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SHIP SHAPE:
Condition Monitoring
in the Marine Industry

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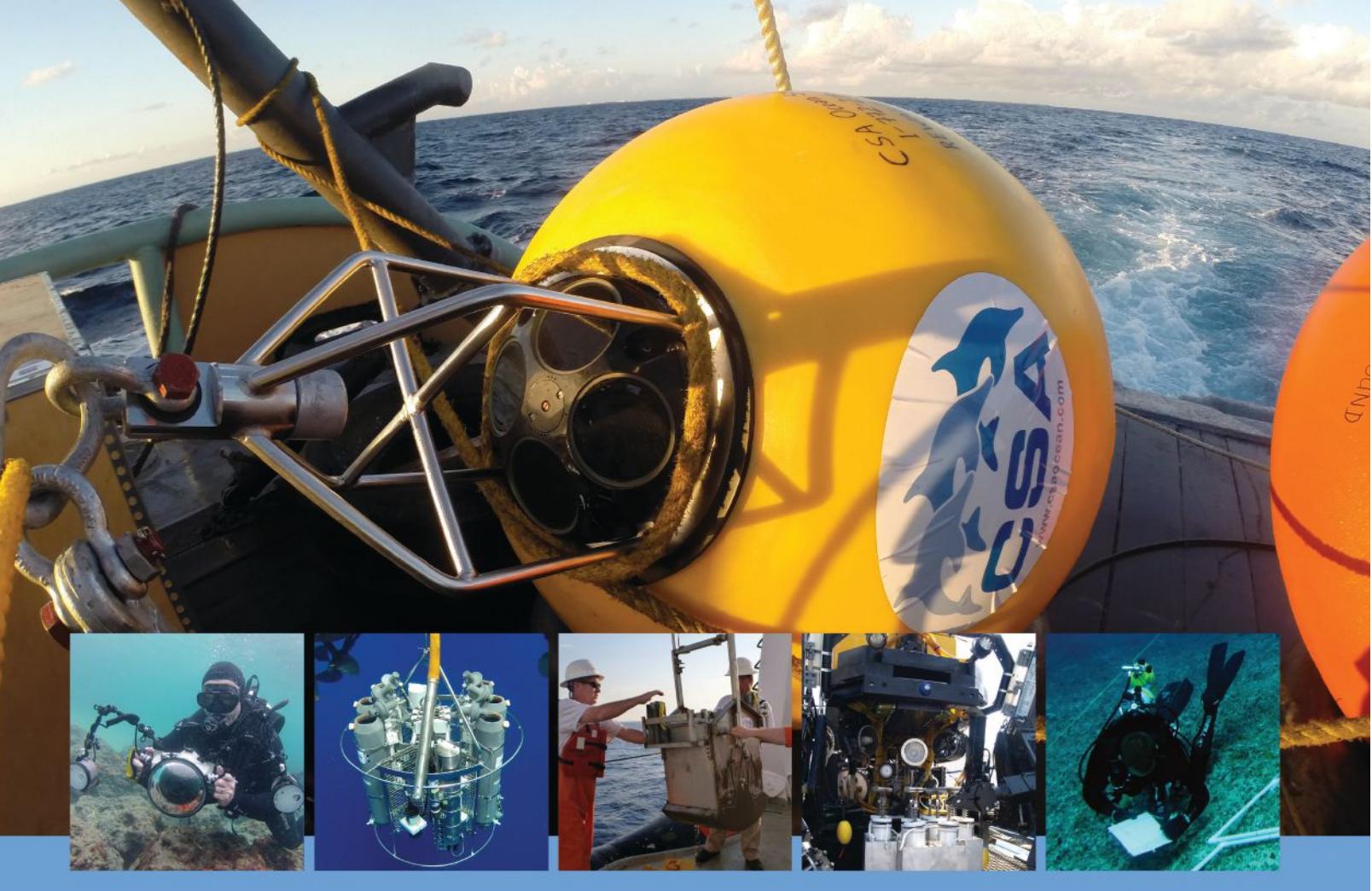


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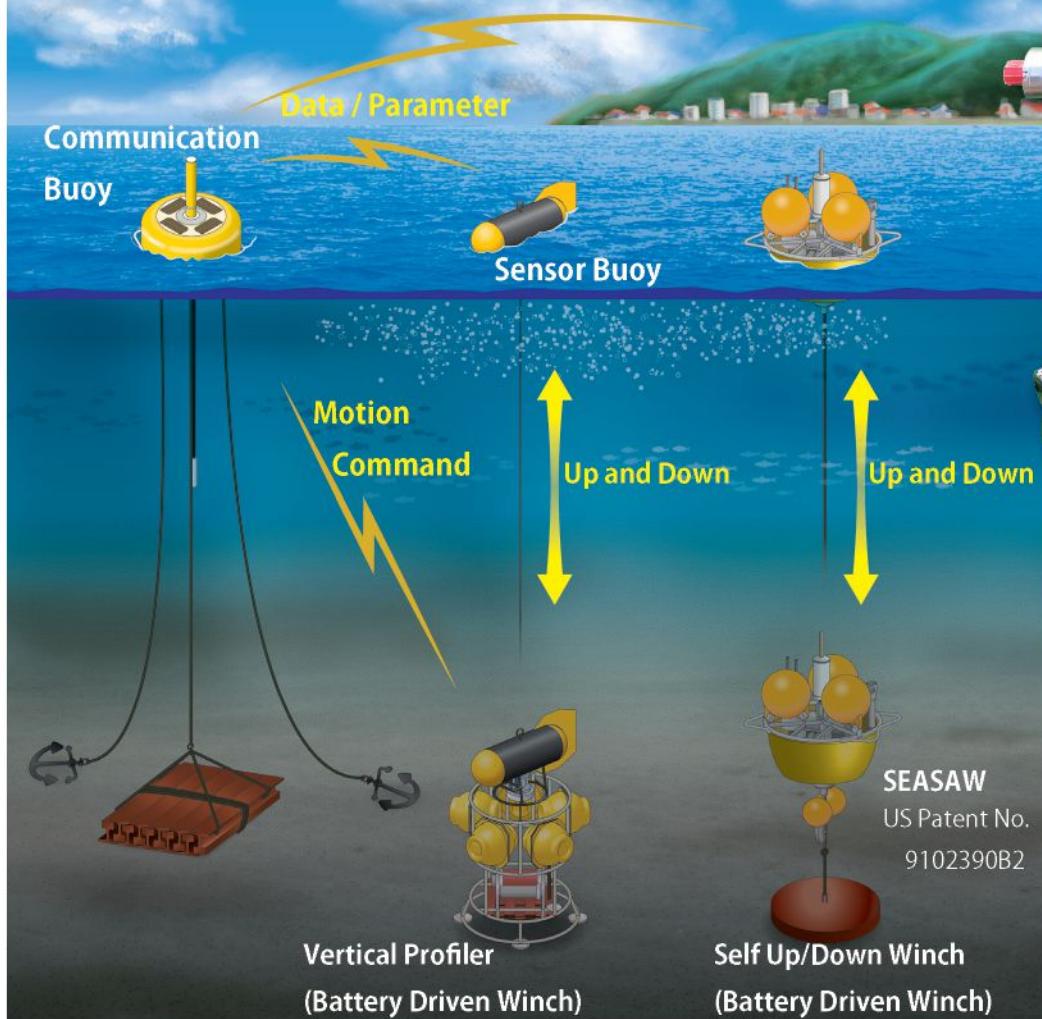
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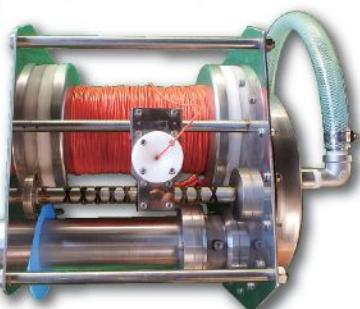


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Submersible winch component / system



Submersible winch, as a part / component



Component (AES)

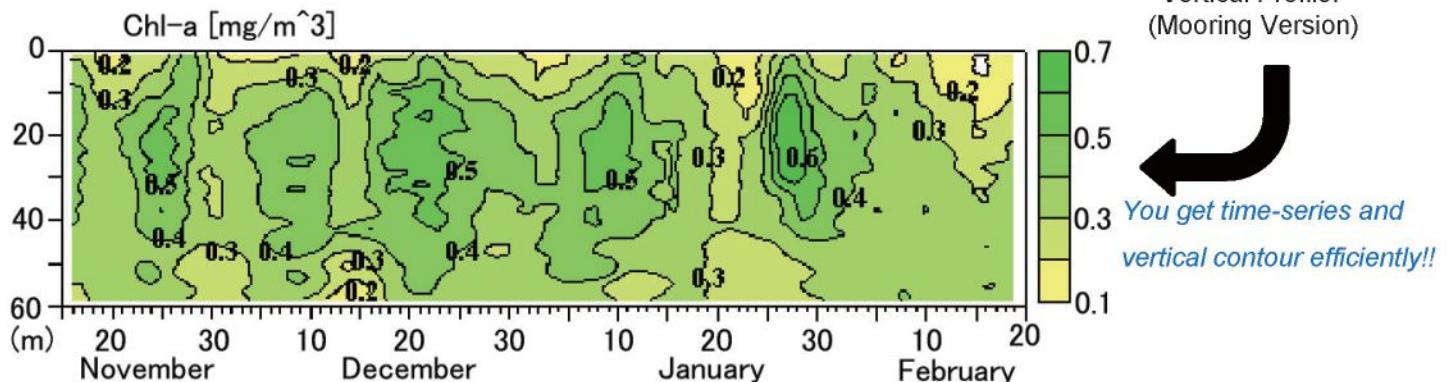


Component (SEASAW)

as a system

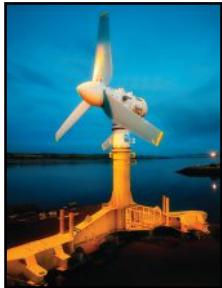


Vertical Profiler
(Mooring Version)



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Offshore Industry



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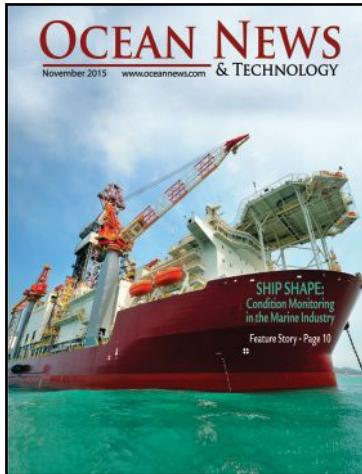
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EDITORIAL

By Ray Tyson



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Low prices taking big toll on oil and gas industry

Just how much longer can we expect the greatly diminished price of crude oil to continue? Six months? One year? Two years? Five years or longer? Since I first addressed this issue in my column last spring, well-meaning market analysts have flooded my desk with widely varying predictions, one even ranging out a couple of decades. The fact is, with generally reliable economic indicators (such as supply and demand) taking on confused meaning, price forecasting has become little more than a guessing game.

But one thing's for sure: the ill effect of the prolonged weak pricing market continues to take a huge toll on the oil and gas industry worldwide, including massive worker layoffs, greatly reduced capital spending, and many highly leveraged companies that are fighting for their very existence.

Let's be realistic. How many projects that were proposed and designed when oil was \$100/bbl remain viable at \$50/bbl? It doesn't take a rocket scientist to figure that one, especially when considering some longer-term forecasts call for prices to dip as low as \$30/bbl.

At \$50/bbl, a staggering \$1.5 trillion of potential investment in new oil projects isn't viable, highlighting the need to reduce costs, declares consultant Wood Mackenzie Ltd., in a front page story appearing in the oil and gas section of this month's Oil News & Technology.

The proposed projects, including spending on North American shale, are "now out of the money, or in starker terms, uneconomic at \$50 oil," James Webb, upstream research manager at Wood Mackenzie, said in a statement. "This spend is very much at risk."

Moreover, at a time when the oil price is languishing at its lowest level in six years, producers need to find half a trillion dollars to repay debt, according to Bloomberg, which concluded that "some might not make it."

The number of oil and gas company bonds with yields of 10% or more, a sign of distress, tripled in the past year, leaving 168 firms in North America, Europe and Asia holding this debt, data compiled by Bloomberg show. The ratio of net debt to earnings is the highest in two decades.

In addition to producers, oilfield service companies, especially drillers, are feeling the pinch as the number of active offshore rigs have fallen dramatically worldwide since mid-2014, the U.S. Energy Information Administration said



in a recent report. EIA noted that 304 offshore rigs were operating in August 2015, down from 377 in August 2014, a decline of nearly 20%. The federal agency also noted that during this period, the number of active offshore rigs in the U.S. Gulf of Mexico dropped more rapidly, falling by 46%. Over the past 15 years, the U.S. Gulf's share of active offshore rigs worldwide has declined significantly, from almost half of all active offshore rigs worldwide in 2000 to less than 20% since 2008, EIA reported.

In another one of our front page stories, Moody's Investors Service predicts in a report that the offshore drilling industry will remain under severe distress through 2017, explaining that most troubling for the industry is overcapacity, as the number of idle rigs climbs despite delivery deferrals and retirements and as newbuild deliveries loom over the market.

"Drillers will increasingly contend with diminished backlog, rig values, fleet sizes, and margins if oil prices do not bounce back to the \$70-80/bbl range, which we believe could support an increase in shallow-water as well as deepwater and ultra-deepwater drilling," Moody's writes.

Exploration and production companies have already made 2015 a record year for writedowns and impairments, according to energy consulting group IHS. Impairments or writedowns are the result of companies adjusting down the value of assets they list on their books. As the price of oil has fallen, so has the value of the reserves oil companies keep on their books, IHS says.

Beleaguered drillers wrote off \$29 billion in the first quarter of the year alone, more than the 2014 full-year total of about \$25 billion. Halfway through reporting on the second-quarter, the total value of writedowns had jumped to about \$49 billion, surpassing the \$48 billion in writedowns companies took when oil markets last seriously tanked in 2008, according to IHS numbers.

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FEATURE STORY

SHIP SHAPE:

Condition Monitoring in the Marine Industry

By: David Johansson, Head of Marine
Business Development, SKF



Condition-based maintenance (CBM) is a tried and trusted technique within the world of manufacturing. It helps to improve the overall machine efficiency and ensures timely and accurate repair of machines by keeping a constant watch on their condition and identifying errors before they can cause problems.

Any industry that uses a lot of independent machines can derive enormous benefit from CBM. For this reason, at SKF we see considerable potential for CBM in the marine sector. For example, the needs of marine customers are similar to those in manufacturing: improving maintenance procedures, boosting uptime, and cutting costs. However, the industry's natural conservatism coupled with reliability, stringent regulations, and ever-tougher economic conditions means that the take-up of CBM has been relatively slow.

Cutting Costs

Shipbuilding is under as much pressure as any other manufacturing sector, while ship owners are also trying to make their operations as lean as possible. They must minimize cost by, for example, optimizing trade routes, reducing cruise speeds, and improving fuel efficiency to protect operating margins.

Although cost-conscious ship owners might see CBM as an unnecessary expense, the reverse is in fact true. By investing in the CBM technologies that are already widely used and proven for reducing machine operating and maintenance costs in the manufacturing sector, ship owners and operators can benefit from the efficiencies that arise from greater machine reliability; in many instances, this can have a positive impact on the number of days each vessel can remain at sea.

The early adopters of CBM have been the highest value vessels, such as cruise ships and those used in the oil and gas sector. Increasingly, however, we are seeing the implementation of CBM technology in a far wider range of cargo ships, large and small.

Traditionally, a ship used in the offshore sector is brought into dry-dock every 2.5 years for a complete overhaul of on-board machinery; for merchant ships generally this period is longer, at around 5 years. In each case, every day that the ship is in dry-dock represents lost revenue.

Investing in automated condition-based monitoring systems could potentially delay the need for these major overhauls—meaning that a ship will undergo fewer major maintenance operations during its lifetime and spend more time at sea. Routine repairs can also be carried out with more

confidence and planned so that they can be completed while vessels are in port or at sea so that normal operations are not affected.

Data can be gathered in a number of ways. On-board engineers can use instruments such as SKF's Microlog hand-held devices to carry out portable data collection or use online systems where fixed sensors mounted in dangerous or hard-to-access areas are hardwired back to a central on-board control room. Data can, therefore, be analyzed by ship engineers or, more commonly for critical equipment, transmitted to a shore-based facility for interpretation by remote experts.



Microlog AX-CTC.

Bandwidth Issues

Of course, there are some key differences that do not translate directly from the manufacturing to the marine sector. One is the availability of network or satellite bandwidth.

By its very nature, condition monitoring generates large amounts of data. In a manufacturing environment with on-site analysis, data overload is rarely a problem. On board a ship, once the vessel is out of reach of land-based communications networks, it is impractical to send such high volumes of data over satellite links, especially if it has to compete for bandwidth with voice or other more critical communication. First, information must, therefore, be carefully analyzed and filtered, with only the most relevant data being transmitted for on-shore analysis.

FEATURE STORY

Environmental Push

And it's not just maintenance data that's important. CBM is increasingly moving into performance monitoring, too. Ship owners require a large array of information, such as fuel consumption and emission levels to optimize operations.

New solutions are emerging to help meet these needs. For example, BVI's Turbulo BlueMon is an emission monitoring system that records everything in one place. By linking to GPS position data, the system helps with marine MARPOL conventions compliance, so that if a ship is approaching an area with higher emission standards a warning can be sent to the bridge so that emission levels can be rechecked. Data remain available for 24 months, allowing later verification of compliance.

This and other systems are effectively filling in the ship's logbook automatically—the kind of operation that is likely to become far more common in the future. Fitting this technology to an entire fleet would allow a ship owner to benchmark its environmental performance against industry standards or identify the best performing crews and vessels.

There is an additional benefit of centralized data collection in that it helps to overcome a common trend within the marine industry—that of engineers rotating between ships, with knowledge of individual vessels inevitably being lost as staff move on.



BVI's Turbulo BlueMon is an emission monitoring system that records everything in one place.

