Richard Turner said that with its heading capability, the system is aimed at the company's many survey customers, allowing them to derive an accurate heading and high-accuracy GPS and Glonass positioning from a single, easy-to-use receiver and so significantly reduce operational times and costs.

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

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## Biosonics announces major software release

BioSonics announced the release of Visual Habitat DT-X, a new version of a software program first released in May 2012 along with the MX echosounder as part of a new data collection, processing, and visualization system for aquatic habitat assessment. BioSonics has provided its DT-X series of fisheries echosounders since 2002, with hundreds of current DT-X users worldwide. Until now, Visual Habitat was compatible only with MX echosounder data. Driven largely by client requests, BioSonics has now developed a specialized version of Visual Habitat software that will accept hydroacoustic data collected with DT-X echosounders. This will enable the many DT-X users around the globe to utilize the unique features offered through Visual Habitat software.

Visual Habitat DT-X is used for the rapid assessment and mapping of aquatic habitat features. With Visual Habitat software, users can quickly and easily present their results in a clear and visually captivating display. Data are

processed to generate full-color maps displaying transects as data layers that highlight bathymetry, plant coverage, plant canopy height, and substrate type. While viewing a file echogram, users can simultaneously view a synchronized map view showing the corresponding transect. This revolutionary dual-viewing mode allows for visual ground truthing of a plan (map) view with a cross-section (echogram) view.

An integrated utility automatically provides satellite imagery of each study site over which habitat data can be superimposed. Data can be processed and maps generated within minutes of data collection, all with very little training. User-selectable color gradients allow for easy identification of substrate types such as rock, mud, sand as well as plant density and height. The output is a stunning visual representation of results that can be easily interpreted, readily shared, and quickly communicated. Processed files can be exported as .CSV for GIS mapping or as .KML files for sharing and viewing via Google Earth.

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

## Blue sky adds map overlay features to SkyRouter

Blue Sky Network, a supplier of satellite tracking and communication solutions for aviation, land and marine, announced several new map overlay enhancements to its cloud-based fleet management solution, New SkyRouter.

The new overlays include third-party weather feeds and localized traffic information from Bing Maps. Blue Sky Network also provides an overlay for oil and gas lease block data in the Gulf of Mexico and customer specific overlays such as pipelines or power lines. These enhancements can be combined with existing asset tracking information to improve a single map view source. This allows operators to manage assets and routing in near real-time based on changing conditions leading to improved fleet efficiency and safety.

New SkyRouter combined with Blue Sky Network's tracking hardware enables fleet managers to stay in constant communication with widely dispersed global assets.

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

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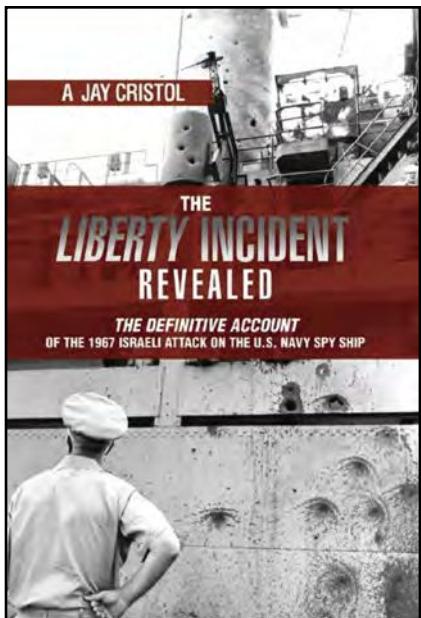
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# The Liberty Incident Revealed