Needs Analysis

SKF can also provide a Client Needs Analysis (CNA) to ship owners, helping them to improve on-board maintenance procedures. The CNA is a survey of around 40 questions that are put to the maintenance operations team. It takes a full day of



SKF tech at work.

interviews to gather the relevant information. SKF then generates a score of a company's maintenance performance, often revealing immediate ways to boost procedures and cut costs. In addition, the report provides a roadmap for future improvements. CNAs are widely used, and proven, within manufacturing, but still in their early days in the marine industry. Nonetheless, they can be an excellent first step in planning the introduction of an on-board CBM solution.

Where Next?

The marine industry will not adopt CBM overnight. The main focus of marine engineers is reliability as a means of optimizing vessel availability; this has historically been carried out using visual or time-based maintenance inspections, so changing the culture will take time.

Change will be driven by economic pressures and by ever-tougher regulations, such as on emission controls and machine safety. It will also be driven by companies such as SKF entering into strategic alliances with the goal of developing new and innovative technologies that offer ship-wide and fleet-wide condition monitoring.

Perhaps the biggest challenge faced by marine engineers is the management of multiple on-board machines; indeed, in many instances there are so many machines, from many different suppliers, on each ship that it's much like a floating factory. For SKF, with our background in manufacturing plus our experience and alliances in marine applications, we are able to offer knowledge engineering solutions that help OEMs improve the performance and reliability of their systems and enable ship owners and operators to increase the time that each vessel spends profitably at sea.

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- Depth: up to 7,000 m



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OCEAN INDUSTRY

NOAA, Deepwater Horizon trustees announce draft restoration plans



NOAA and the other Deepwater Horizon Natural Resource Trustees have released a 15-year comprehensive, integrated environmental ecosystem restoration plans for the Gulf of Mexico in response to the 20 April 2010 Deepwater Horizon oil rig explosion and spill. Implementing the plan will cost up to \$8.8 billion. The explosion killed 11 rig workers and the subsequent spill lasted 87 days and impacted both human and natural resources across the Gulf.

The Draft Deepwater Horizon Oil Spill Draft Programmatic Damage Assessment and Restoration Plan and Draft Programmatic Environmental Impact Statement allocates Natural Resource Damage Assessment monies that are part of a comprehensive settlement agreement in principle among BP, the U.S. Department of Justice on behalf of federal agencies, and the five affected Gulf States announced on 2 July 2015. The Department of Justice lodged on 5 October in U.S. District Court a consent decree as part of the more than \$20 billion dollar settlement.

In the draft plan, the Trustees provide documentation detailing impacts from the Deepwater Horizon oil spill to:

- wildlife, including fish, oysters, plankton, birds, sea turtles, and marine mammals across the Gulf
- habitat, including marshes, beaches, floating seaweed habitats, water column, submerged aquatic vegetation, and ocean-bottom habitats; and
- recreational activities including boating, fishing, and going to the beach.

The Trustees determined that "overall, the ecological scope of impacts from the Deepwater Horizon spill was unprecedented, with injuries affecting a wide array of linked resources across the northern Gulf ecosystem." As a result of the wide scope of impacts identified, the Trustees "have determined that the best method for addressing the injuries is a comprehensive, integrated, ecosystem restoration plan."

Both the consent decree and the draft plan are available for 60 days of public comment. The Trustees will address public comment in adopting a final plan. For the consent decree, once public comment is taken into account the court will be asked to make it final.

Public comments on the draft plan will be accepted at eight public meetings to be held between 19 October and 18 November in each of the impacted states and in Washington, DC. Comments will also be accepted online and by mail sent to: U.S. Fish and Wildlife Service, P.O. Box 49567, Atlanta, GA 30345. The public comment period will end on 4 December 2015.

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Fathom the Loss

Christopher Nicholson, one of the world's leading innovators in underwater robotics technology, passed away suddenly at the age of 62 at his residence in Falmouth, Massachusetts.

Nicholson was founder and president of Deep Sea Systems, International, now Oceaneering International. He was an internationally recognized inventor and developer of underwater robotics and received the National Oceanographic Institute Award from the Academy of Underwater Arts and Sciences in 1992.

Starting out his illustrious career as a teenager, he won awards for designing and building prize-winning ROVs in high school. By the time he was in his early 20s, he had constructed the largest ROV in the world, the Smit Sub. By the age of 30, his next ROV, the RPV 430, was featured in two separate National Geographic cover stories. The first of these was on the Hamilton & Scourge, a pair of shipwrecks from the War of 1812 found in 88 m of water in Lake Ontario, Canada. The second story highlighted the Breadalbane, filmed in the Northwest Passage under 103 m of water and ice, the northern-most sailing ship ever discovered and explored!

Nicholson applied the Model T concept to ROVs by implementing efficient assembly lines, resulting in quality, affordable ROVs rather than custom, one-off designs. He felt there was a market for smaller, portable and affordable ROVs and proved it by building the Mini-ROVER and the Sea ROVER. His new machines inspired other manufacturers to follow his lead—and ultimately this evolution has provided increased depth, time on site, and safety for subsea exploration as well as access for the subsea industry, military, and scientific communities.

Over time, what Nicholson learned through his development of the small exploration class ROVs has been applied many times over in his cutting edge projects and developments with Oceaneering International. His determined goal was to provide modular, all-electric ROVs with the simplicity of fewer parts and down time, "Cheap & Deep," a "Totally Environmentally Friendly, Green Machine in an advanced pilot controlled environment"—"as good as being there!"

Our industry is deeply saddened, and Christopher Nicholson will be greatly missed.



Navy agrees to limit underwater assaults on whales and dolphins

A federal court entered an order settling two cases challenging the U.S. Navy's training and testing activities off the coasts of Southern California and Hawai'i, securing long-sought protections for whales, dolphins, and other marine mammals by limiting Navy activities in vital habitat. The settlement stems from the court's earlier finding that the Navy's activities illegally harm more than 60 separate populations of whales, dolphins, seals, and sea lions.

For the first time, the Navy has agreed to put important habitat for numerous populations off-limits to dangerous mid-frequency sonar training and testing and the use of powerful explosives. The settlement aims to manage the siting and timing of Navy activities, taking into account areas of vital importance to marine mammals, such as reproductive areas, feeding areas, migratory corridors, and areas in which small, resident populations are concentrated.

Many of the conservation organizations who brought the lawsuits have been sparring legally with the Navy and the National Marine Fisheries Service—the agency charged with protecting marine mammals—for more than a decade, demanding that the Navy and Fisheries Service comply with key environmental laws by acknowledging that the Navy's activities seriously harm marine mammals and taking affirmative steps to lessen that harm.

"We can protect our fleet and safeguard our whales," said Rhea Suh, president of the Natural Resources Defense Council, whose lawyers challenged the Navy's activities in Southern California and Hawai'i on behalf of NRDC, Cetacean Society International, Animal Legal Defense Fund, Pacific Environment and Resources Center, and Michael Stocker. "This settlement shows the way to do both, ensuring the security of U.S. Navy operations while reducing the mortal hazard to some of the most majestic creatures on Earth. Our Navy will be the better for this, and so will the oceans our sailors defend."

"If a whale or dolphin can't hear, it can't survive," said David Henkin, an attorney for the national legal organization Earthjustice, who brought the initial challenge to the Navy's latest round of training and testing on behalf of Conservation Council for Hawai'i, the Animal Welfare Institute, the Center for Biological Diversity, and the Ocean

Mammal Institute. "We challenged the Navy's plan because it would have unnecessarily harmed whales, dolphins, and endangered marine mammals, with the Navy itself estimating that more than 2,000 animals would be killed or permanently injured. By agreeing to this settlement, the Navy acknowledges that it doesn't need to train in every square inch of the ocean and that it can take reasonable steps to reduce the deadly toll of its activities."

Scientific studies have documented the connection between high-intensity mid-frequency sounds, including Navy sonar, and serious impacts to marine mammals ranging from strandings and deaths to cessation of feeding and habitat avoidance and abandonment. Nonetheless, until now the Navy has refused to set aside biologically important areas to minimize such harm to vulnerable marine mammal populations.

Until it expires in late 2018, the agreement will protect habitat for the most vulnerable marine mammal populations, including endangered blue whales for which waters off Southern California are a globally important feeding area; and numerous small, resident whale and dolphin populations off Hawai'i, for which the islands are literally an oasis, their only home.

Ocean industry CEO's take on sustainable development and the blue economy

An exceptional gathering of CEOs from a range of ocean industries will engage in a high-level plenary discussion at the SOS 2015.

The Ocean Executive Forum will bring together a unique cross-sectoral panel of ocean industry leaders to give their views on "Sustainable Development and Growing the Blue Economy - the Next 50 Years" and how ocean industries can collaborate on Corporate Ocean Responsibility.

The Ocean Executive Forum panel will include:

- Kenneth Koo, CEO, TCC Shipping (shipping);
- Bram Roelse, CEO, Royal IHC Merwede (shipbuilding/dredging);
- Volker Kuntzsch, CEO, Sanford Ltd (fisheries);
- Gary Gysin, CEO, Liquid Robotics (ocean data/technology);
- Joao Metelo, CEO, Principle Power (offshore wind energy);
- Mike Johnston, CEO, Nautilus Minerals (seabed mining); and

- Jim Schweigert, EVP, Matrix Networks (submarine cable).

The high-level, multi-industry panel will consider the challenges and opportunities for the private sector to responsibly respond to the growing need to supply energy, food, transport and information from the ocean. Additional CEOs from oil and gas, aquaculture, cruise tourism or desalination may also be joining the panel as their availability is confirmed.

For more information, visit www.oceancouncil.org.

Oceanology International launches OI North America 2017

Providing what the industry wants and needs has long been the maxim behind Oceanology International (OI), the world's largest exhibition and conference for the ocean science and marine technology community. This commitment has resulted in the launch of the biennial Oceanology International North America (OINA) being held for the first time in San Diego, California on 14-16 February 2017 at the San Diego Convention Center.

"We've been regularly asked whether we could re-create the OI London magic in the world's largest marine technology market, North America ... and now we have!" says event director, Jonathan Heastie of Reed Exhibitions. "Like OI London over its 46-year history, OINA will bring together all elements and communities within the North American ocean science and marine technology market. This includes ensuring we bring together multiple buyers from differing industries, all united by the use of technology, but in a myriad of different ways. We are looking forward to working with all the industry stakeholders to deliver a world-leading event for the benefit of its participants."

The two events will alternate. OI London is being held 15-17 March 2016 and will repeat in 2018, 2020 and so on, and OINA launches in 2017 with subsequent events in 2019, 2021 and further 'odd years.' OI China, launched in 2013, will continue to be a Fall event in Shanghai (OI China 2015 is being staged 3-5 November 2015). OI London 2014 attracted 8,400 attendees from 52 countries—an increase of 10% over 2012. Exhibitor figures were higher than ever before with 528 exhibiting companies from 35 countries.

For more information, visit www.oceanologyinternational.com.

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The official publication of the
Gulf of Mexico Foundation

International Maritime Security Associates and SRG Technology launch maritime security alerting system

SRG Technology, developer of cutting-edge data collection and analysis solutions designed to drive performance improvements, in conjunction with the International Maritime Security Associates (IMSA), unveiled a first-of-its-kind maritime alerting security system (MASS™) during International Shipping Week in London.

MASS was developed through a partnership between IMSA and SRG Technology, which provides the innovative software portal platform – Blender™. MASS is a maritime threat alerting, security management and compliance system that provides vessels and fleet managers of all types with near real-time, geo-positional threat alerts, security management tools and customized protocols on a single dashboard.

The MASS command control center (CCC), operated round the clock by veteran maritime security personnel, collects, consolidates, validates and disseminates data sources from around the globe. Only relevant threat data is delivered to vessels based on their geo-position location.

"The maritime industry regularly faces numerous and unique risks such as piracy; maritime terrorism; civil unrest; medical outbreaks; port delays and closures; severe weather; and other maritime hazards," said SRG Technology CEO, Neil Sterling. "MASS has the potential to revolutionize the way these threats can be addressed by offering a maritime security solution which provides vessels with customized threat data in a smarter and more meaningful way, securing safer outcomes and lower costs."

Through the use of SRG's Blender dashboard, the MASS system adds superior value by providing information not only to vessels, but also to stakeholders such as vessel and fleet management, and ultimately leads to increased vessel security.

MASS allows importing of customized security plans for compliance with various regulatory bodies and vessel protocols allowing ship personnel to seamless identify and respond to threats. Fleet security personnel are afforded the same information for all their vessels and can track and manage security for entire fleet.

"MASS is an exciting application that is going to change how the maritime industry manages risk information and data," said Corey Ranslem, CEO of International Maritime Security Associates. "Vessels and ship managers can now receive near real-time risk information to help them better manage their specific risks."

Panama Canal sets new tonnage record

Following the close of the 2015 fiscal year, the Panama Canal Authority (ACP) announced that it has set a new historical tonnage record, welcoming 340.8 million Panama Canal tons (PC/UMS) through the Canal. The spike represents a year-on-year increase of 4.3% and highlights the Canal's value and significance to global maritime trade. The previous record was set in FY2012 when the Canal experienced 333.7 million PC/UMS tons. This year's record surpasses that amount by more than 7 million tons.

The Panama Canal noted that container ships registered the most total tonnage, followed by dry bulk, liquid bulk and car carriers. Compared to the other segments, liquid bulk saw the most notable boost, reporting an increase of 23%, or 11.9 million PC/UMS tons, due to booming diesel, gasoline and propane exports from the U.S. Gulf Coast to South America and Asia.

The container ship segment also recorded positive results, seeing a 3.7% increase in PC/UMS tonnage year-on-year. Seven new liner services were introduced in January of this year, which also contributed to the increase in cargo passing through the Canal: five in the U.S. East Coast-Asia route, one U.S. West Coast-Europe route, and another one on the North-South route.

In addition, the car carrier segment recorded an increase of 5.2% as a result of exports from Mexico's West Coast destined to the U.S. East Coast.

Crowley takes delivery of first Jones Act tanker from Aker Philadelphia Shipyards



Crowley Maritime Corp. took delivery of Ohio, the first of four new Jones Act product tankers from Aker Philadelphia Shipyards, Inc. (APSI), the wholly-owned U.S. subsidiary of Aker Philadelphia Shipyard ASA. The delivery is momentous not only for Crowley, but also for the industry because it signifies the first time a product tanker has been constructed with consideration for the future use of LNG for propulsion. The remaining three product tankers being built by APSI for Crowley are currently under construction and have planned deliveries through 2016.

"We are excited to offer our customers cutting-edge technology available in these new tankers, which not only embraces operational excellence and top safety, but also offers the potential to be powered by environmentally friendly LNG in the future," said Crowley's Rob Grune, senior vice president and general manager, petroleum and chemical transportation. "Adding these new Jones Act tankers to our fleet allows us to continue providing our customers with diverse and modern equipment to transport their petroleum and chemical products in a safe and reliable manner."

The new 50,000 dwt product tankers are based on a proven Hyundai Mipo Dockyards (HMD) design that incorporates numerous fuel efficiency features, flexible cargo capability, and the latest regulatory requirements. The vessel is 600 ft long and is capable of carrying crude oil or refined petroleum products.

Crowley's Seattle-based, naval architecture and marine engineering subsidiary Jensen Maritime is providing construction management services for the product tankers. Jensen now has an on-site office and personnel at the Philadelphia shipyard to ensure strong working relationships with shipyard staff and a seamless construction and delivery program.

New ship handling simulator for Philippines-based Crest Inc.

Kongsberg Maritime has completed delivery and installation of a new K-Sim Polaris ship-handling simulator for the Cebu Reliable and Excellent Seafarers Training Center, (CREST) Inc. in the Philippines. CREST joins the growing number of Filipino maritime training organizations that choose Kongsberg Maritime simulators to meet the training demands of the world's dominant seafarer labor market.

The CREST delivery consists of a full mission, DNV GL class A K-Sim Polaris ship's bridge simulator with 270 degrees of visual view and KONGSBERG K-Bridge consoles, in addition to three GMDSS/ECDIS Radar Trainers. A key requirement in the selection of K-Sim Polaris was its in-depth built-in assessment functionality, which CREST will use for practical assessment and examination of officers as a mandatory requirement to receive a license.

"K-Sim Polaris is a strong match for our officer training needs," said Capt. Emerico B. Gepilano, vice president, CREST Inc. "The new simulator will support the development of our course offering and help to enhance our assessment processes, while the availability of Kongsberg Maritime as a local service provider was also a key advantage when choosing our new simulation supplier."

"The Philippines is a key market for Kongsberg Maritime simulators so we are delighted to add CREST as a customer in the region," adds Tor H. Kristoffersen, area sales manager, Kongsberg Maritime. "Our K-Sim navigation and engine room simulators are currently in use by more than 75 training institutes in the country. The support we provide directly and through our agent Mastech Inc. is therefore vital for Filipino maritime training providers who demand the very best simulator technology and services."

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

BAM-compliant systems can bring peace and quiet to the bridge

On 30 April 2016, the 11th amendment of the Marine Equipment Directive (MED) comes into force, making compliancy with the Bridge Alert Management (BAM) concept mandatory for all navigation equipment.

Imtech Marine, a leading bridge systems integrator, has been working on the test standards of BAM for several years through its participation in the International Electrotechnical Committee. But even with this rapidly approaching deadline, we have seen that there is still a lot of misunderstanding about BAM.

The official definition of BAM is an: "Overall concept for management, handling and harmonised presentation of alerts on the bridge." Put simply, BAM-compliant systems have the potential to bring "peace and quiet" to the bridge, and a quick understanding of complex alert situations, but of course, this depends on the quality of implementation and on the user behavior.



With technology these days, it is possible to monitor nearly everything. This results in a plethora of alerts popping up on the bridge screens, accompanied by their audible indication. Not every alert is indicating immediate trouble, yet everything appears to have priority, attracting the crew's attention. This can mean that the real priority cases are being lost in a cacophony of alarms, which could potentially lead to safety being compromised.

Managing the alarms and sorting through the alerts takes time the crew simply doesn't have and what realistically is the operator going to do if everything is deemed 'urgent'?

At the same time, vessels are getting bigger but they have much smaller crews. A 450-m ship can sail with fewer than 20 people. Additionally, crew fatigue is a growing problem with alarms disturbing sleep, particularly in the engine room department.