The Definitive Account of the 1967 Israeli Attack on the U.S. Navy Spy Ship

By A Jay Cristol

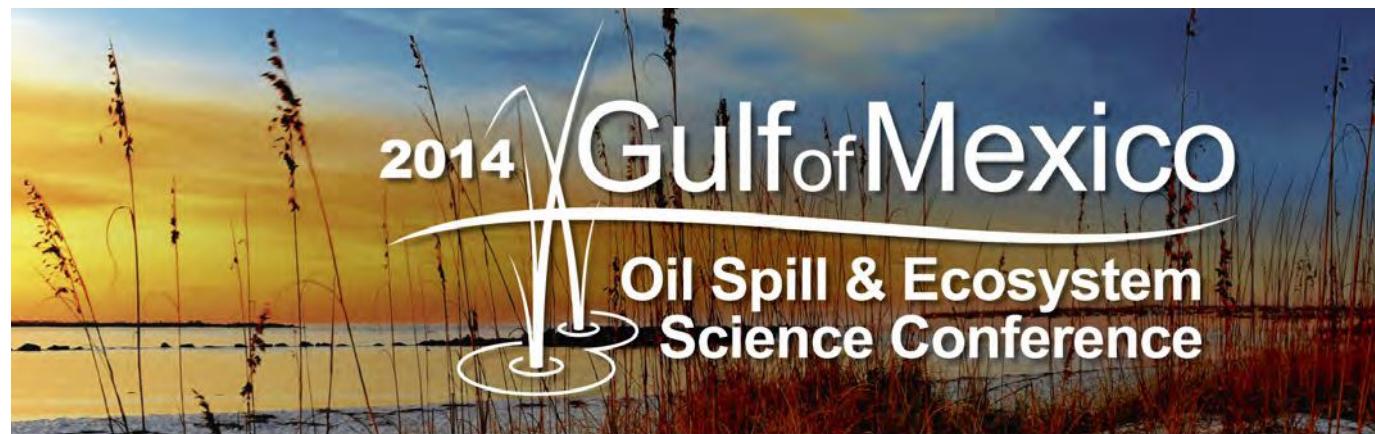


The Liberty Incident Revealed is the complete and final story about the Israeli Air Force and Navy attack on the USS Liberty during the Six Day War in June 1967. Cutting through all of the controversy and conspiracy theories about Israel's deadly attack, Cristol revises his well-regarded book about the event with an expanded and in-depth analysis of all of the sources, including the released tapes of the National Security Agency (NSA) intercepts.

When Cristol's first book on the subject, *The Liberty Incident*, was published in 2002, there remained many unanswered questions about Israeli Air Force audio tapes. The NSA intercepts tapes had not yet been released in 2002. Some conspiracy theorists alleged the NSA tapes would prove that the Israeli attack was premeditated. Cristol's successful Freedom of Information Act lawsuit against the NSA, while resulting in the release of those tapes, has been greeted by anti-Israel sources insisting that the NSA tapes are fraudulent and are part of a larger conspiracy to deceive the American public.

After a quarter of a century of intensive research in both Israel and the U.S.; researching all relevant archives from NSA, CIA, and the State Department; reviewing both formerly classified and open source documents; and interviewing all then-living individuals directly involved in the incident, the factual and documentary record is clear. Cristol maintains that despite the fact that all of the official records and transcripts are now available for review, the truth has proven to be of no interest to those individuals and organizations who are motivated by hidden agendas, wish to keep conspiracy theories alive, or are trying to feed sensational stories to the media. Documenting his findings in six new chapters, Cristol establishes definitively that the Israeli attack was a tragic mistake and presents a convincing argument that will be regarded as the final chapter in the long-simmering debate about this incident.

Naval Institute Press; ISBN-10: 1612513409  
Hardcover, 416 pages, September 2013



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- Ecosystem Monitoring Strategies
- Education and Outreach

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

The Interior Department has tapped **Brian Salerno**, a former U.S. Coast Guard official who helped lead the response to the 2010 BP oil spill, as the next director of its offshore drilling safety branch. The former vice admiral was to begin leading Interior's Bureau of Safety and Environmental Enforcement (BSEE) in late August, replacing outgoing director James Watson, who is also a former Coast Guard official. Salerno retired from the Coast Guard last year as deputy commandant for operations. Salerno's education includes a master's degree in strategic studies from the U.S. Army War College and a master's degree in administrative science from Johns Hopkins University. In addition to working on the response to the BP disaster, his tenure at the Coast Guard included service as "incident commander for responses to several large-scale transportation accidents, oil spills and hurricanes," Interior said.

**Kevin Sunday**, formerly deputy press secretary for the Pennsylvania Department of Environmental Protection, has joined Quantum Communications. Sunday will help lead the growing energy practice at Quantum Communications, a regional leader in strategic communications.

"Pennsylvania is strategically positioned to be the center of the energy world, and I am looking forward to helping Quantum's clients successfully take advantage of that," Sunday said. He served with DEP in a variety of senior communications roles. He provided the state's perspective on significant energy issues, including Marcellus shale and air quality, to national, statewide, and regional media. He also helped plan and successfully execute strategic plans for a variety of policy matters for the agency and the Governor's Office.

International subsea inspection, repair, and maintenance group Harkand appointed **John Reed** as its new chief executive officer as it embarks on the next stage of its ambitious growth strategy. Reed, an industry veteran with more than 30 years of experience in the offshore engineering and construction sector, will lead the development of the company as it drives forward with its target of growing turnover to \$1 billion in the next 5 years. Due to take over the reins in October, he replaces Nicolas Mouté who



Sunday

steered the group's formation since inception and through the merger of Iremis, Integrated Subsea Services (ISS) and Andrews Survey following investment by Oaktree Capital Management and the acquisition of Veolia Marine Services. Mouté will move to another senior role within the group, to be announced later. Reed most recently served on the Cal Dive International Inc. board of directors. Prior to that, he was chief executive officer of Global Industries Ltd.

Aberdeen-based Reftrade UK, a market specialist in the supply of cold storage solutions to the global offshore energy industry, appointed **Alex Cruickshank** to the position of general manager. He joins the company with many years of experience in the oil and gas sector and brings over 5 years of management experience to the role. The new appointment will add further strength and expertise to the existing management team and will support Reftrade UK as it continues to grow and expand its product offering to the offshore energy industry, the firm said. Cruickshank was previously employed at Osprey3 Ltd where he held the position of procurement and stores controller.

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Continental Shelf Investment Capital, Inc. (CSIC) is pleased to announce that **Patrick Lagrange** is joining the firm as its new managing director. Lagrange will help manage CSIC's existing investments in the coastal, ocean, and subsea industries and look for new opportunities. Lagrange and CSIC will work to help develop concepts and ideas into great businesses. Hailing from New Orleans, Lagrange brings with him nearly two decades of experience investing in and advising companies in a variety of capital markets, M & A, and restructuring transactions. Lagrange began his career as an attorney working for the oil industry. He then made a career shift that would allow him to pursue his interest in finance by earning an MBA from New York University. He has worked with several leading investment and financial advisory firms in the Northeast. In addition to his work at CSIC, Mr. Lagrange will serve as president of Pelagic Strategic Partners LLC (Pelagic). Pelagic is a newly formed CSA affiliate that will bring high-quality strategic and management consulting services to small-growth stage companies in the coastal, ocean, and subsea industries.

Liquid Robotics®, an ocean data services provider and developer of the first wave-powered Wave Glider® ocean robot, announced that **Pablo Luther**, former CFO of Gridiron Systems, Inc., has joined the company as CFO. Reporting directly to Bill Vass, CEO and president of Liquid Robotics®, Luther will be responsible for the finance, human resources, and information technology organizations. Luther has over 25 years of experience at both private companies as well as public Fortune 500 companies, spanning the software, networking, and semiconductor industries. He has held CFO and COO-level positions in Silicon Valley start-ups including Kasenna, Netfish Technologies, and eFinance Corporation, all of which culminated in M & A transactions. Prior to that, Luther spent 6 years at Stormedia, Inc. in senior executive roles including V.P. Finance and CFO. He started his career at HP, where he spent 6 years in financial management roles, including Controller of the PC division. Luther holds a dual MBA in Marketing and Finance from Wright State University and a BS from University of Mumbai. He was also elected to the board of trustees of the Los Altos School District in 2012.