BAM doesn't reduce alerts but it prioritises them and changes the way attention is attracted. Alerts are classified, and easier to identify, and BAM makes it clear who can handle them. This makes decision-making easier and enables the operator to immediately identify the issue and take any action needed to maintain a safe operation.

From 30 April, equipment manufacturers are going to be obliged to give functional, rather than 'symptom' alerts. This is a huge difference and dramatically decreases the cognitive loads on the crew.

Because Imtech Marine has been a forerunner in this field, its bridge systems and some systems in the engine room, are ready for BAM. The first Imtech Marine customers now have BAM-equipment installed and can already see big improvements. For example, previously in a failure situation a long alarm list would sound, keeping the operator tied up until the last alarm had been read and acknowledged. But now an alert list holding

only a few alarms requiring immediate action will sound. Other alarms are converted into warnings and silent cautions that can be taken care of at a later time.

And although the bridge is just the starting point for BAM, there is no doubt that the benefits are evident, which means that it will migrate to other parts of the ship.

For more information, visit www.imtechmarine.com.

Wärtsilä introduces new thruster aimed at river and inland waterway vessel applications

Wärtsilä introduces the latest addition to its thruster product portfolio, the Wärtsilä WST-14 steerable thruster, which represents state-of-the-art azimuthing propeller technology. It is aimed primarily at inland waterway cargo vessel applications. The new thruster will provide increased reliability and efficiency, while also lowering costs.

Among the many innovations incorporated into the WST-14 are its space-saving compact design, an integrated slipping clutch that provides a cost-competitive solution for maneuvering when combined with a fixed pitch (FP) propeller, and the ability to maintain and service the propeller shaft and steering seals without requiring a complete overhaul of the thruster. It has a straightforward, reliable design and is ice-class rated.

By combining the 6-cylinder in-line Wärtsilä 20 engine with the WST-14 thruster, a solution package that is ideal for the specific demands of river and inland waterway operation can be offered. It also suits other marine applications, such as tugs, where maneuvering in harbors and/or ice conditions is required. Compared to conventional fixed pitch (FP) and controllable pitch (CP) propeller drive line solutions, the WST-14 thruster enables a greater load capacity for the vessel. This offers increased revenues for the owner/operator since more cargo can be transported.

"This project began 2 years ago and we are delighted to announce that the WST-14 is now available to the market. This introduction fills a particular need in the inland waterway vessel sector, and it is already attracting interest from owners and yards in Asia, Europe and America. Wärtsilä is now able to offer a complete and highly efficient propulsion package for this specific market," says Arto Lehtinen, vice president, propulsion, Wärtsilä Marine Solutions.

For more information, visit www.wartsila.com.

New report details 10 years of improvements in Gulf observation systems

A new report from the Gulf of Mexico Coastal Ocean Observing System Regional Association (GCOOS-RA) details the first 10 years of the nonprofit organization's work to improve access to ocean observing data that helps to protect and preserve the Gulf and its residents.

The report, "The Gulf of Mexico Coastal Ocean Observing System: 10 Years of Protecting and Preserving the Gulf," was published in recognition of the organization's 10th anniversary and released at its September board meeting in St. Petersburg, Florida. The report outlines improvements made in:

- Developing early warning systems for harmful algal blooms;
- Integrating data that supports improved weather and hurricane forecasts;
- Safer navigation in the Gulf's ports; and
- Educating residents on the important role the Gulf plays in their daily lives.

At the heart of these improvements is the GCOOS-RA. As a member of the U.S. Integrated Ocean Observing System, GCOOS-RA is responsible for bringing together representatives from the maritime industry, governmental and nongovernmental organizations, marine scientists and resource managers to combine ocean data to provide timely information about the Gulf of Mexico. The data comes from instruments mounted on things such as buoys, autonomous underwater vehicles and even oil platforms.

"Probably the most notable success in our first 10 years is the fundamental change that we've made in how ocean monitoring is conducted in the Gulf," said Dr. Barbara Kirkpatrick, executive director of the GCOOS-RA. "GCOOS has helped move organizations away from collecting and keeping their own ocean data to sharing and exchanging information in real-time and near real-time. We helped to develop data management standards and we provide a portal where organizations can stream their data and provide public access."

For more information, visit <http://gcoos.tamu.edu/>.

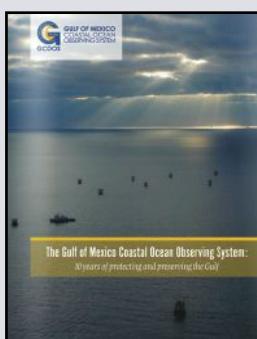
Extreme Pacific sea level events to double in future

Over the coming decades and added onto gradual sea level rise from greenhouse warming, the tropical Pacific will experience more extreme sea level swings on timescales of several years. The culprit is a change in the El Niño phenomenon, according to recent computer modeling experiments and tide-gauge analysis by scientists Matthew Widlansky and Axel Timmermann at the International Pacific Research Center, University of Hawai'i at Mānoa, and Wenju Cai at CSIRO in Australia.

During El Niño, warm water and high sea levels shift eastward, leaving in their wake low sea levels in the western Pacific. Scientists have already shown that this east-west seesaw is often followed 6 months to a year later by a similar north-south sea level seesaw with water levels dropping by up to 1 ft (30 cm) in the Southern Hemisphere. Such sea level drops expose shallow marine ecosystems in South Pacific Islands, causing massive coral die-offs with a foul smelling tide called taimasa (pronounced [ka' ma'sa]) by Samoans.

The team of scientists recently asked, how will future greenhouse warming affect the El Niño sea level seesaws? The scientist used state-of-the-art climate models, which accounted for increasing greenhouse gas concentrations, together with simulations of the observed climate and tide-gauge records to verify the model results. They determined that projected climate change will enhance El Niño-related sea level extremes. By the end of this century, the experiments show that the intensified wind impacts of strong El Niño and La Niña events are likely to double the frequency of extreme sea level occurrences, especially in the tropical southwestern Pacific.

For more information, visit www.eurekalert.org.



NOAA declares third ever global coral bleaching event



Extensive stand of severely bleached coral at Lisianski Island in Papahānaumokuākea Marine National Monument (Hawaii), documented during an August 2014 NOAA research mission (Credit: NOAA).

As record ocean temperatures cause widespread coral bleaching across Hawaii, NOAA scientists confirm the same stressful conditions are expanding to the Caribbean and may last into the new year, prompting the declaration of the third global coral bleaching event ever on record.

Waters are warming in the Caribbean, threatening coral in Puerto Rico and the U.S. Virgin Islands, NOAA scientists said. Coral bleaching began in the Florida Keys and South Florida in August, but now scientists expect bleaching conditions there to diminish.

"The coral bleaching and disease, brought on by climate change and coupled with events like the current El Niño, are the largest and most pervasive threats to coral reefs around the world," said Mark Eakin, NOAA's Coral Reef Watch coordinator. "As a result, we are losing huge areas of coral across the U.S., as well as internationally. What really has us concerned is this event has been going on for more than a year and our preliminary model projections indicate it's likely to last well into 2016."

While corals can recover from mild bleaching, severe or long-term bleaching is often lethal. After corals die, reefs quickly degrade and the structures corals build erode. This provides less shoreline protection from storms and fewer habitats for fish and other marine life, including ecologically and economically important species.

This bleaching event, which began in the north Pacific in summer 2014 and expanded to the south Pacific and Indian oceans in 2015, is hitting U.S. coral reefs disproportionately hard. NOAA estimates that by the end of 2015, almost 95% of U.S. coral reefs will have been exposed to ocean conditions that can cause corals to bleach.

The biggest risk right now is to the Hawaiian Islands, where bleaching is intensifying and is expected to continue for at least another month. Areas at risk in the Caribbean in coming weeks include Haiti, the Dominican Republic, and Puerto Rico, and from the U.S. Virgin Islands south into the Leeward and Windward islands.

For more information, visit www.noaa.gov.

Scientists to give Shetland's aquaculture industry early warning on harmful algae

Scientists at the Scottish Association for Marine Science (SAMS) in Oban are helping to safeguard stocks of farmed shellfish and salmon in Scottish aquaculture's industrial heartland.

The waters around Shetland produce around 77% of the rope-grown mussels in Scotland and the seafood sector on the islands is worth around £350 million per year, meaning the Shetlands are crucial to Scottish Government targets of sustainably producing 210,000 tonnes of fish and 13,000 tonnes of shellfish by 2020.

But these stocks can be threatened by masses of harmful algae that can form off the coastline, known as Harmful Algal Blooms (HABs) – one bloom in July 2013 led to a voluntary ban on harvesting from all 20 mussel sites on Shetland. Toxins from some of these algae are absorbed by shellfish, posing a risk to human health, and others can kill farmed fish.

Human health is protected by regulatory monitoring that leads to fishfarms or shellfisheries being closed if toxin levels rise.

To help improve this monitoring, SAMS scientists, in conjunction with Marine Scotland, have deployed 16 floating 'drifters' in the waters to the north of Scotland to track ocean currents, which along with data from satellite images, will help them anticipate when some of these HABs could occur.

The collected data will then be used to validate a model that will more accurately predict the emergence of blooms and will complement The Bulletin (http://www.somuchtosea.co.uk/news/bulletin_for_shellfish_farmers.aspx), a HAB monitoring service currently funded by the Natural Environment Research Council (NERC) and Biotechnology and Biological Research Sciences Council (BBRSC). This will give fish and shellfish growers a reliable early warning system to the emergence of HABs, allowing them to take mitigating actions.

Professor Keith Davidson, SAMS' principal investigator in microbial ecology and modelling, said: "The security of Shetland's aquaculture industry is key to ensuring products are safe to eat and to the success and reputation of

both Scotland and the wider UK seafood market.

"Science can help build robust early-warning systems that can help reduce the risk of HABs affecting farmed products. The more work we can do in this area, the better prepared we will be."

A drifter is a floating GPS, anchored to the water so that it can track currents, rather than being blown by the wind. They transmit their location via satellite every hour. Eight of the 16 drifters have sails to anchor them to the surface meter or so, and 8 have a wire tether and a sea anchor at 15m depth to follow subsurface currents. That lets investigators see how the more wind-driven surface layer moves compare to deeper water.

Plymouth Marine Laboratory and Exeter University are conducting remote sensing as part of this project and the drifters will be released from the Marine Scotland Science vessel, Scotia. The Shetland-based North Atlantic Fisheries College (NAFC) Marine Centre is also contributing to inshore oceanography.

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

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Harte Research Institute, OCEARCH team up for Gulf shark-tagging expedition

The Harte Research Institute (HRI) for Gulf of Mexico Studies at Texas A&M University-Corpus Christi is teaming up with leading shark-tracking nonprofit OCEARCH to build the most extensive shark-tagging program in the Gulf of Mexico region.

OCEARCH is bringing its unique research vessel, the M/V OCEARCH, to the Gulf for a multi-species study to generate previously unattainable data on critical shark species, including Hammerhead, Tiger and Mako sharks.

"OCEARCH brings amazing capacity that allows us to greatly increase the numbers of sharks tagged in our region," said Dr. Greg Stunz, HRI chair for fisheries and ocean health and director of the Center for Sportfish Science and Conservation (CSSC). "We will have access to a world-class vessel and fishermen to locate and capture the sharks. Additionally, the OCEARCH vessel is equipped with a lift system that safely lifts the shark from the water giving us unprecedented access to the animal. This method is key for efficiently attaching tags, drawing blood, assessing reproductive status using ultrasound technology, along with a host of other scientific data collection methods that would otherwise be impossible on such a large, powerful, and dangerous animal."

Divided among three nations—the U.S., Mexico and Cuba—each with different regulations, the Gulf is a large marine ecosystem where policy development and enforcement requires multinational cooperation. Sharks are a highly mobile species that can travel hundreds of miles a day, heedless of international boundaries, and little is currently known about their movements in the Gulf. Research on shark migration will provide scientists with data necessary to understand their movements within this tri-national water body to better affect policy and conserve these key marine predators.

"Sharks, especially the large pelagic species, are difficult to access and this expedition will provide HRI an unprecedented opportunity to better understand where and how they live," said Dr. Larry McKinney, HRI executive director. "We are always looking for how the Gulf of Mexico is connected to the world's oceans and these sharks are the perfect model to study."

Additionally, data is needed to understand the interaction between large

predators and the oil and gas platforms currently present in the Gulf, and how this relationship compares to natural reefs and other ocean features.

CSSC runs a number of tagging programs to monitor shark populations in the Gulf of Mexico, including passive, acoustic and satellite tagging, and has tagged thousands of sharks to help fill information gaps about their lives in the Gulf. Meanwhile, through its online Global Shark Tracker, OCEARCH has helped millions of adults and children to gain a much closer and comprehensive look at one of the Gulf's more important indicator species, the challenges sharks face worldwide, and the important information they provide about the Gulf's biodiversity. The pairing of these teams makes an ideal collaboration.

The expedition, largely supported by Caterpillar Inc. as part of a socially innovative, multi-year partnership to impact ocean sustainability, is scheduled to take place beginning in Galveston, Texas, and ending in New Orleans, Louisiana. The expedition is also generously supported by HRI's Center for Sportfish Science and Conservation, Texas State Aquarium, Cheniere Energy, Coastal Conservation Association-Texas, Shell Oil and Gas and Orion Drilling.

For more information, visit www.tamucc.edu.

Teledyne Oceanscience supplies innovative rapidCAST to TerraSond for major hydrographic project

Teledyne Oceanscience supplied world-leading geospatial company TerraSond Limited with rapidCAST, a new, innovative, automated underway profiling system. According to TerraSond, the product was used in a major hydrographic project completed for NOAA's Office of Coast Survey in the Bering Sea in northwestern Alaska for the purpose of nautical chart updating.

"The rapidCAST system contributed to the high production rate we experienced on this project, helping us to finish well ahead of schedule," said Andrew Orthmann, TerraSond Limited's charting program manager. "The project area was located in an exposed area of the Arctic with a limited ice-free season. It was therefore crucial that we finish the project before the fall storms intensified and the Arctic ice-pack moved back in, and the rapidCAST helped us do that."

Approximately 3,900 nmi of multibeam data was collected to survey 300 sq. nmi. of seafloor centered on Cape Prince of Wales Shoal, a navigationally

significant shoal of intense interest to mariners navigating the area.

TerraSond used the rapidCAST system with a Valeport rapidSV sensor to collect sound speed profiles for correcting the bathymetric data. The system was mobilized by TerraSond aboard the R/V Qualifier 105 (Q105), a 105-ft research vessel that collected multibeam data 24/7.

Approximately 320 sound speed casts were conducted with the system over the course of the project, in depths from 5 to 40 m. The interval between casts varied from 30 minutes to 3 hours.

For more information, visit www.oceanscience.com.

Sea turtles in plastic pollution peril

A new global review led by the University of Exeter that set out to investigate the hazards of marine plastic pollution has warned that all seven species of marine turtles can ingest or become entangled in the discarded debris that currently litters the oceans.

The research, which was carried out in collaboration with Plymouth Marine Laboratory, North Carolina Wildlife Resources Commission, North Carolina State University, Duke University Marine Lab and James Cook University, is published in the ICES Journal of Marine Science and reveals serious knowledge gaps in the diverse and complex pathways in which plastic pollution can harm marine life.

Joint lead author Sarah Nelms, from the Centre for Ecology and Conservation at the University of Exeter's Penryn campus said: "I was shocked at how little is known about the impacts of plastic on marine turtles."

"We know that discarded plastic poses a serious threat to wildlife, but this study shows that more research is urgently needed if we are to understand the scale of the problem."

Annual global plastic production has grown from 1.5 million tonnes to 299 million tonnes in the last 65 years and as a result plastic pollution is increasing, both on land and at sea.

Prof. Brendan Godley, who led the team said: "When turtles ingest plastic, they can suffer intestinal blockage that can result in malnutrition, which can in turn lead to poor health, reduced growth rates, lower reproductive output and even death."

Entanglement in plastic debris, such as lost fishing gear or discarded packaging, can cause lacerations and increased drag when swimming, which may result in drowning or death by starvation.

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

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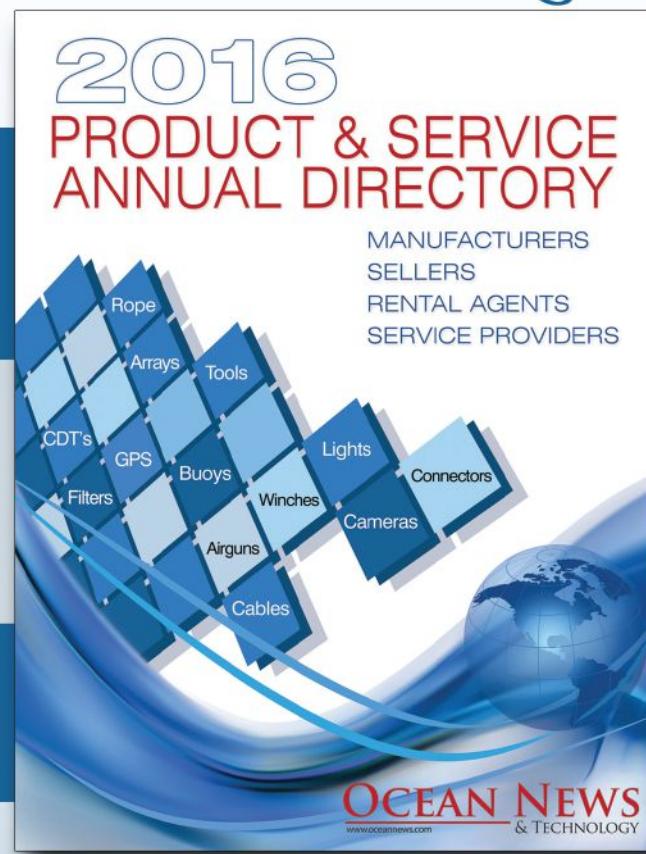
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BOEM announces major step for renewable energy offshore North Carolina

The Bureau of Ocean Energy Management (BOEM) announced that it completed an important environmental review, allowing BOEM to move forward with its process for considering a renewable energy lease sale offshore North Carolina.