Luther

Global Diving & Salvage, Inc. announces the hiring of **Jim Riedel**, joining the pacific northwest environmental division. Based out of the Seattle corporate office, Riedel will assist in the management of existing preventative boating operations as well as the pursuit of additional opportunities in the Puget Sound and surrounding areas. Riedel brings with him over 17 years in the environmental services industry at National Response Corporation (NRC).

Bollinger Shipyards, announces the appointment of **Chris Bollinger** as the company's new president. Bollinger will be responsible for implementing the company's vision through the management of all operational and administrative functions of the business. Bollinger has been employed at Bollinger since 1993 and has held numerous managerial and leadership positions, including most recently serving as the company's executive vice president of new construction. He will continue to serve on the company's board of directors. Also announcing the appointment of **Ben Bordelon** as chief operating officer. Bordelon has been employed with Bollinger since 1999 and has most recently served as the company's executive vice president of the repair operations. In his new role, Bordelon will be responsible for all of the company's repair and new construction operations. Bordelon will also continue to serve on the company's board of directors. Bollinger Shipyards, Inc. is a leading designer and builder of fast military patrol boats, ocean-going double hull barges, offshore oil field support vessels, tug boats, rigs, liftboats, inland waterways push boats, barges, and other steel and aluminum products from its new construction shipyards. Bollinger has 10 shipyards, and all are strategically located between New Orleans and Houston with direct access to the Gulf of Mexico, Mississippi River, and the Intracoastal Waterway. Bollinger is the largest vessel repair company in the Gulf of Mexico region with a total of 28 dry-docks in Louisiana and Texas.

**Mr. Archis Ambulkar**, an environmental engineering professional living



Riedel



Bollinger



Bordelon

in Pennsylvania, USA, has been recently appointed to the United Nations (UN) Pool of Experts for World Ocean Assessment (WOA). Nominations for the Experts are made by the UN Member States and selection of WOA experts is based on several criteria, including international recognition, established record of scientific publications, expertise in the environmental field and professional experience. A Group of Experts for the "Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects," representing all regions of the world, will carry out the World Ocean Assessments. The Group of Experts will be assisted by a Pool of Experts that will provide expertise in the wide range of areas and subjects needed for the World Ocean Assessment. The objective for the Regular Process is "to improve understanding of the oceans and to develop a global mechanism for delivering science-based information to decision makers and public".

**Seatronics do Brazil**, an Acteon company, has been appointed as the exclusive distributor for CodaOctopus Ltd in Brazil, a decision that will widen the portfolio of specialist subsea marine equipment that it can now offer to the Brazilian market. The new partnership will enable Seatronics, as a global supplier of electronic subsea equipment, to provide its offshore construction and survey customers with leading 3D echoscope real-time sonar, F180 inertial positioning and motion sensing, and digital data acquisition and geophysical data processing technologies. A major benefit for Seatronics' Brazilian ROV and survey customers will be the access to unique 3D imaging capabilities, especially where real-time visualization is required at depth.

Strong sales ensure **Applied Acoustics** keeps growing. Increased demand for the company's products has necessitated the installation of a further calibration tank at Applied Acoustics' Great Yarmouth facility. The new tank will enable production schedules to keep pace with additional customer requirements for advanced subsea acoustic positioning products that are calibrated prior to shipment to check acoustic integrity. Strong sales growth that has taken place in existing markets, new geographical regions, and applications has not only required extra testing and production facilities but also an increase in personnel, up more than 10% from last year.

## CALENDAR & EVENTS

October 8-9, 2013 <b>MTS Dynamic Positioning</b> Houston, TX <a href="http://www.dynamic-positioning.com">www.dynamic-positioning.com</a>	November 6-8, 2013 <b>Oil Comm</b> Houston, TX <a href="http://www.oilcomm.com">www.oilcomm.com</a>	January 26-29, 2014 <b>GOM Oil Spill &amp; Ecosystem Science</b> Mobile, AL <a href="http://www.gulfofmexicoconference.org">www.gulfofmexicoconference.org</a>
October 9-13, 2013 <b>International Workboat</b> New Orleans, LA <a href="http://www.workboat.com">www.workboat.com</a>	November 11-13, 2013 <b>Subsea Survey IMMR</b> Galveston, TX <a href="http://www.subseasurvey.com">www.subseasurvey.com</a>	February 5-6, 2014 <b>Subsea UK</b> Aberdeen, UK <a href="http://www.subseauk.com">www.subseauk.com</a>
October 22-24, 2013 <b>Deep Offshore Technology</b> Houston, TX <a href="http://www.deepoffshoretchnology.com">www.deepoffshoretchnology.com</a>	November 12-14, 2013 <b>Clean Gulf</b> Tampa, FL <a href="http://www.cleangulf.org">www.cleangulf.org</a>	February 11-13, 2014 <b>Underwater Intervention</b> New Orleans, LA <a href="http://www.underwaterintervention.com">www.underwaterintervention.com</a>
October 22-24, 2013 <b>LAGCOE</b> Lafayette, LA <a href="http://www.lagcoe.com">www.lagcoe.com</a>	November 19-20, 2013 <b>North Sea Decommissioning</b> Aberdeen, UK <a href="http://www.decomworld.com/nsd">www.decomworld.com/nsd</a>	February 23-28, 2014 <b>Ocean Sciences Meeting</b> Honolulu, HI <a href="http://www.aslo.org/meetings/sessions">www.aslo.org/meetings/sessions</a>
October 22-24, 2013 <b>AWEA/Offshore Windpower</b> Providence, RI <a href="http://www.offshorewindexpo.org">www.offshorewindexpo.org</a>	November 19-21, 2013 <b>EWEA Offshore</b> Frankfurt, Germany <a href="http://www.ewea.org/offshore2013">www.ewea.org/offshore2013</a>	March 5-7, 2014 <b>Subsea Tiback</b> San Antonio, TX <a href="http://www.subseatibackforum.com">www.subseatibackforum.com</a>
November 5-7, 2013 <b>Deepwater Operations</b> Galveston, TX <a href="http://www.deepwateroperations.com">www.deepwateroperations.com</a>	November 26-27, 2013 <b>International Tidal Energy Summit</b> London, England <a href="http://www.tidaltoday.com/tidal-conference">www.tidaltoday.com/tidal-conference</a>	March 9-13, 2014 <b>NACE Corrosion</b> San Antonio, TX <a href="http://www.nace.org">www.nace.org</a>

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## 2013 EDITORIAL CALENDAR

### January/February 2013

**Editorial:** Decommissioning & Abandonment, Subsea Fiber Optic Networks  
**Distribution:** Decommissioning & Abandonment Summit, NACE, Offshore Mediterranean, U.S. Hydro  
**Product Focus:** Navigation, Mapping & Signal Processing

### March

**Editorial:** Oceanology & Meteorology, Maritime Security  
**Distribution:** Ocean Business, SubOptic 2013  
**Product Focus:** Ocean Instrumentation, Diver Detection Systems

### April

**Editorial:** Offshore Technology, Ocean Mapping & Survey  
**Distribution:** GMREC, IDGA Maritime Homeland Security, OTC  
**Product Focus:** Connectors, Cables & Umbilicals

### May

**Editorial:** UW Imaging & Processing, Marine Salvage  
**Distribution:** EnergyOcean, Oceans '13 Bergen, Sea Work Intl, UDT  
**Product Focus:** Cameras, Lights & Imaging Sonars

### June

**Editorial:** Workclass ROVs, Deepwater Pipeline & Repair & Maintenance  
**Distribution:** TBA  
**Product Focus:** Subsea Tools & Manipulators

### July

**Editorial:** AUVs & Gliders, Marine Construction  
**Distribution:** AUVSI  
**Product Focus:** Tracking & Positioning Systems, Seismic Monitoring