BOEM's revised environmental assessment (EA), which was conducted according to National Environmental Policy Act (NEPA) requirements, found there would be no significant environmental or socioeconomic impacts from issuing wind energy leases within three Wind Energy Areas (WEAs) offshore North Carolina.

The WEAs, which total approximately 307,590 acres, include the Kitty Hawk WEA (about 122,405 acres), the Wilmington West WEA (about 51,595 acres), and the Wilmington East WEA (about 133,590 acres).

As part of this revised EA, BOEM only considered the issuance of leases and approval of site characterization (e.g., shallow hazard, geological, geotechnical, biological, and archaeological surveys) and assessment activities (e.g., installation of meteorological towers and buoys).

If, after leases are issued, a lessee proposes to construct a commercial wind energy facility, it must submit a construction and operations plan for BOEM's review and approval. BOEM would then prepare a site-specific NEPA analysis for the project proposed.

The announcement builds on BOEM's recent activities to grow offshore renewable energy through the leasing of WEAs. BOEM has awarded nine commercial wind leases, including seven through its competitive lease sale process (two offshore Rhode Island-Massachusetts, two offshore Massachusetts, two offshore Maryland and one offshore Virginia). To date, competitive lease sales have generated more than \$14.5 million in high bids for over 700,000 acres in federal waters. BOEM is expected to hold a competitive lease sale for a WEA offshore New Jersey later this year.

For more information, visit www.boem.gov.

Innovation funding supports company in wave energy sector

A Welsh company that specializes in capturing the potential of wave energy and reducing the current cost associated with this process has been announced as the first company to benefit from new Welsh Government innovation funding.

Wales' First Minister announced the £115 million package of support to boost innovation in Wales, leading to the creation of hundreds of new products and high quality jobs.

Marine Power Systems (LTD), based in Swansea, was formed to develop the WaveSub, a unique, patented device that captures the energy potential of ocean waves and has the potential to reduce the costs associated with this method of energy generation.

The company is one of the first to benefit from the Welsh Government funding, receiving almost £225,000 to develop the revolutionary WaveSub technology and produce a prototype that will be critical to the progress of the project.

The prototype will be tested in Milford Haven and the results will inform the development of a full-scale version of the device.

The funding announcement is made as business, entrepreneurs and investors gather in Cardiff for the free Venturefest Wales event, where a mix of speakers, workshops and panel debates will motivate delegates to share ideas, make connections and foster new business opportunities.

With support from the European Regional Development Fund (ERDF) and private sector investment, the two innovation projects—SMART Cymru and SMART Expertise—will work alongside the current SMART Innovation Programme.

Together, they form an overall package of support for Welsh businesses and academic establishments, enabling them to bid collaboratively for research and development funding and access information and advice from the Welsh Government to bring new ideas to the market.

For more information, visit www.gov.wales.

Atlantis and DP Energy join forces at FORCE



Tidal developer Atlantis and global renewables company DP Energy announced they have formed a partnership to develop a multi-turbine array at the Fundy Ocean Research Centre for Energy (FORCE) facility in Bay of Fundy in Nova Scotia, Canada. The deal will see DP Energy acquire a 50% stake in Atlantis Operations Canada Limited (AOCL).

AOCL is the leaseholder of a berth at the FORCE facility in Canada, which was awarded a 4.5-MW feed-in-tariff by the Nova Scotia Department of Energy in December 2014. The partnership will enable DP Energy to take an active role alongside Atlantis in bringing AOCL's opportunities to fruition and tapping into the huge potential of the Canadian tidal market.

Atlantis and DP Energy are now looking forward to working with FORCE, the Department of Energy in Nova Scotia, the local supply chain, business owners, the North American investment community and local stakeholders to develop the joint project.

It is anticipated that the array will include AR1500 turbines from Atlantis' turbine division. Financing and front end engineering design is expected to be completed in 2016 in anticipation of an offshore construction commencement date in 2017.

For more information, visit www.atlantisresourcesltd.com.

Sound & Sea Technology, Inc. to test Fred. Olsen Ltd. wave energy conversion device for U.S. Navy

During August and September 2015, Sound & Sea Technology, Inc. (SST) successfully managed and participated in the assembly and systems integration of the first Wave Energy Conversion (WEC) device for the Navy's Kaneohe Bay Wave Energy Test Site (WETS) in Hawaii. Since May 2015, SST has been assembling and integrating components for the Fred. Olsen Ltd. Lifesaver Energy Platform in preparation for eventual offshore deployment and testing at WETS.

The Lifesaver Energy Platform (LEP) is an advanced electro-mechanical point absorber WEC platform that uses unique point absorber hull and leading-edge power take-off (PTO) configurations. The Lifesaver Energy Platform will be tested and evaluated for approximately 6 months at WETS. The device was previously tested in waters off the United Kingdom and is one of the most advanced devices



in the industry. The Lifesaver Energy Platform is the first WEC device to be deployed at one of the new WETS deep water test berths and is the result of the Navy's interest in advancing renewable energy for Department of Defense applications.

As the prime contractor for WETS, SST has provided engineering support services to the Navy to upgrade and expand WETS since 2012. This includes technical input for operations and installation, mooring analyses and design, environmental and geotechnical site reviews, power cable testing and analysis, grid connection component design, power grid studies, preliminary and final WETS system design specifications, and execution of the WETS infrastructure installation process.

For more information, visit www.soundandsea.com.

First UK Round 3 offshore wind project begins

The Crown Estate, manager of the UK seabed, has welcomed the news that E.ON has confirmed that it will invest in and build the £1.3 billion Rampion Offshore Wind Farm, which will be situated 13 km off the Sussex coast, alongside its partner in the project, the UK Green Investment Bank plc (GIB).

The announcement means the green light has been given for full construction to begin on the 400-MW capacity, 116 turbine wind farm. When complete, the wind farm could provide enough electricity to supply the equivalent of around 300,000 homes and reduce CO₂ emissions by up to 600,000 tons a year.

The Crown Estate takes an active approach to managing the seabed to unlock value from this natural asset, including through supporting offshore wind. In addition to managing leases, it invests in activities such as technical surveys and the commissioning of reports through bringing industry together to share knowledge and best practice. This is part of our positive approach to active asset management and long-term investment.

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

DONG Energy's first offshore wind farm in Germany inaugurated

On 9 October, DONG Energy, the LEGO Group and William Demant celebrated the inauguration of the offshore wind farm Borkum Riffgrund 1, which can provide clean electricity for 320,000 households.

The joint announcement by top management from DONG Energy, market leader in planning, constructing and operating offshore wind farms, the LEGO Group (KIRKBIA/S), makers of the iconic LEGO® brick, and William Demant, specialists in personal hearing aid products, was made in the presence of His Royal Highness Prince Joachim of Denmark, who officially opened the wind farm.

Uwe Beckmeyer, Federal Ministry of Economy & Energy, State Secretary and Deputy Minister commented, "The first offshore wind farm installed by DONG Energy in Germany is a great success. Borkum Riffgrund 1 is an impressive example of just how fast offshore installations can now be installed. This translates into lower costs and is good news for consumers."

Thomas Thune Andersen, chairman of the board of directors of DONG Energy A/S welcomed the guests in Norden-Norddeich, located in the Northwest of Germany, from where the wind farm will be operated, saying, "Borkum Riffgrund 1 is our first operational project in Germany and I'm very satisfied with the fact that we can now harvest the fruits of the investment we have put into this project. I'm also very pleased with the confidence that our joint venture partners have shown us by investing in this project. Our journey in Germany is far from over. We are currently building another two offshore wind projects and have a number of other projects in our pipeline that will allow us to demonstrate the skills and competences we have gained and will allow us to continue to show the trust we have in the German offshore wind market."

With a nominal power per turbine of 4.0 MW, the 78 wind turbines will pro-



duce enough environmentally friendly electricity to supply 320,000 German households each year. The planning of the offshore wind farm Borkum Riffgrund 1 began with the final investment decision in 2011. In August 2013, the construction of the wind farm started with the installation of the offshore substation, which is the heart of the wind farm.

For more information, visit www.dongenergy.com.

Approval of India's National Offshore Wind Energy Policy

The Union Cabinet chaired by the Prime Minister Shri Narendra Modi has given its approval to the National Offshore Wind Energy Policy.

With this approval, the Ministry of New & Renewable Energy (MNRE) has been authorized as the Nodal Ministry for use of offshore areas within the Exclusive Economic Zone (EEZ) of the country and the National Institute of Wind Energy (NIWE) has been authorized as the Nodal Agency for development of offshore wind energy in the country and to carry out allocation of offshore wind energy blocks, coordination and allied functions with related ministries and agencies. The approval paves way for offshore wind energy development, including setting up of offshore wind power projects and research and development activities in waters in or adjacent to the country, up to the seaward distance of 200 nmi (EEZ of the country) from the base line.

A statement released by Government's Press Information Bureau said that preliminary assessments along the 7,600 km long Indian coastline have indicated prospects of development of offshore wind power. With the introduction of the National Offshore Wind Energy Policy, the Government is attempting to replicate the success of the onshore wind power development in the offshore wind power development. The policy will provide a level playing field to all investors/beneficiaries, domestic and international. All the processes would be carried out in a transparent manner by NIWE.

The development would help the country in moving forward towards attaining energy security and achievement of the NAPCC targets.

The scheme would be applicable throughout the country depending upon offshore wind potential availability.

For more information, visit www.pib.nic.in.



First operating wave farm built with MathWorks' Model-Based Design

MathWorks announced that Carnegie Wave Energy has used Model-Based Design to design and build the world's only operating wave farm. MATLAB and Simulink enabled Carnegie Wave Energy's engineers to develop unique technology for generating clean electric power from the ocean's waves.

As part of the Perth Wave Energy Project (PWEP), Carnegie needed to demonstrate the viability of its CETO technology, which generates power from ocean swells via submerged buoys. Engineers needed to analyze loads placed on mechanical components and to estimate energy output without building a scale model of the entire system. The team used Simulink and SimHydraulics to model the wave energy system, including hydraulic and electromechanical components, which minimized scale testing and offered critical design insights. MATLAB helped to analyze and visualize simulation and test data and also accelerated sensitivity studies.

"We can't afford the time and expense of building and analyzing multiple physical prototypes," said Jonathan Fiévez, chief technology officer at Carnegie. "Instead, we put the effort into virtual prototyping and getting the design right in Simulink. Simulation reduces risk and fosters innovation because we can use it to quickly test novel ideas."

"As companies work on technology to help generate clean energy, they need innovative ways to prove the systems they design will work—without investing resources in building out a full-scale model that may be far from final," said Graham Dudgeon, energy industry manager, MathWorks. "With Model-Based Design, companies can iterate on and test virtual prototypes to quickly arrive at the most successful mix of components and models within the design."

Simulink was used to simulate a virtual prototype of the CETO 5 technology, where pumps actuated by the motion of the 11-m diameter buoys

pressurize water to drive hydroelectric conversion devices, generating up to 240 kW of power per unit. After analyzing test result data in MATLAB to validate their models, engineers found that initial tests suggest a strong correlation between the modeled and measured results. Carnegie is currently working on CETO 6, which has a targeted power output of 1 MW per buoy and will be located offshore Garden Island, Western Australia.

To learn more about Carnegie Wave's use of MATLAB and Simulink, read the user story, "Carnegie Wave Energy Designs and Builds the World's First Operating Wave Farm," and watch this video of the CETO 5 unit.

For more information, visit www.mathworks.com.

U.S. Department of Interior to auction 344,000 acres offshore New Jersey

U.S. Secretary of the Interior Sally Jewell and Bureau of Ocean Energy Management (BOEM) director Abigail Ross Hopper announced that 343,833 acres offshore New Jersey will be offered for commercial wind energy development in a competitive lease sale on 9 November 2015.

If fully developed, the New Jersey Wind Energy Area could support at least 3,400 MW of commercial wind generation, enough to power an estimated 1.2 million homes, according to the Department of Energy's National Renewable Energy Laboratory.

"On the heels of this summer's historic 'steel-in-the-water' milestone for the nation's first commercial offshore wind farm, this announcement marks another major step in standing up a sustainable offshore wind program for Atlantic coast communities," Secretary Jewell said. "This effort took significant engagement and cooperation with New Jersey and other stakeholders to advance clean energy development and reduce potential use conflicts, which moves us closer to harnessing the enormous potential of wind energy along the Atlantic coast."

BOEM has awarded nine commercial offshore wind leases, including seven through the competitive lease sale process (two in an area offshore Rhode Island-Massachusetts, another two offshore Massachusetts, two offshore Maryland and one offshore Virginia). These lease sales have generated about \$14.5 million in winning bids for more than 700,000 acres in federal waters.

In July, Jewell and Hopper joined

Rhode Island officials to celebrate the start of construction on Deepwater Wind's \$225 million, 30-MW offshore wind project. The facility, which will provide electricity to Block Island and Rhode Island mainland consumers, required Interior Department approval because part of its submerged transmission cable crosses federal waters.

"We are pleased to see sustained commercial interest in offshore wind development," said Hopper. "We will continue to work closely with members of the New Jersey Renewable Energy Task Force to ensure that our intergovernmental partners remain informed on the next steps proposed by the winners of this auction."

To date, BOEM has determined that the following energy development companies are legally, technically and financially qualified to participate in the upcoming New Jersey lease sale:

- Convalt Energy LLC;
- GSOE I LLC;
- EDF Renewable Energy Development Inc.;
- Energy Management Inc.;
- Fishermen's Energy LLC;
- Green Sail Energy LLC;
- Iberdrola Renewables Inc.;
- New Jersey Offshore Wind LLC;
- OffshoreMW LLC;
- RES America Developments Inc.;
- Sea Breeze Energy LLC;
- U.S. Mainstream Renewable Power (Offshore) Inc.; and
- U.S. Wind Inc.

The New Jersey Wind Energy Area starts about 7 nmi. from shore. A map of the Wind Energy Area can be viewed at <http://www.boem.gov/New-Jersey/>.

Under the terms of the Final Sale Notice, was published in the Federal Register on 25 September, the New Jersey Wind Energy Area will be auctioned as two leases. Lease OCS-A 0498 (i.e., South Lease Area) consists of 160,480 acres, and Lease OCS-A 0499 (i.e., North Lease Area) consists of 183,353 acres.

Per the Final Sale Notice, BOEM will consider monetary and nonmonetary factors (i.e., whether a bidder has obtained a Power Purchase Agreement or New Jersey Offshore Renewable Energy Certificate award) in determining the winners. The notice further describes these requirements as well as other relevant sale items, such as deadlines and milestones for bidders, the area available for leasing, lease provisions and conditions, auction details, criteria for evaluating bids, award procedures and lease execution.



Vestas appointed preferred supplier for Navitus Bay project

MHI Vestas Offshore Wind has been appointed preferred supplier for the delivery of V164-8.0 MW turbines for the Navitus Bay project in the UK. As soon as the project translates into a firm and unconditional order, MHI Vestas Offshore Wind will disclose further details.

CEO Jens Tommerup said, "If the project translates into a firm and unconditional order, the 80-m blades are planned to be produced locally at our manufacturing facility on the Isle of Wight, providing jobs in the region close to the project."

The proposed Navitus Bay project is located off the Dorset and Hampshire coast and to the west of the Isle of Wight. The project could be up to 970 MW using a maximum of 121 turbines, with a mitigation option of 630 MW using a maximum of 78 turbines, subject to development consent.

Over 200 full-time jobs have already been created at MHI Vestas Offshore Wind's blade production facility on the Isle of Wight, where manufacturing of

80 m composite blades for the V164-8.0 MW—the world's most powerful offshore wind turbine—is ramping up to serial production.

For more information, visit www.mhivestasoffshore.com.

Maynooth University, Aquamarine Power collaborate on commercial wave energy technology

One of the world's leading experts on wave energy, Professor John Ringwood from the Centre for Ocean Energy Research at Maynooth University, has been awarded EU Horizon 2020 funding to collaborate with Scottish company Aquamarine Power in the development of commercial wave energy technology.

The team has been awarded €800,000 to improve the performance of Aquamarine Power's Oyster wave energy converter. Maynooth University's role in the project is to develop computer automated systems that maximize the power capture of the Oyster device. Wave energy converters should be operational for 20 years and the research will analyze the optimum shape and maintenance interventions to maximize the economic performance of the system.

With a sea area 10 times greater than its landmass, Ireland has an abundant marine renewable energy resource. A study of European wave energy has indicated that the average wave power in Europe is highest near the west of Ireland, with an average wave power of 76-kW occurring off the Irish coast. This provides a significant opportunity for wave energy to feed into Ireland's target of 40% of electricity from renewable resources by 2020.

The project, INNOWAVE, will explore ways to optimize the energy capture and economic performance of wave energy devices. Three newly recruited early-stage researchers will divide their time over the 3-year project between Maynooth's Centre for Ocean Energy Research and the Aquamarine Power premises in Edinburgh and Belfast, with site visits to the European Marine Energy Centre in Orkney, where Aquamarine Power has been testing its Oyster device for the past 4 years.

For more information, visit www.maynoothuniversity.ie.

November 2015

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Ocean News & Technology

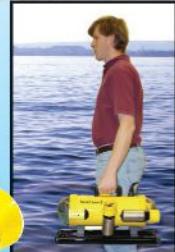
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Saab signs maritime mine countermeasures contract

Defense and security company Saab has signed a contract with BAE Systems for the design and development of the new Multi-Shot Mine Neutralization System (MuMNS).

In March this year, Thales France won the contract for the French and UK's collaborative Maritime Mine Countermeasures (MMCM) project. As part of that project, over the last 18 months, Saab has been working with BAE Systems to design a new mine disposal system.



The two companies have now signed a contract for Saab to finalize the design and development of its new MuMNS, based on a new Saab ROV, as part of the overall capability.

"This is the culmination of some great collaborative efforts between Saab and a number of other companies, including Thales and BAE Systems. It is positive that we are now part of such a challenging collaborative project that will reinforce Saab's position at the forefront of MCM system development," says Görgen Johansson, head of Saab business area Dynamics.

MuMNS will be the neutralization solution for the whole MMCM system and will operate remotely from the unmanned surface vessel (USV), another component of the overall solution. This ambitious project will deliver greater efficiency at a significantly lower risk to the operator while bringing considerable operational flexibility.

For more information, visit www.saab.com.

ASV to deliver unmanned surface vehicle systems to Anglo-French MMCM program

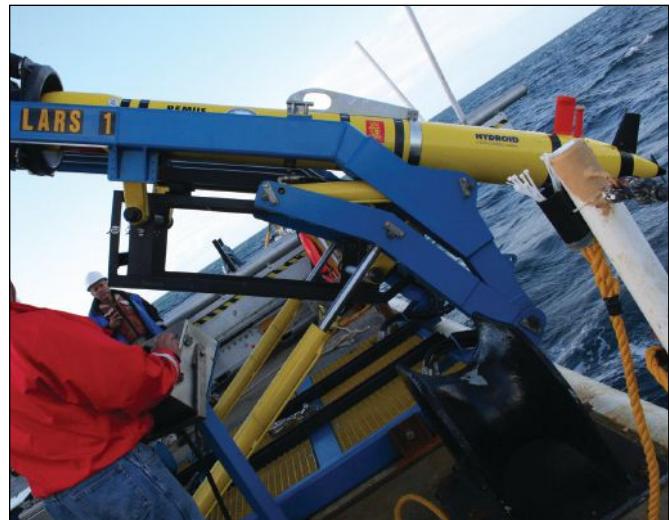
ASV has been enlisted as part of the Thales-BAE consortium to develop and deliver the first complete operational unmanned mine countermeasures system. The program seeks to offer a low risk, robust and reliable solution into the UK/French Maritime Mine Countermeasures (MMCM) requirement.

The USV capability to be provided by ASV has been proven and validated at sea through the Halcyon multi-role USV. The vehicle, which was showcased at DSEI 2013, had its full autonomy capability validated in a demonstration to the UK MOD in September 2014.

Maritime autonomy is recognized as a key area of technological development reflected by the investment being made by the UK and French MOD into the development of an MCM solution centred on autonomous and unmanned systems. This MMCM program seeks to demonstrate the maturity of the industry-provided autonomous solutions.

Broken down into various stages, the program output will be two identical systems for evaluation against several pre-defined operational scenarios. Following an initial de-risking study, detail design has now begun. This first official stage comprising a design study prior to system build is scheduled to run until the end of 2016. This will also involve working with the end user to define the requirement and place consideration on other external factors. Stages 2 and 3 will include the system manufacture and demonstrations.

ASV is a leading manufacturer of Unmanned and Autonomous Marine platforms with specialist expertise and experience in design, build, operation and maintenance. ASV provides solutions for commercial, defence and scientific applications in the UK and across the globe.

Naval Oceanography Commander talks unmanned systems strategy

Rear Adm. Tim Gallaudet, commander, Naval Meteorology and Oceanography Command, rolled out his command's unmanned systems strategy at the National Defense Industrial Association's 2015 Joint Undersea Warfare Conference.

The Naval Oceanography Unmanned Systems strategy will increase capabilities to collect environmental information for warfighting while sharing the Naval Oceanography community's two decades of experience with other unmanned systems stakeholders.

For more than 20 years, naval oceanographers, operating 100+ unmanned systems, have collected information from more than 250,000 mi of physical battlespace so that Naval and Joint commanders can make better decisions faster than the adversary.

"Our innovative use of unmanned systems plays a critical role in collecting data that directly supports anti-submarine, mine, amphibious, strike, special and expeditionary warfare," said Gallaudet. "The technology is perfectly suited for other 'dull, dirty and dangerous' missions and provides a flexible and cost-effective solution to a variety of warfighting challenges."

The goals of the strategy are to expand the Naval Oceanography's use of unmanned systems, to enable the fleet and joint forces' use of unmanned systems, and to engage unmanned systems stakeholders to accelerate development of future systems.

Specific objectives include increasing Naval Oceanography's use of unmanned systems in fleet and joint operations and exercises; using unmanned systems and integrating collected data to develop a physical battlespace awareness common operational picture; and establishing a global physical battlespace awareness maritime operations center.

The document also provides for outreach opportunities to unmanned systems developers, expanded partnerships within the science and technology and research and development communities, as well as increased coordination with unmanned systems requirement officers. These ongoing relationships will ensure that future systems will continually benefit from the community's considerable operational experience.

For more information, visit www.navy.mil.

NUSHIP Adelaide starts final sea trials

In preparation for delivery later this year, NUSHIP Adelaide started her final period of sea trials in August.

The second of the Landing Helicopter Dock (LHD) ships being built for the Royal Australian Navy (RAN) will leave the Williamstown shipyard and head up the eastern coast of NSW to the Jervis Bay area. About 200 BAE Systems employees, equipment/system subcontractors, RAN crew members and representatives from the Department of Defence Capability Acquisition and Sustainment Group will be on board to support the trials that are expected to last 10 days.

Pivotal to this period of sea trials will be testing of the ship's combat and communications systems in a range of scenarios to validate the systems' capabilities. Like her sister ship HMAS Canberra that was delivered by BAE Systems last October, HMAS Adelaide is the largest and most complex type of vessel that the RAN operates.

When she returns from sea trials, NUSHIP Adelaide will be prepared for delivery. The RAN will have the opportunity to perform various routine alongside exercises as it continues to build its capability for crewing the vessel while the ship compartments and systems are progressively handed over to the NUSHIP Adelaide crew.

The crew has already been trained for its role on the RAN's second Landing Helicopter Dock ship. All crew serving on NUSHIP Adelaide and HMAS Canberra were trained by BAE Systems at the Company's state-of-the-art training facility at Mascot, Sydney.



Director of maritime, Bill Saltzer said, "Everyone who has worked on this program should be proud of their contribution in delivering a step change in capability to the RAN. We have integrated the many systems that have brought the ships to life and which will be vital during their service to the Navy, both for defense of Australia as well as for providing humanitarian aid and dis-

aster relief. Of course as the prime contractor for the In Service Support of both LHDs, our connection with and commitment to these amazing vessels will continue long beyond the delivery of NUSHIP Adelaide."

For more information, visit www.baesystems.com.

Raytheon, U.S. Navy collaborate to optimize minehunting sonar

Raytheon Company is working closely with the Naval Undersea Warfare Center (NUWC) – Division Newport to enhance the features of the company's AN/AQS-20A minehunting sonar. Together, the team is analyzing the system's synthetic aperture sonar to fully optimize its ability to capture and process high- and low-resolution images of mine threats undersea.

Under a 'work for private party' contract funded by Raytheon, NUWC joins the ongoing initiatives of the AN/AQS-20A team that has been providing these systems to the U.S. Navy for more than 10 years. The system leverages advanced sonar technologies to support the Navy's critical minehunting missions, ensuring safe access and passage for military and civilian vessels on the world's oceans and waterways.

Enhancements provided by the synthetic aperture sonar include higher-quality imaging of objects found deep undersea to aid in the identification and classification of mines. Through a series of lab- and sea-based tests, the team will extensively evaluate and exercise the sonar's features to optimize the quality of both high- and low-resolution imaging.

Deployed from the Littoral Combat Ship (LCS) as the variable depth sonar for the AN/WLD-1 Remote Minehunting System (RMS), AN/AQS-20A is a critical element of the U.S. Navy's mine countermeasure capability, and the only minehunting sonar sensor developed, tested and certified for Remote Multi-Mission Vehicle (RMMV) deployment. It is the most advanced and capable mine warfare sensor system, uniquely providing detection and classification through the integration of multiple sensors.

The AN/AQS-20A system is towed undersea to simultaneously scan the water column for anti-shipping mines forward of, to the sides, and beneath the vehicle. Sophisticated sonar, electro-optical sensors, and high-precision location information are used to provide high-resolution images of mines and mine-like objects.

Raytheon provides both a modern



minehunting and mine neutralization capability to the U.S. Navy, which are two of the components in the mine countermeasure mission package for the Littoral Combat Ship class. Supporting mine-clearing operations in both deep-ocean and littoral waters, AN/AQS-20A minehunting sonar detects, localizes bottom, close-tethered and volume mines, and identifies bottom mines. The AN/ASQ-235 Airborne Mine Neutralization System (AMNS) re-acquires and neutralizes mines found by the AN/AQS-20A. AMNS consists of a helicopter-deployed launch and handling system equipped with four unmanned Archerfish™ neutralizer vehicles that destroy mines via remote control from the operator in the MH-60S helicopter.

For more information, visit www.raytheon.com.

Royal Navy to test weapons of tomorrow

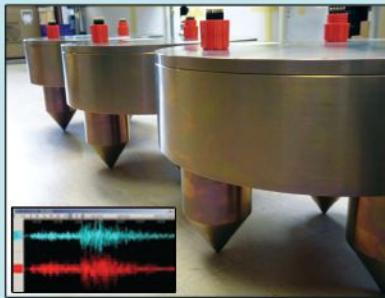
The Royal Navy plans to test energy directed weapons before the decade is out and bring space age technology to front-line operations.

The First Sea Lord Admiral Sir George Zambellas used the Defence and Security Equipment International (DSEI) exhibition to make the announcement as part of his key note speech and underlined the need for the Fleet to make use of new and novel technology in order to stay ahead of any foe.

He outlined a series of hi-tech innovations the Royal Navy is researching, testing, investing in, or already using. The Admiral told the audience at London's ExCeL center that the Navy was working with DSTL on a "directed energy weapon" with the goal of demonstrating it at sea before the end of the decade. The Navy also has exchange officers working on the U.S. Navy's railgun system—the electromagnetic cannon which can hurl shells at targets at five, and potentially, ten times the speed of sound.

For more information, visit www.royalnavy.mod.uk.

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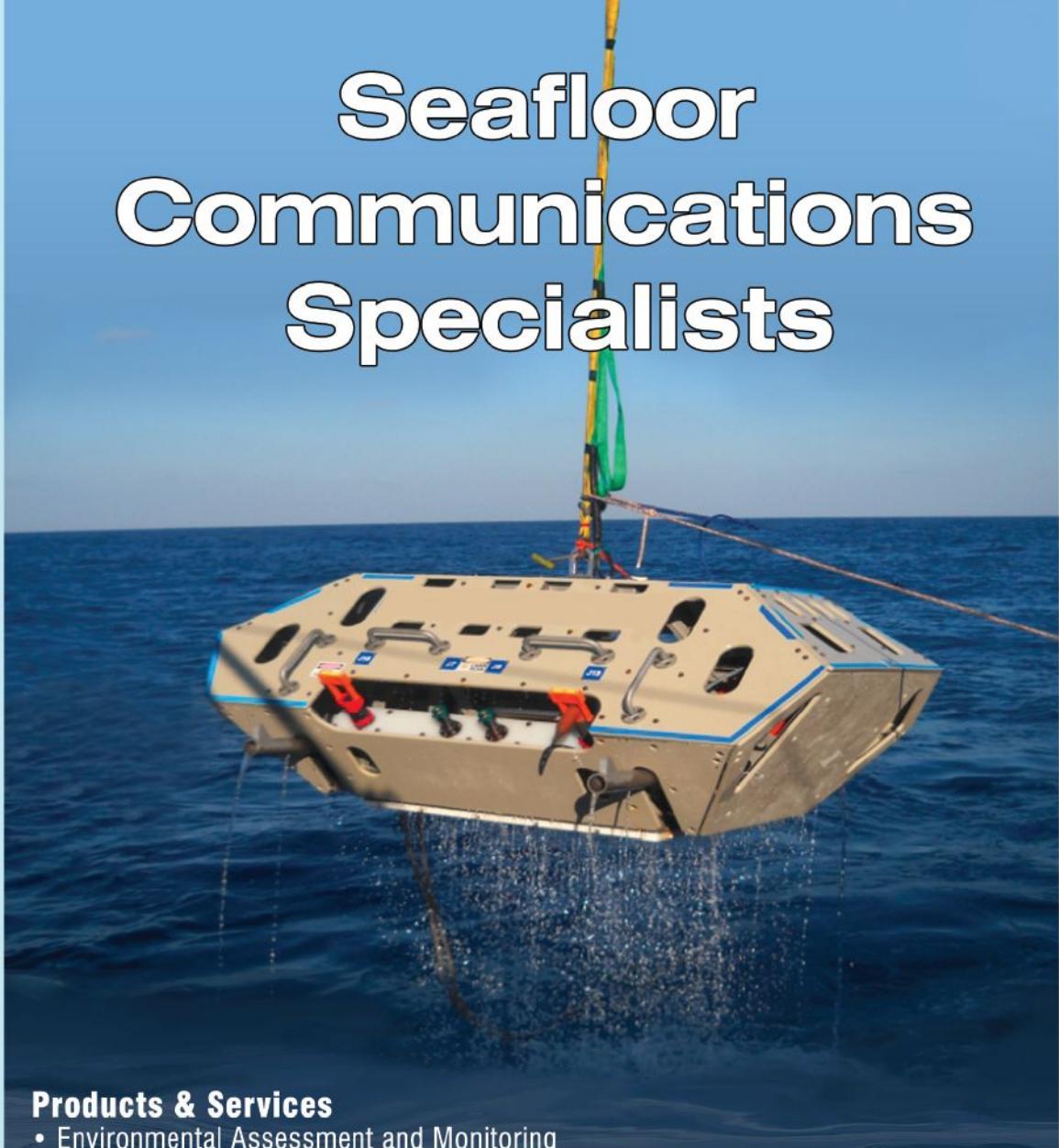
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CSnet offers end-to-end solutions providing global users a pre-engineered, expandable, portable system that can be deployed and redeployed anywhere – in water depths up to 3,000 meters. Meeting the needs for a wide range of spatial, power or bandwidth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

Offshore Communications Backbone

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



OFFSHORE INDUSTRY

U.S. and five states disclose \$20B settlement with BP over GoM oil spill

The Justice Department and five states announced a \$20 billion final settlement of environmental damage claims arising from the 2010 Deepwater Horizon oil spill in the Gulf of Mexico.

The deal, once approved by a judge, would resolve all civil claims against BP and end 5 years of legal fighting over a 134 million-gallon spill that affected 1,300 mi of shoreline. It also would bind the company to a massive cleanup project in the Gulf Coast area aimed at restoring wildlife, habitat and water quality.

"BP is receiving the punishment it deserves, while also providing critical compensation for the injuries that it caused to the environment and the economy of the Gulf region," Attorney General Loretta Lynch said at a Justice Department news conference.

The settlement, filed in federal court in New Orleans, finalizes an agreement first announced in July. The next steps were a 60-day public comment period and court approval.

Among other requirements, BP would have to pay \$5.5 billion in Clean Water Act penalties and nearly \$5 billion to five Gulf states: Alabama, Florida, Louisiana, Mississippi and Texas. The company would also be required to pay \$8.1 billion in natural resource damages, with funds going toward Gulf restoration projects such as support for coastal wetlands, fish and birds.

An additional \$600 million would cover other costs, such as reimbursement for federal and state natural resource damage assessment costs. And up to \$1 billion would go to local governments to settle claims for economic damage from the spill, which followed the April 2010 explosion on an offshore oil rig that killed 11 workers.

Offshore drilling woes to last through 2017, Moody's says

The offshore drilling industry will remain under severe distress through 2017, predicts Moody's Investors Service, explaining that most troubling for the industry is overcapacity, as the number of idle rigs climbs despite deliv-

ery deferrals and retirements and as new-build deliveries loom over the market.

"Drillers will increasingly contend with diminished backlogs, rig values, fleet sizes, and margins if oil prices do not bounce back to the \$70-80/bbl range, which we believe could support an increase in shallow-water as well as deepwater and ultra-deepwater drilling," writes Moody's in an industry report.

The firm expects crude oil prices to remain volatile and to "rise minimally" through 2017. "Even if rig demand stabilizes, persistent excess capacity will likely keep day rates low for several more years," according to the report.

Average day rates have fallen by more than 35% for new-generation floating rigs from a cyclical peak early in 2014 and by more than 25% for jack-ups. Rig utilization dropped by about 10% between mid-2014 and mid-2015. Global utilization is approaching 80% for jack-ups and floaters.

"These declines occurred even as the number of active and marketed rigs shrunk by about 5% globally," Moody's says.

Between mid-2014 and mid-2015, the number of jack-ups with contracts fell by 13%, and the number of floating units with contracts fell by 18%. Because of oversupply, day rates for floaters will fall more in this oil-price slump than they did in the 2009 downturn, when floaters were in short supply. Jack-up day rates also are expected to plunge.

Oil price decline seen as threat to about \$1.5T of new projects

About \$1.5 trillion of potential investment in new oil projects isn't viable with crude prices at \$50 a barrel, highlighting the need to reduce costs, according to consultant Wood Mackenzie Ltd.

The proposed projects, including spending on North American shale, are "now out of the money, or in starker terms, uneconomic at \$50 oil," James Webb, upstream research manager at Wood Mackenzie, said in a statement. "This spend is very much at risk."

While operators want to cut costs by 20% to 30% on new projects, supply-chain savings will only achieve cuts of 10% to 15% on average, according to Wood Mackenzie. A drop of about 50% in crude prices over the past year has forced oil companies to cut spending and defer new projects.

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World's first subsea compression system on stream at Åsgard field

The world's first subsea gas compression system is now on stream at the Statoil-operated Åsgard field in the Norwegian Sea. Aker Solutions delivered the subsea compression system for this field development.

"We're immensely proud to be part of this achievement, which is a major milestone for our industry," said Aker Solutions chief executive officer Luis Araujo. "The close collaboration we've had with Statoil and our suppliers has been essential to ensure the successful delivery of this break-through technology."

Aker Solutions in December 2010 was awarded the contract by Statoil to deliver the system, which consists of modules for two identical sets of compressors, pumps, scrubbers and coolers fitted together in an 1,800-metric



ton steel frame. These components were delivered to Statoil ready for installation on the seafloor of the Åsgard field.

Placing the compressor on the seabed near the wellheads, rather than on a platform, improves recovery rates and reduces capital and operating costs. Subsea compression also leaves a smaller environmental footprint and is safer to operate than a platform.

The Åsgard field's operator is Statoil and license partners are Petoro, Eni Norge, Total E&P Norge and ExxonMobil E&P Norway. Aker Solutions has supported Statoil on installation, testing and start-up activities. The compression system is designed for large flow rates, built to be reliable, efficient and flexible. The versatile technology is of particular value for developments in deepwater and harsh environment areas.