### August

**Editorial:** Defense & Naval Systems, Corporate Showcase  
**Distribution:** TBA  
**Product Focus:** Multibeam & Side Scan Sonars

### September

**Editorial:** Ocean Observing Systems, Ocean Renewables  
**Distribution:** Oceans MTS IEEE, SPE ATCE, MREC, MTS Dynamic Positioning,  
**Product Focus:** Buoys & Monitoring Instrumentation

### October

**Editorial:** Offshore Vessels, Offshore Communications  
**Distribution:** International Workboat, LAGCOE, Oil Comm, OTC Brazil, North Sea Decommissioning, AWEA/Offshore Windpower  
**Product Focus:** Acoustic Modems, Releases & Transponders, Marine Communications

### November

**Editorial:** Subsea Inspection, Monitoring, Maintenance, Repair; Subsea Telecom  
**Distribution:** SUBSEA Survey IMMR, Clean Gulf  
**Product Focus:** Handling Equipment, Winches & Control Systems, Battery Technology

### December

**Editorial:** Light Workclass ROVs, Commercial Diving  
**Distribution:** Subsea UK, Underwater Intervention  
**Product Focus:** Diving Equipment & Buoyancy Materials

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Lisa Chilik

574-261-4215

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#### Texas/Louisiana

Amy Dukes

713-557-8057

[adukes@tscpublishing.com](mailto:adukes@tscpublishing.com)

#### International

Zinat Hassan

+44 (0) 845 6522 483

[zhassan@tscpublishing.com](mailto:zhassan@tscpublishing.com)

Mimi Shipman

+44 (0) 777 601 7564

[mshipman@tscpublishing.com](mailto:mshipman@tscpublishing.com)

### Editorial

Ladd Borne

772-219-3002

[lborne@tscpublishing.com](mailto:lborne@tscpublishing.com)



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**International:**

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Contact: Calvin Lwin, Applications Engineering



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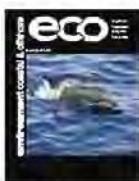
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**Small Data Loggers**

**Data Storage Tag (DST)**

- Various depth ranges
- Selection of different sensors
- Option for memory extension
- Long battery life

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# UNDERWATER COMMUNICATION AND POSITIONING SOLUTIONS

# Evo Logics®

## S2C TECHNOLOGY: COMMUNICATION AND TRACKING COMBINED

- time, space and cost-saving solutions
- low power consumption for autonomous operations
- advanced data delivery algorithms, addressing and networking, remotely configurable settings
- extendable platform with multiple configuration options: power-saving Wake Up module, acoustic releaser, additional sensors, custom solutions, OEM versions available

### USBL POSITIONING SYSTEMS

**simultaneous** positioning and communication - no need to switch between positioning mode and modem mode

- SiNAPS – USBL positioning made simple and flexible
- reliable data transmissions
- range: up to 8000 m
- accuracy: up to 0.04 degrees

### UNDERWATER ACOUSTIC MODEMS

reliable data transmissions even in adverse conditions, special edition available for network protocol developers

- range: up to 8000 m
- depth: up to 6000 m
- data rate: up to 31.2 kbps

### LBL POSITIONING SYSTEMS

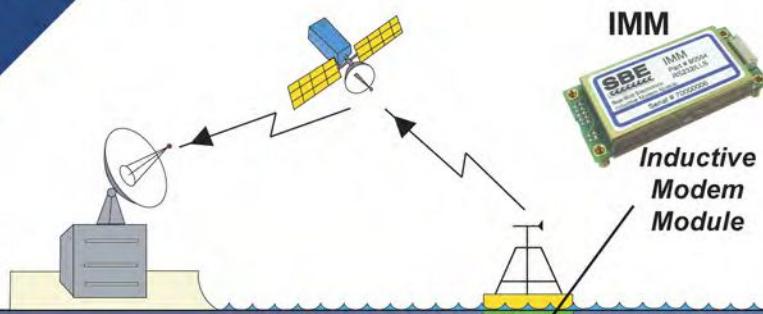
highly accurate, precise and stable performance