Aker Solutions is continuing to improve future versions, to deliver slimmer and more cost-efficient solutions.

OFFSHORE INDUSTRY HEADLINES

Research & Development • Environmental Assessment • Discovery

Steep rise in UK decommissioning appears inevitable, report suggests

Consistently lower oil prices will likely accelerate decommissioning activity on the UK continental shelf, according to analyst Douglas-Westwood.

During much of the period since 2000, UK operators were able to focus on extending the lives of their offshore facilities through improved recovery, enhanced maintenance, and, critically, successful divestment, thanks to high and rising oil prices and concerns over the long-term global oil supply.

At the same time, DW added, smaller operators managed to extract production from fields that had ceased to be profitable under original ownership, and with all indicators pointing toward continued high prices, many agreed to the transfer of decommissioning liabilities.

However, this model no longer works at \$45/bbl, particularly for buyers that cannot absorb the liabilities associated with big oil fields and deliver value to their shareholders.

International operators are coming under increasing pressure to reduce their exposure to high-cost regions and remove decommissioning liabilities from their balance sheets. This is likely to advance asset decommissioning on the UK shelf, DW claimed.

Early movers will look to avoid looming constraints in the supply chain for this growing market and take advantage of lower rig rates for P&A activity, the analyst added.

The Wood Report estimated costs of up to \$50 billion for UK shelf decommissioning, although the actual figure may be far higher. Companies offering solutions in products and services that improve safety and efficiency of these operations should thrive, as will those involved in plugging and abandonment.

Opportunities for new field developments remain in the UK North Sea, with extensive infrastructure in place to develop the most promising fields, and the best existing assets. However, the region is mature, DW stressed, and producing in the North Sea remains expensive in a world overflowing with oil.

Shell abandons Arctic quest after \$7B bid yields ‘disappointing’ results

Shell is pulling out of the Chukchi Sea, citing poor drilling results from an exploratory well, the high costs associated with the project, and the “challenging and unpredictable federal regulatory environment in offshore Alaska.” The company invested 7 years and some \$7 billion in the effort. It reportedly spent \$1.4 billion this year alone in the Arctic.

Shell’s Burger J well encountered “indications of oil and gas” but the company said they were “not sufficient to warrant further exploration”—a significant blow for the Anglo-Dutch firm that had hoped to find a multibillion barrel crude reservoir in those remote waters.

The company said in a statement that it would cease further exploration activity off the coast of Alaska “for the foreseeable future.”

“Shell continues to see important exploration potential in the basin, and the area is likely to ultimately be of strategic importance to Alaska and the U.S.,” said Marvin Odum, the Houston-based director



Polar Pioneer headed to Chukchi Sea.

of Shell Upstream Americas. “However, this is a clearly disappointing exploration outcome for this part of the basin.”

Alaska’s Congressional delegation blamed Obama Administration regulations for the sudden end of Arctic offshore drilling. Alaska Gov. Bill Walker also faulted the regulations. “This is a very tough day for Shell, a very tough day for Alaska,” he said. “We have to pick up the pieces from this and move forward.”

Shell was to take a financial charge from the decision, since the firm’s Alaska assets had a carrying value of about \$3 billion and the company had an additional \$1.1 billion already committed in existing contracts for rigs, ships and other assets.

U.S. Gulf share of global offshore rigs on the decline, says EIA

The U.S. Energy Information Administration (EIA) has released a new report that examines the decline in world share of offshore drilling rigs in the U.S. Gulf of Mexico. In its recent Today in Energy report, the EIA noted that the number of active offshore rigs has declined worldwide in response to the decline in oil prices since mid-2014. The agency noted that 304 offshore rigs were operating in August 2015, down from 377 in August 2014, a decline of nearly 20%.

The federal agency also noted that during this period, the number of active offshore rigs in the U.S. Gulf dropped

more rapidly, falling by 46%. Over the past 15 years, the U.S. Gulf’s share of active offshore rigs worldwide has declined significantly, from almost half of all active offshore rigs worldwide in 2000 to less than 20% since 2008.

The report noted that technology advancements have accelerated the development of the deepwater fields prompting the departure of rigs operating in the shallow waters of the U.S. Gulf. Natural gas prospects have also become less profitable, as the largely shale-driven increase in onshore natural gas supply contributed to decreases in U.S. natural gas prices.

The number of active offshore rigs in the U.S. Gulf declined from 122 in January 2000 to 41 in January 2010, before falling to 19 in June 2010 following the Deepwater Horizon blowout. The active offshore rig count recovered to 57 by December 2014; that number stood at 33 at the time of the EIA report.

Looking elsewhere, the report noted that from 2000 to 2006, the share of active rigs operating offshore in Asia/Pacific, the Middle East, and Latin America grew significantly. That share remained steady over the past decade. The expansion of offshore drilling in India and China largely accounted for the growth in offshore rigs in the Asia/Pacific region.

During the early 2000s, Qatar and Iran accounted for much of the growth in active offshore rigs in the Middle East, with Saudi Arabia accounting for a large portion of the regional growth since 2006.

Subsea vessel operations spend expected to rise through 2020

Global subsea vessel operations expenditure is expected to increase by 29% when compared to the preceding 5-year period, totaling \$97.7 billion from 2016 to 2020. The Douglas-Westwood report continues to point out that this recovery will come toward the end of the forecast time frame with volatile prices and newbuild programs depressing day rates in the nearer term.

North America, Africa, and Latin America are to account for 47.5% of global expenditure between 2016 and 2020, predicts Douglas-Westwood. The development of East African gas basins in the Indian Ocean will contribute to subsea vessel demand in the latter years of the forecast period.

Asia will be the single largest market with an anticipated 18.7% of expenditure over the next 5 years, largely driven by shallow-water inspection, repair and maintenance (IRM) and pipelay-related activities. Australasia has the fastest growth rate of all of the regions at a 46.8% CAGR.

Study finds huge oil, gas potential off Newfoundland and Labrador

The government of Newfoundland and Labrador, Nalcor Energy, and Beicip-Franlab have announced that the in-place oil and gas resource potential is 12 Bbbl of oil and 113 tcf of gas for the 2015 license round area offshore Newfoundland and Labrador.

"This is an momentous day for the future of Newfoundland and Labrador's oil and gas industry; we clearly know that there is more oil and gas waiting to be discovered and developed," said the Honorable Paul Davis, premier of Newfoundland and Labrador.

"Through this information, we know more about our resource potential than we ever have before. For the first time,

detailed oil and gas resource numbers will be released in advance of a license round closing, providing a fair and level playing field for the global industry prior to bidding in the license rounds."

Paul Davis

With the support of the government of Newfoundland and Labrador, since 2011 Nalcor has been the driving force behind one of the most comprehensive offshore oil and gas geo-science programs in the world. By the end of this year, more than 62,137 mi of 2D multi-client seismic data will be acquired and made available to the global oil and gas industry.

The resource assessment carried out by Beicip Franlab is based on new geo-science data covering the 11 parcels on offer in the Flemish Pass. This is the first call for bids for offshore Newfoundland and Labrador under the Scheduled Land Tenure Regime.

"Through our detailed and scientific analysis of new data for offshore Newfoundland and Labrador, the oil and gas potential of the Flemish Pass area shows that the area contains abundant oil and gas resources," said Jean Burrus, chief executive officer of Beicip-Franlab.

The area covered by the resource assessment represents about 1.6% or 9,266 sq. mi of Newfoundland and Labrador's offshore area, an area that covers more than 579,153 sq. mi. To ensure maximum value is attained for the people of the province, resource assessments will be carried out on future license round areas with the results released to the global oil and gas industry prior to the license round bid closing. To download a copy of the resource assessment, visit: www.nalcorenergy.com/exploration.

Two decades later, Troll field still pumping strong

It's been 20 years since the start of oil production from the Troll field located in the Norwegian sector of the North Sea. And the 20 year-old can look back on enormous wealth, with 1.56 Bbbl produced thus far and U.S. \$54.85 billion (NOK 460 billion) in income. But according to field operator Statoil, Troll oil is the impossible made possible.

"Only a few believed in extracting the thin oil zone at Troll, and through a burning desire to make it happen, determination and innovation, Troll oil became reality," said Øivind Dahl-Stamnes, Statoil's head of Troll production.

Determination and innovation in reservoir technology, drilling, well and seabed technology and professional and systematic operations have taken Troll Oil to where it is today: Norway's biggest oil producer the last 3 years.

"Troll oil is a story that summarizes the best (of) our operations and the opportunities on the Norwegian continental shelf," Dahl-Stamnes added.

The Troll oil and gas adventure started with the awarding of the fourth licensing round in 1979. On 17 July 1979, Borgny Dolphin started exploration drilling, and 4 months later Troll was a fact.

A thin oil-bearing layer stretches across the entire field, but is only viable in two provinces in Troll west. The oil is produced using 15 seabed frames with a total of 121 well slots linked to the floating production platforms Troll B and Troll C.

The greatest challenge when planning the field was to develop technology to extract the thin oil zones without the wells producing too much gas, according to Statoil. Technology was challenged and resolved, and in many ways Troll has been groundbreaking in drilling and well technology.

All of the production wells at Troll oil are horizontal wells. This means drilling in two stages, initially down to the reservoir which is 1,600 m below the seabed, and then up to 5,500 m horizontally into the reservoir. Most of the wells are so-called branch wells, which mean that they have two or three horizontal sections that are gathered at a crossroad in the reservoir.

To date, 200 wells have been drilled around Troll B and C, which combined have produced 1.56 Bbbl of oil. Troll oil has been Norway's largest oil producer for the past three years. Statoil and its partners still have great ambitions for production, and are stretching for the 2.1 Bbbl mark in the field's lifetime. The current recovery rate for oil is 40%, with a goal to reach 52%. So far, the Troll oil adventure has been built on investments of around U.S. \$11.92 billion (NOK 100 billion).

The oil is transported to Mongstad, from Troll B through the Troll Oil Pipeline I (completed 1995; 16" diameter, 85 km length, transport capacity 42,500 m³/day), and from Troll C through the Troll Pipeline II (completed 1999; 20" diameter, 80 km length, transport capacity 40,000 m³/day). Associated gas goes to Troll A.



The Troll complex's production A platform.

DNV GL ship classification rules, effective 1 Jan. available online

DNV GL's new ship classification rules are available online for the first time. The new rules come into force on 1 Jan., 2016. Through the process of developing the new DNV GL rules, the group said more than 7,000 pages were reviewed, both internally and externally. In all, more than 2,000 detailed comments by yards, manufacturers, owners, academics, flag states, and other maritime stakeholders were submitted. This consultation resulted

in more than 700 rule adjustments triggered by industry expertise. One of the most significant advances in the new rules is the introduction of equivalent design waves (EDW) to calculate environmental loads. DNV GL said EDW enables a more accurate representation of these loads and consequently a more precise stress description of a vessel's structure. The reworking of the rules has allowed DNV GL to incorporate and integrate more modern tools and software, making them responsive to future developments.

Nexans to supply umbilicals for West Nile Delta project

Nexans has won a contract to deliver 30 mi of static umbilicals to BP and partner DEA for the West Nile Delta Taurus Libra project offshore Egypt. The Taurus Libra development is a subsea project tied in to existing BG Group-operated Burullus facilities. The umbilicals consist of electrical and fiber-optic cables as well as hydraulic and chemical lines. They will be designed, engineered and manufactured at Nexans' specialized subsea cable and umbilical facilities in Halden and Rognan, Norway. The company will also deliver accessories for this project. Delivery is expected in May 2016. The West Nile Delta project involves the development of gas and condensate fields located within the North Alexandria and West Mediterranean deepwater concessions in the Mediterranean Sea, approximately 40 to 53 mi off the coast of Alexandria, Egypt. Discovered in 2000-2001, the Taurus Libra development is part of the first development phase of the West Nile Delta fields.

Ocean Installer to set up UFRs in Moho Nord off Congo

Norwegian subsea company Ocean Installer has secured a contract with Total E&P Congo to install umbilicals, flowlines, risers (UFR) at the Moho Nord field off the coast of the Republic of Congo. Under the contract, Ocean Installer will carry out installation and pre-commission an umbilical, multi-phase pump (MPP), flying leads, and spools in water depths of around 1,000 m. In addition to providing offshore work, the company will provide services that include project management, engineering and logistics and manage the project from

its Stavanger head office. For the offshore execution, the company plans to use the high-capacity DP3 construction support vessel Normand Vision, which will be able to meet the high-specification requirements for the project. The vessel is equipped



DP3 support vessel Normand Vision

with a 150Te vertical lay spread (VLS), a 400Te active heave compensated crane and two Oceaneering's remotely operated vehicles. Located 75 km off the coast of the Republic of Congo in water depths ranging from 450 to 1,200 m, the Moho Nord field is 53.5% held by Total E&P Congo. Other partners include Chevron (31.50%) and Société Nationale des Pétroles du Congo (15%). In June, ExxonMobil Exploration & Production Norway awarded a contract to Ocean Installer to provide subsea well tie-back, engineering, IRM, ROV and associated services at the Balder field.

Statoil contracts Wood Group for Peregrino field services

Statoil has awarded Wood Group a 4-year operations and maintenance contract covering wellhead platforms Alpha and Bravo, and the FPSO Peregrino offshore Brazil. The contract's scope includes offshore services and covers all production processes and equipment except drilling services and introduces a new operating model for the field, as for the first time the company is bundling all these services in one single contract in order to boost integration and simplify the contract management. Peregrino is 53 mi offshore Brazil in the Campos basin at about 328 ft water depth in licenses BMC-7 and BMC-47. Statoil holds 60% ownership and the operatorship of the field. Sinochem holds the remaining 40%.

New Liberty development plan off Alaska relies on old-style island concept

The new operator of a long-delayed oil prospect in federal waters of the Beaufort Sea is moving forward with a new plan modeled on old fields. Hilcorp Energy Co., the privately held Texas-based exploration and production company that acquired many of BP Plc's Alaska assets, has completed its plan to develop the offshore Liberty prospect and start producing oil from it, the Bureau of Ocean Energy Management (BOEM) aid.

The new Liberty development and production plan is deemed "submitted," according to BOEM terminology, meaning that public review and a formal environmental impact statement will begin. Liberty, estimated by BOEM to hold 150 mmbbl of recoverable oil, is about 5.5 mi offshore and about 20 mi east of Prudhoe Bay.



The prospect, which got its start in the 1980s as a Royal Dutch Shell exploration project, was pursued by BP for nearly two decades. BP last year sold a 50% share of Liberty to Hilcorp, among other Alaska assets, and last November Hilcorp became the unit's operator.

Hilcorp's development and production plan proposes constructing a gravel island to support drilling activities, following a model that BP used to develop the Northstar unit, in production since 2001, BOEM said. The Liberty island would be built in federal waters about 19 ft deep and about 5 mi off the Beaufort Sea coast, BOEM said. It would provide a work surface of about 9.3 acres, BOEM said (the Northstar island was six acres). Such gravel islands have been used elsewhere on the North Slope, at the Oooguruk and Nikaitchuk units in the Beaufort Sea.

If developed, Liberty would be the first producing oil-field unit located entirely in the federal outer continental shelf area off Alaska. However, agency action deeming the plan complete does not mean Hilcorp's development of Liberty is approved, BOEM said.

"BOEM will conduct a rigorous evaluation of this DPP, recognizing the significant environmental, social and ecological resources in the region and honoring our responsibility to protect this critical ecosystem, our Arctic communities, and the subsistence needs and cultural traditions of Alaska Natives," BOEM director Abigail Ross Hopper said in a statement. "Any activity proposed offshore Alaska is scrutinized using the highest safety, environmental protection, and emergency response standards."



*Abigail Ross
Hopper*

Hilcorp's plan to build an artificial island for Liberty echoes the first Liberty development plan submitted by BP 15 years ago. BP scrapped that plan and replaced it in 2007 with an ambitious plan to develop the offshore field from land, using new ultra-extended-reach drilling technology. The Minerals Management Service, the precursor to BOEM, approved BP's development plan in 2008. BP scrapped that development plan in 2012, after the company encountered numerous problems with the custom drilling rig.

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*The AOS Swift.*

Damen delivers first twin axe boat to Mideast for safe crew transfer

Damen Shipyards Group has delivered a Damen fast crew supplier (FCS) 2610 workboat, named AOS Swift, for the Atlantic Maritime Group. This is the first Damen twin axe vessel to be used in the Middle East for safe passenger and crew transfer as well as for the transport of industrial persons, materials and equipment to unmanned offshore platforms in the Strait of Hormuz.

Within less than 3 months, and this includes the vessel's transportation from Damen Shipyards Gorinchem, Damen customized, commissioned and delivered the stock vessel. The vessel is going to be chartered to a Norwegian oil and gas company for its platform operations Offshore Oman.

Atlantic Maritime Group FZE ordered the workboat because it is considered to be reliable in rough water conditions with a high operational speed of 25 knots maximum. Up to 35 industrial persons are transported to and from the platform daily. Although there is a helipad on the unmanned platform, it is much more efficient and less costly to do personnel transfer by sea, the company said.

The vessel was shipped from Damen Shipyards Gorinchem to Damen Shipyards Sharjah for further customization and outfitting. The 25.75-m long workboat's twin hull design features robust fendering. A gas detection has also been installed and extra air-conditioning units were needed for the Middle East climate zone.

Seadrill Ltd. cancels contract with Hyundai for West Mira construction

Seadrill Ltd. has canceled its contract with Hyundai Heavy Industries Co. Ltd. that for the construction of West Mira, a sixth-generation ultra-deepwater harsh environment semi-submersible drilling unit.

Ordered during the second quarter of 2012, Seadrill said that the contract stipulated that the unit was to be delivered by

31 December 2014. Due to the shipyard's inability to deliver the unit within the timeframe required under the contract, the company has exercised its cancellation rights, it said in its statement.

Under the contract terms, Seadrill has the ability to recoup the \$168 million in pre-delivery installments to the shipyard, plus accrued interest.

In the fourth quarter of 2012, Seadrill was awarded a 5-year contract for West Mira with Husky Oil Operations Ltd. for operations in Canada and Greenland. Due to the late delivery of the unit, the company had tentatively agreed with Husky to reduce the dayrate of West Mira drilling contract.

Seadrill stated during its second quarter 2015 earnings call that it would not take delivery of West Mira if it did not have a satisfactory contract with Husky and financing to go along with it, Evercore ISI senior managing director & partner James West said, noting that the semi-sub was priced at \$650 million.

"West Mira was ordered on May 4, 2012 for 1 October 2014 delivery, but was most recently scheduled for delivery on 24 August 2015," West continued. "The rig was in the middle of sea trials as of late August and marks the second newbuild floater canceled by an established contractor thus far."

Seadrill said it remained in discussions with Husky to find an alternative solution to meet its drilling requirements.

Keppel delivers jack-up Naga 8 to Malaysia's UMW Oil & Gas Corp.

Keppel FELS, a wholly owned subsidiary of Keppel Offshore & Marine (Keppel O&M), has delivered UMW Naga 8, a KFELS B Class jack-up rig to Malaysia's UMW Oil & Gas Corp. Berhad (UMW-OG). It was completed 32 days ahead of schedule, on budget and with a perfect safety record, the builder said.

This is the third KFELS B Class jack-up rig that Keppel FELS has delivered to UMW-OG. The first jack-up—UMW Naga 4—was delivered in February 2013 and is currently servicing the contract of Petronas Carigali in Malaysia, while the second—UMW Naga 5—was delivered in April 2014 and is currently working in Vietnam.

UMW Naga 8 is the seventh consecutive rig Keppel FELS has delivered this year within contract schedule, on time and on budget. The yard is also on track to complete 15 rigs in 2015 as contractually scheduled, making it the second highest number of deliveries in a year following its record delivery of 21 rigs in 2013.

At a delivery ceremony held at the yard recently, Chris Ong, deputy managing

*The jack-up rig UMW Naga 8.*

director of Keppel FELS, said, "The safe and early completion of a third rig for UMW-OG bears testimony to the win-win partnership between our companies."

"This design is the industry choice for robust, efficient and economical performance and it has helped our customers to secure charters even in the current low oil price environment," he added.

Keppel to deliver three ice-class vessels to Bumi Armada Offshore

Keppel Singmarine's unit Keppel Offshore & Marine (Keppel O&M) is set to deliver three ice-class vessels to Bumi Armada Offshore, a subsidiary of Malaysian offshore oilfield services company Bumi Armada Berhad. The two supply ships and one multi-purpose duty-rescue vessel were christened Bumi Uray, Bumi Pokachi and Bumi Naryan-Mar.

They have been bought to support offshore platforms at the Filanovsky oilfield located in the northern part of the Caspian Sea, off the coast of Russia and discovered and developed by Lukoil. According to Keppel, the vessels will provide services such as the delivery of cargoes, salvage, and search.

Other services include rescue work, fire-fighting operations, and towing and tanker mooring operations. The delivery is expected to further boost the company's position in the specialist market of ice-class vessels.

Keppel has built two of the supply ships at Keppel Nantong in China, and the Keppel Singmarine's yard in Singapore handled the construction of the multi-purpose vessel.

The vessels have been built to the MTD 8060-TS and MTD 8060-RV designs respectively, developed by Marine Technology Development, the ship design and development arm of Keppel O&M. Keppel Singmarine is also constructing another ice-class multi-purpose vessel of its design for Maritime Construction Services.

Topaz to acquire subsea vessels from Vard for \$115M

Dubai-based Topaz Energy and Marine is set to acquire two subsea vessels from Norway-based Vard Brattvaag for \$115 million. The new VARD 3 08 design offshore subsea construction (OSCV) vessels, specifically developed for light subsea construction with intervention duties, are scheduled for delivery from Vard Brattvaag in Norway in the third quarter of 2017 and forth quarter of 2017.

Measuring a total length of 98.1 m with a beam of 20 m, the new vessels will be capable of accommodating up to 82 persons in high standard cabins.

"We have confidence in the growth of the subsea sector and accordingly we're reinvesting in our subsea-capable fleet with these innovative and fit-for-purpose vessels," Topaz Energy and Marine CEO René Kofod-Olsen said.

With a 120 ton active heave compensated offshore crane, the DP2 class vessels will be prepared for two remote operated vehicles, which are deployed through launch and recovery systems in the ship's side. The vessels would be built by Vard according to the special purpose ship regulations with diesel electric engines.

SHI launches semi for Inpex's \$34B Ichthys project

Shipbuilder Samsung Heavy Industries (SHI) has launched the semi-submersible that will serve as the central processing facility (CPF) for Inpex's \$34 billion Ichthys LNG project off Western Australia. It was launched from SHI's shipyard in Geoje, South Korea.

The CPF was berthed quayside at the shipyard where work is continuing to lift and install the living quarters and integrate and commission all equipment in preparation for the CPF's sail away. The project began construction of the CPF in January 2013.

Upon completion, the CPF is expected to be towed 5,600 km to the Ichthys field in the Browse Basin and will be permanently moored there for the project.

Japanese company Inpex, which leads the project, has a 62.245% participating interest in it. Other partners in the project include Total (30%), CPC (2.625%), Tokyo Gas (1.575%), Osaka Gas (1.2%), Kansai Electric (1.2%), Chubu Electric Power (0.735%) and Toho Gas (0.42%). The large-scale LNG project is expected to be operational over a period of 40 years. The final investment decision for the project was reached in 2012, with first production set for 2016 and is expected to produce 8.4 million tons of LNG and 1.6 million tons of LPG a year.


The CPF will be towed 5,600 km to the Ichthys field in the Browse Basin.

Ithaca Energy Inc. said the partners in the Greater Stella Area development in the UK central North Sea have entered into an agreement with Petrofac. This is designed to incentivize timely delivery of the refurbished semi-submersible platform FPF-1, which according to Ithaca is on track from the Remontowa shipyard in Poland by end-March.

Ithaca revises terms for North Sea Stella floater delivery

Petrofac will continue to incur all costs for the modifications above the contract cost cap. Ithaca will pay Petrofac \$13.7 million in respect of final payment on variations to the contract, although payment will be deferred until 3.5 years from first production from the Stella field.

Depending on the timing of the platform leaving the yard,



The P-MAX vessel Stena Paris.

Concordia renews contract for P-MAX vessels

Concordia Maritime has renewed a contract with an international oil and gas company for 12 months for two vessels. The contract also includes an additional vessel for 6 months.

The renewed contract relates to three P-MAX vessels: Stena Paris, Stena Provence and Stena Polaris.

"It's obviously very positive to achieve the renewed confidence of this customer, which has specific transport requirements that suits the high cargo capacity of our P-MAX vessels, which results in a lower actual cost per unit. The contract is fully in line with our efforts to steer employment towards niche trades that can optimally utilize the P-MAX vessel's unique characteristics," said Kim Ullman, chief executive officer of Concordia Maritime.

Petrofac will receive a further payment of up to \$34 million (also deferred for the same period). Commissioning operations have started on the platform, including electrical loop checking on the process control and safety systems and equipment pack- age interface testing.

ABS grants approval in principle for MES FPSO design

ABS said it granted Mitsui Engineering & Shipbuilding Co. Ltd. (MES) approval in principle (AIP) for a floating production, storage and offloading (FPSO) vessel design and an innovative construction concept.

This work is the result of an ABS-MES joint development project that began in March. The "noah-flex modular design" for the FPSO and the flexible construction procedure "noah-flex modular construction" were granted AIP on September 15.

The noah-flex modular construction processes consists of multiple steps that take place in parallel to shorten the construction time efficiently, with keel laying marking the commencement of construction.

The first step of the project is FPSO design and hull construction, including propulsion and relevant machinery equipment-systems, which could be carried out by MES in Japan while construction of the oil storage component takes place at another yard, possibly outside Japan.

Following this process, the topside facilities will be subsequently simultaneously fabricated in a different or the same shipyard and installed on the elongated hull, after which the completed FPSO will move to the specified operation site for hookup and commissioning. The FPSO design will be reviewed for compliance with the ABS rules and applicable regulations.



VNG well proves more oil in Pil area offshore Norway

The semi-submersible Transocean Arctic has discovered oil while drilling two wells on the VNG Norge-operated Boomerang prospect in the Norwegian Sea.

According to partner Faroe Petroleum, main bore 6406/12-45 was drilled in the southwest segment of the Upper Bookmerang prospect, 1 mi southeast of last year's Pil oilfield discovery. It encountered an 85-ft gross Upper Jurassic intra-Spekk/Rogn sandstone with good reservoir properties and moveable oil, thought to be in the range 13 to 31 mmbc.

Analysis confirmed hydrocarbons above the Pil oil-water contact in Melke-age sandstone, and the well also encountered

the main Pil reservoir sandstone within the water leg, as planned, providing important appraisal information for the Pil development. A subsequent side-track, 6406/12-4A, was drilled into Boomerang's southern segment, intersecting poor-quality Jurassic sandstone reservoir, but with no evidence of moveable hydrocarbons. Both wells were on the Halten Terrace, 20.5 mi southwest of the Njord field.

After completing P&A operations, Transocean Arctic will transfer 3.7 mi to the northeast to drill the Blink (6406/12-5S) exploratory well, target Upper Jurassic reservoirs thought to be analogous to Pil and the nearby Bue and Draugen fields.

Maersk says oil confirmed in Jude offshore Denmark

Maersk Oil has encountered oil with its appraisal well Jude-1 (5504/7-18) in license 8/06 in the southwestern Danish North Sea, according to the Danish Energy Agency. The jack-up Noble Sam Turner drilled Jude-1 as a vertical data acquisition well in 144 ft of water with three stratigraphic targets: lower Cretaceous chalk, upper Jurassic Farsund shale, and potential sandstones within the underlying Farsund formation.

The well confirmed oil in the lower Cretaceous Tuxen formation of the Bo South deposit, as proven by earlier wells in the area. It was terminated in upper Jurassic clay stone at a depth of 11,443 ft below mean sea level. However, the well did not encounter the prognosed sandstones in the underlying part of the Farsund formation. The well was being plugged and abandoned, and the rig was due to transfer to the Maersk-operated Tyra South East field for development drilling.

Shell Olie og Gasudvinding Danmark B.V. Holland Dansk Filial, A.P. Møller - Maersk A/S, Nordsøfonden, and Chevron Denmark, Filial af Chevron Denmark Inc., USA participated in the well.

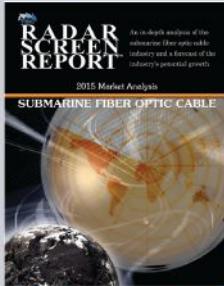
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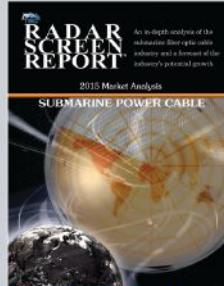
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Companies discuss production boosting measures offshore Iran

Iranian Offshore Oil Co. (IOOC) is in talks with companies from France, Italy, Norway, and Ukraine on increasing output from oil fields in the Persian Gulf, according to news service Shana.

"A Norwegian-Austrian group has finalized the master development plan for (the) Esfandyar oil field and is ready to start work based on Iran's new oil contract models," said IOOC managing director Saeid Hafezi.

IOOC is also working with a Ukrainian company on ways to boost output from the Dorud oil field using acid liquids, he added. The company is looking to increase production from Iranian offshore fields by 800,000 bbl per day over the next 5 years.

In addition, Iran is in talks with Oman to jointly develop the Hengam field in overlapping waters and with the UAE to further develop the Salman gas field.

ExxonMobil starts oil production at Erha North Phase 2 project

ExxonMobil Corp.'s subsidiary, Esso Exploration and Production Nigeria Limited, started oil production ahead of schedule at the Erha North Phase 2 project, offshore Nigeria.

The Erha North Phase 2 project is a deepwater subsea development located 60 mi offshore Nigeria in 3,300 ft of water and 4 mi north of the Erha field, which has been producing since 2006. The Erha North Phase 2 project includes seven wells from three drill centers tied back to the existing Erha North FPSO, reducing additional infrastructure requirements.

The project is estimated to develop an additional 165 mmbbl from the currently producing Erha North field. Peak production from the expansion is currently estimated at 65,000 bbl per day and will increase total Erha North field production to approximately 90,000 bbl per day.

Operator Esso Exploration and Production Nigeria Ltd. holds a 56.25% interest in Erha North Phase 2, while Shell Nigeria Exploration and Production Co. holds the remaining 43.75% share.

VAALCO produces first offshore oil from Gabon's Dentale formation

VAALCO Energy has delivered first oil from the North Tchibala field offshore Gabon. The North Tchibala 1-H well came online at just over 3,000 bbl per day. It was drilled to 11,160 ft MD, targeting the previously undeveloped Dentale reservoir. Although the Dentale formation is productive in fields onshore Gabon, the well represents the first Dentale production from that horizon off-

shore Gabon, VAALCO said. The well started initially by means of an electrical submersible pump, but was subsequently allowed to produce naturally. It is not producing formation water or hydrogen sulfide, and has a strong flowing tubing pressure of over 1,000 psi. VAALCO plans to continue production without artificial lift while monitoring surface and downhole pressures. This was the second well drilled and placed on production at the company's new Southeast Etame/North Tchibala platform.

Petrobras proves more oil in presalt Carcará structure offshore Brazil

Petrobras' third well in the presalt Santos basin Carcará area (block BM-S-8) offshore Brazil confirmed the presence of light oil, the company said, adding that the Carcará Northwest well was drilled 3.4 mi northwest of the original discovery (4-SPS-86B) in 6,640 ft of water, around 140 mi off São Paulo state. It encountered good-quality carbonate reservoirs just below the salt layer at a depth of 19,258 ft.

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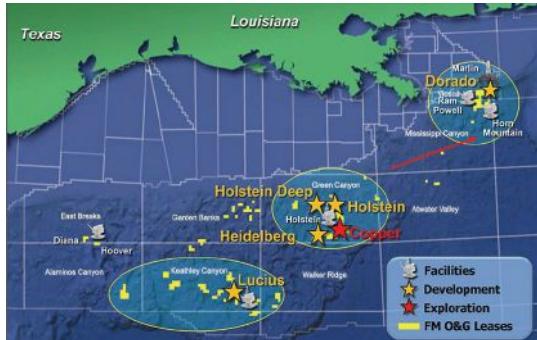
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Ocean News & Technology



The Horn Mountain Deep prospect is situated in the upper right of the map.

Freeport-McMoRan strikes oil at deepwater Gulf of Mexico prospect

Freeport-McMoRan said it made an oil discovery at its Horn Mountain Deep prospect in the deepwater U.S. Gulf of Mexico. Initial production from the well, which will be tied back to existing facilities, is expected some time in the first half of 2017. This well, combined with two follow on development wells at Horn Mountain Deep, could produce a total of 30,000 boe per day.

The Horn Mountain Deep well was drilled to a total depth of about 16,925 ft.

The company said that logging while drilling logs indicated that the well encountered a total of roughly 142 net ft of Middle Miocene oil pay with excellent reservoir characteristics. In addition, these results indicate the presence of sand sections deeper than known pay sections in the field, the company said. The 100%-owned Horn Mountain production facilities in the company's Mississippi Canyon area are capable of processing 75,000 bbl of oil per day.

"The positive results at Horn Mountain Deep and our geophysical data support the existence of prolific Middle Miocene reservoir potential for several additional opportunities in the area, including the 100%-owned Sugar, Rose, Fiesta, Platinum and Peach prospects," Freeport-McMoRan said in a statement. The company owns rights to over 55,000 acres associated with these prospects.

Since commencing development activities in 2014 at its three production platforms, the company has drilled 12 wells, all with positive results. Three of these wells have been brought on production, and Freeport-McMoRan said it plans to complete and place the remaining additional wells on production in late 2015, 2016 and 2017.

U.S. investors among successful bidders at Mexican lease sale

Houston-based investors were among successful bidders in late September when Mexico auctioned three offshore leases as part of its historic move to open up its long-nationalized oil industry. Mexico offered five blocks in the Bay of Campeche, and sold three.

Buyers were Italian oil company Eni, a consortium including an international arm of BP Plc and another partnership including Houston-based Fieldwood Energy. The blocks contain shallow-water fields with confirmed oil and gas deposits in the southern Gulf of Mexico.

The sale was the second in a series of tenders intended to revitalize the country's flagging energy sector by luring private investment. The first auction, in July, floundered as the Mexican government's strict bidding terms combined with low oil prices to scare off potential bidders. The first Mexican auction awarded only two of 14 blocks and was widely considered a failure. The second auction was designed with more favorable terms.

Mexico's regulators said they expected the three fields to begin production in late 2018 and to reach combined peak production of 90,000 bbl per day.

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Ireland's 2015 Atlantic Margin Licensing Round sets record

Ireland's 2015 Atlantic Margin Licensing Round drew a record 43 applications. Minister of State for Natural Resources, Joe McHugh, said the response was the largest for any of the country's offshore licensing rounds to date, with applicants ranging from small companies to majors.

"The response is a further positive signal of the building momentum in oil and gas exploration offshore Ireland," he said. All the country's main Atlantic basins—Porcupine, Goban Spur, Slyne, Erris, Donegal, and Rockall—were included.

The government planned to issue awards over the next few months. Recipients will be offered a 2-year licensing option, to be granted under the Petroleum and Other Minerals Development Act, 1960.

The main purpose of the licensing option is to define exploration potential and actively promote the acreage, but the terms do not include exploration drilling.

Holders wishing to progress to exploration license can apply for a 15-year frontier exploration license with a first phase of 3 years and three subsequent phases of 4 years each.

Europa Oil & Gas, which applied for multiple blocks in this year's round, plans to assume a 100% interest in and operatorship of licences FEL 2/13 and FEL 3/13 in the Porcupine basin.

This follows Kosmos Energy Ireland's decision to exercise its option to withdraw from joint operating agreements for both licenses, which Europa believes could hold prospective resources of 1.7 Bboe. The company said it is confident of attracting interest from other parties, based on the level of interest in the licensing round.

Work to date includes a 990-sq. mi 3D seismic survey in 2013 and delivery of a processed dataset and prospect inventory in 2014.