- multiple target tracking
- range: up to 8000 m
- accuracy: better than 0.01 m

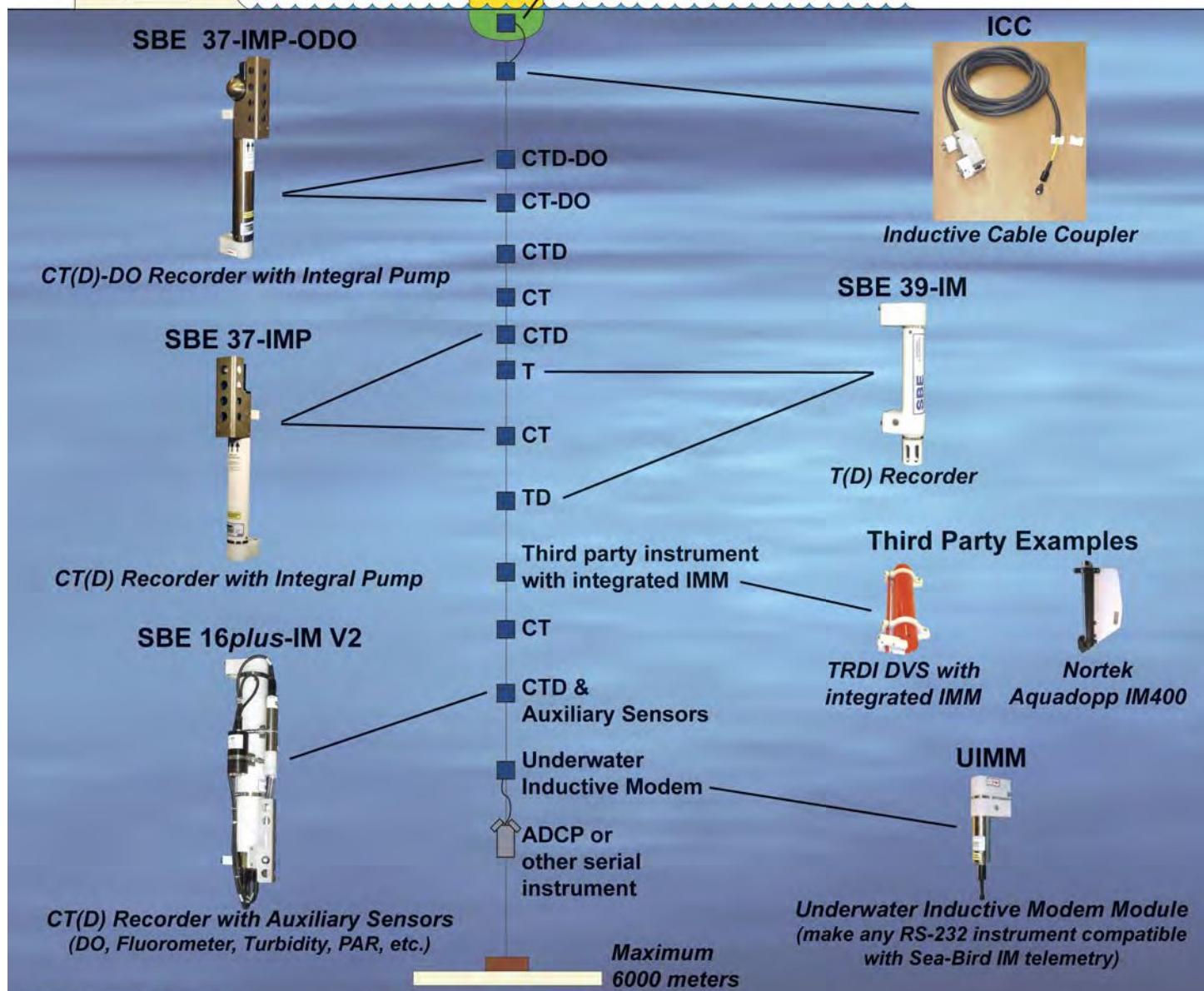


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