BOEM outlines next two U.S. Gulf of Mexico oil and gas lease areas

The U.S. Bureau of Ocean Energy Management (BOEM) will offer 40 million acres offshore Louisiana, Mississippi, and Alabama for oil and gas exploration and development in sales that will include all available unleased areas in the Central and Eastern Gulf of Mexico Planning Areas.

Proposed Gulf of Mexico Central Planning Area Lease Sale 241 and Eastern Planning Area Lease Sale 226, scheduled to take place in New Orleans in March of 2016, will be the ninth and tenth offshore sales under the

Administration's Outer Continental Shelf Oil and Gas Leasing Program for 2012–2017 (Five-Year Program).

Proposed CPA Sale 241 will include approximately 7,919 blocks, covering 42.1 million acres, located from 3 to 230 nmi offshore, in water depths ranging from 9 to more than 11,000 ft (3 to 3,400 m).

Proposed EPA Sale 226 will offer approximately 175 blocks, covering 595,475 acres. The blocks are at least 125

statute mi offshore in water depths ranging from 2,657 ft to 10,213 ft (810 to 3,113 m). The area is bordered by the Central Planning Area boundary on the west and the Military Mission Line (86° 41'W) on the east. It is south of eastern Alabama and western Florida; the nearest point of land is 125 mi northwest in Louisiana. In addition, BOEM has published the Final Supplemental Environmental Impact Statement (SEIS) prepared for these sales.

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Final contract inked for Johan Sverdrup jacket

Kvaerner has signed the final contract for delivery of the drilling platform jacket to the Johan Sverdrup field. This is number 45 in a series of steel substructures from Kvaerner in the past 45 years. In June 2014 Kvaerner entered into a frame agreement for delivery of steel jacket substructures for future Statoil projects. At the same time, letters of intent were signed for the steel jackets for the Johan Sverdrup riser platform and drilling platform.

With the two contracts for delivery of steel jackets to Johan Sverdrup in order backlog, Kvaerner Verdal has a solid and predictable foundation as basis for continuous improvement and long-term planning in connection with further development of Kvaerner in Verdal, said Jan Arve Haugan, Kvaerner's president and chief executive officer.

The drilling platform jacket is scheduled to be delivered in the spring of 2018. The engineering has now started at Kvaerner's offices in Oslo. Kvaerner Verdal is the contract party, and the project management will be based at the company's specialized jacket facility in Verdal in Mid-Norway, where fabrication will be executed. Prefabrication will start in the summer of 2016, and assembly will take place from the spring of 2017, the company said.

At peak manning, around 250 Kvaerner employees will be working on the drilling platform jacket. Together with the delivery of the riser platform jacket, this will engage around 500 Kvaerner employees when the two projects are at their most hectic. Additionally, it is expected that as spin-off effects of the two deliveries work will be created for another 1,500 persons in Kvaerner's sub-suppliers and from regional service providers in private and public sector.



Statoil's Johan Sverdrup platform.

NNPC secures \$1.2B package for 36 oil wells in Nigeria

The Nigerian National Petroleum (NNPC) has secured a \$1.2 billion multi-year drilling financing package for 36 offshore-onshore oil wells from a consortium of Nigerian and international lenders.

The package received under the NNPC-Chevron Nigeria joint venture is an integral part of the accelerated upstream financing program initiated by the company.

According to NNPC, the program is aimed at addressing the persistent challenges experienced by the federal government in providing its counterpart funding of joint venture upstream activities. In two stages, the latest package will be channeled into the development of 23 onshore and 13 offshore wells on OML 49, 90 and 95 during 2015-18.

Consisting of 19 wells, stage one is expected to deliver 21,000 bbl of crude oil and condensate per day alongside 120,000 mmscf of gas per day over 2015 and 2016.

Expected to yield 20,000 bbl of crude oil and condensate per day, stage two comprises 17 wells and will also yield alongside gas production of 7 mmscf per day, between 2016 and 2018. Project Cheetah would be operated on a 60-40 basis.

Hess orders tubulars, line pipe for Stampede project

Hess Corp. has ordered 14,000 tons of tubular goods and line pipe from Vallourec for use on the Stampede project in the Gulf of Mexico. The contract calls for Vallourec to supply more than 5,000 tons of oil country tubular goods including high-performance premium grades and 9,000 tons of seamless steel line pipe for flow lines and steel catenary risers.

Vallourec said that most of the pipes will be threaded at VAM USA with more than 12,000 connections. Stampede is a deepwater U.S. Gulf project and the pipe is destined for installation in 3,500 ft water depth. The project is 115 mi south of Fourchon, Louisiana.

Ocean Installer to install subsea structures at Moho Nord

Total has contracted Ocean Installer for deepwater installations at the Moho Nord field 46.6 mi offshore Republic of Congo. This is the contractor's first major job off West Africa following its creation of an Africa, Mediterranean and Middle East regional office late last year.

It will install and pre-commission an umbilical, a multi-phase pump, flying leads and spools in water depths of around 3,281 ft. The scope includes project management, engineering, and logistics. All work will be managed from the head office in Stavanger, with the DP-3 construction support vessel Normand Vision handling offshore installations.

The vessel's features include a 165-ton vertical lay spread, a 441-ton heave-compensated crane, and two work-class ROVs supplied by Oceaneering.

VBMS joint venture installs Wintershall control umbilical

VBMS, a joint venture between VolkerWessels and Boskalis, has completed the offshore installation of an 11.5-mi control umbilical for Wintershall Noordzee BV. The umbilical connects platform RAVN to A6A, located in the Danish and German sectors of the North Sea.

VBMS equipped the SURF-installation vessel Ndurance with the in-house developed Trenchformer burial system in order to perform the full installation, which included direct pull-ins and the simultaneous laying and burial of the umbilical.

ALE connects Shell's Malikai TLP modules for transport

ALE has jacked-up and skidded the topsides for Shell's new Malikai tension leg platform, due to be installed 62 mi offshore Sabah. The contractor performed the work on behalf of the Technip-Malaysia Marine and Heavy Engineering joint venture at the latter's West yard in Johor Darul Takzim, Malaysia.

ALE's scope comprised weighing and transporting four unit hull blocks, living quarters and mega beams for the lifting program; weighing of the topsides and subsequent skidding and jacking up; and finally skidding at height of the topsides over the hull and mating of the two structures.

In April ALE began setting up equipment for the lift campaign including its computer-controlled skidding system, ALE mast system, Mega Jack system, weighing cells, and strand jacks.

The 13,800-ton topsides was skidded 279 ft onto the Mega Jack system, which jacked the topsides up to a height of 131 ft—claimed to be the highest ever jack-up operation on this scale. ALE then skidded the topsides 295 ft at elevation until it was above the hull, followed by mating.



The topsides have been mated with the hull of the Malikai tension leg platform.

Emas completes Noble-operated subsea tieback projects in GoM

Ezra subsidiary Emas AMC has completed the first two of three subsea tieback projects operated by Noble Energy in the U.S. Gulf of Mexico. Emas has performed services that include project management, fabrication and installation of 8-in steel catenary risers. In addition, it has provided 40 mi of 8-in and 12-in pipe-in-pipe for the Big Bend and Dantzler field development projects in water depths of 7,000 ft. The project also included the design, fabrication and installation of eight 100 ton subsea structures.

Emas carried out project management activities at its Houston, Texas office, while the pipeline production and structures were fabricated at the EMAS Marine Base (EMB) in Ingleside. For the Big Bend and Dantzler projects, Lewek Constellation has conducted more than 30 heavy-lifts of between 900 tons and 2,200 tons, transferring rigid pipe reels since May.

"Our game-changing vessel used in combination with our unique transportable reel delivery system will offer clients more efficient pipe-lay options in ultra-deepwater when compared to more traditional methods," said Lionel Lee, Ezra Group CEO and managing director.

Catcher development gets high pressure drill riser from Claxton

Claxton, an Acteon company, has installed a fully forged high-pressure drilling riser system as part of a contract for the Catcher area field development in the central North Sea. Each joint was forged from a single billet of material with no joining welds, said Claxton.

Claxton's scope of work includes the subsea connector to latch the riser with the subsea wellhead, riser tensioning interface from the riser to the rig's tension system, all riser handling tools and a suite of custom-designed bolt tensioners to facilitate flange make-up.

Acteon sister company, 2H Offshore, provided the riser analysis for the Catcher development.

Claxton secured the contract last year and began mobilization this past July. The contract is for 3.5 years, with a possible extension. The system was installed for Premier Oil's Catcher area field development, which includes the development of the Catcher, Varadero, and Burgman fields.



Drilling riser for the Catcher field in the North Sea (Photo courtesy Claxton).

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Global Gravity takes lifting standards to new heights

An innovative tubular handling frame developed by Danish company Global Gravity to transport, lift and store drill pipes, casing and tubulars more efficiently, cost-effectively and safely than conventional wire bundling is proving to be so successful with the oil and gas industry that the company is now considering opening a facility in Aberdeen to help meet demand.

TubeLock, the company's patented New Generation Tubular Handling System has successfully completed its 3-year operational debut in the North Sea, with operators verifying its track record for improving safety through reduced injury, achieving cost savings and improving drilling operations.

The Esbjerg-based company, which specializes in supplying transport frames to the industry, showcased TubeLock at Offshore Europe in September as it looks to its future development.

"We are very pleased with the success of TubeLock and welcome the ratification which we've had from operators and contractors since it went into operation," said Kim Christensen, Global Gravity's sales and marketing director. "One of the world's biggest operators said that they wished this system had been in existence years ago."



A Global Gravity photo.

Christensen added: "Setting up a facility in Aberdeen is now the logical next step for us to ensure that we can respond to the requirements of the industry operating in the UKCS. While this is currently in the very early stages, we anticipate that establishing a base here could generate up to a dozen on and offshore jobs within the first couple of years of operation."

Developed specifically for the oilfield casing and tubular goods (OCTG) sector of the industry, TubeLock encases batches of tubulars in a fixed frame. Once they are securely locked in place, "packs" of tubulars are transported from source to the quayside where they can be safely and efficiently lifted for onward transportation to offshore installations where they are offloaded, stacked and stored.

"Improving the working conditions for the on and offshore workforce is a priority and our goal is to achieve zero accidents," said Christensen. "In response to the current economic operating conditions, we are also committed to helping the industry achieve cost reductions on handling which leads to increased efficiency on installations. To achieve optimum results we supervise on and offshore packing to ensure the drilling crew has optimal working conditions and to provide enhanced safety conditions."

Trelleborg tackles high temps with new flowline insulation covers

Trelleborg's offshore operation has engineered a new insulation cover that not only withstands extremely cold temperatures at subsea depths but also, with the combination of a silicone liner, the extreme temperatures of hot hydrocarbons. The insulation cover achieves the highest temperatures yet accomplished and in addition, is significantly lighter than steel covers; not molded directly to the pipe, the cover gives easy access to critical parts of the flow stream.



Ben Wait, customer group manager for Trelleborg's offshore operation, said: "The new insulation covers are made from a combination of our trusted insulation systems including silicone Vikotherm™ S1 and polyurethane Vikotherm™ P7. They utilize the properties of cast systems which are poured in a liquid form and solidify to create the finished 'jacket,' unique to the application."

He added: "We've taken our proven knowledge in designing bespoke insulation systems and combined a silicone inner layer to withstand the high temperatures of hot hydrocarbons. The polyurethane outer layer is lighter in weight than traditional steel, to produce the ideal solution."

As the polyurethane and silicone used in the insulation cover has previously been qualified, time to market was significantly reduced, meaning that it was quickly ready for use by our customers.

"This new solution provides piece of mind for operators, especially those who have previously experienced the success of our silicone and polyurethane materials," Wait said. "Our latest technological advancements allow us to cater to the increasing demands of the industry, and enable the systems to operate at even increasing water depths and operating temperatures."

ITF, Clearview form JIP to improve downhole camera functions

The Industry Technology Facilitator (ITF) has started a joint industry project with Clearview Well Services to develop a new drillstring camera. Clearview will build a prototype for a live test of its multi-function camera that will do jet blasting during visual inspections, said ITF. The CDFC can be deployed by helicopter to carry out the operations in one trip of the drillstring. The camera and functions are operated via fiber optics from the surface, said Clearview Well Services.

"Currently during inspections, existing drillstring-mounted cameras flush the area with clean fluid, but carry out a separate time-consuming operation if the area requires cleaning," said Dale Parker, inventor and director of Clearview.

"Our system includes a flushing function and also a high-pressure jet cleaning action for the internals of the blow out preventer, wellhead, tree, hydraulic couplings and riser surfaces," he added. "It will then repeat the flushing, so that in one operation the area can be viewed, cleaned, and checked. It means that operators don't have to carry out the work 'blind' or in two additional trips."

INDUSTRY DEALS

Energy Transfer to buy Williams in second biggest deal this year

The Williams Cos. said it will accept an offer from rival Energy Transfer, ending months of negotiation with a deal worth \$32.9 billion. The purchase is the second-largest energy deal announced this year, behind only Royal Dutch Shell's \$70 billion acquisition of natural gas producer BG Group in April, and it's the largest combination announced since oil prices slid from near \$60 per barrel highs earlier this year. Including debt and other fees, Williams' final price tag will climb to \$37.7 billion.

The new company will be the third largest energy business in North America and the fifth largest globally, according to the announcement. Both Energy Transfer and Williams own expansive natural gas and liquids infrastructure across the United States. Dallas' Energy Transfer operates on a larger scale, with about 71,000 mi of pipelines connecting wells and processing centers throughout Texas, the Gulf Coast and the Midwest.

Williams operates about 33,000 mi of pipelines and has a strong presence in the Northeast that has made the company an attractive target for competitors looking to access that market.

Energy Transfer kicked off negotiations in May when it made a private, all-stock offer valued at about \$48 billion to Williams' board. Energy Transfer offered about \$64 in its own equity for each Williams share at the time, at the time a 32% premium. Williams publicly rebuked that bid in June, saying the offer undervalued its company. However, the Williams board didn't close the door to a deal completely and invited further bidding when it hired investment bankers to determine the best path forward.

Sparrows Group secures 5-year deal with ADMA-OPCO in Mideast

Sparrows Group has won a 5-year deal with Abu Dhabi Marine Operating Co. (ADMA-OPCO) in the Middle East. The successful retender through the company's local partner, Abu Dhabi Oilfield Services, will see Sparrows Group providing the operations and maintenance support to all cranes and lifting equipment aboard offshore platforms and the Al Hyleh Barge in the UAE and Zirku Islands.

The agreement which covers ADMA-OPCO's offshore installations—the Umm Shaif Super Complex, Zakum West Super Complex and the Zakum Central Super Complex—is initially a 3-year contract with the option for two 1-year extensions.

"We have established a strong and successful relationship with ADMA-OPCO since we began working together approximately 16 years ago," said Stewart Mitchell, Sparrows Group chief executive officer. "The work we have been contracted to do involves providing the total integrated management of cranes and other lifting equipment which optimizes the performance and reliability of all safety critical lifting operations."



Sparrows Group will provide operations and maintenance support for cranes and lifting equipment to ADMA-OPCO.

As well as providing offshore personnel who are supported by our onshore staff in Abu Dhabi and worldwide, he said, the company will be supplying preventative maintenance, repair and refurbishment, spare parts, and comprehensive technical support.

"We have placed an emphasis on growing our presence in the Middle East and an important part of this involves building upon our existing contracts," Mitchell noted.

Schlumberger not to extend deadline to acquire stake in Eurasia Drilling

Schlumberger said it would not extend its pending \$1.7 billion bid to acquire a stake in Russian firm Eurasia Drilling Co. after months of delays and uncertainty. According to Schlumberger, the extension was set to expire at the end of September. The company said it would instead focus on other mergers and acquisitions opportunities.

Signed by the companies in January, the agreement extends the long-term relationship enjoyed by the parties within the strategic alliance that originally established in 2011. However, Russia had not yet given approval for the bid and there is uncertainty over whether it will.

Schlumberger wanted a minority equity ownership interest of 45.65% in Eurasia Drilling through one or more subsidiaries in exchange for consideration of \$22 per share.

In April, Eurasia Drilling agreed to extend a deadline on a proposed deal to

sell a stake to Schlumberger from 30 April to 31 May.

Pemex and GE sign MoU on technical, financial cooperation

GE and Mexico state-owned Pemex have signed a memorandum of understanding (MoU) to cooperate on technological and financial solutions for a range of oil and gas development activities.

GE and Pemex have cooperated on a number of fronts over the past few years, including agreements on wellhead development and equipment, and a general collaboration agreement between GE, Pemex, and the Mexican Institute of Petroleum signed in April 2014.

As part of the ongoing reform in the Mexican oil and gas market, Pemex has redesigned its business strategy with the purpose of finding partners that would strengthen its operational capabilities, share the risk of execution, and generate new businesses.

The MoU sets forth the framework for GE and Pemex to work together on technological and financial solutions for gas compression, power generation and hydrocarbons production, onshore and offshore, including subsea and downstream. Both companies also agreed to share best practices on training and human resources.

Halliburton, BH to divest additional businesses to secure merger okay

Halliburton Co. and Baker Hughes Inc. said they intend to divest additional business lines to secure approval for completion of the acquisition.

The businesses to be divested include Halliburton's expandable liner hangers; Baker Hughes' core completions business including packers, flow control tools, subsurface safety systems, intelligent well systems, permanent monitoring, sand control tools, and sand control screens; the Baker Hughes' sand control business in the Gulf of Mexico, including two pressure pumping vessels; and Baker Hughes' offshore cementing business in Australia, Brazil, GoM, Norway, and the UK.

The sale of these businesses will be subject to the negotiation of acceptable terms and conditions, the approval of the divesting company's board of directors, and final approval of the Baker Hughes acquisition by competition enforcement authorities.

Halliburton anticipates that the companies will complete the sales of these businesses in the same timeframe as, and the closing of the divestitures would be conditioned on, the closing of the pending Baker Hughes acquisition.

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Bibby Offshore provides lifeline to oil and gas industry

On an evening in September 2012, a rare sequence of events left one of Bibby Offshore's saturation divers stranded in complete darkness, 90 m below the surface of the North Sea, without any gas to breathe. The diver was rescued and recovered fully, but Bibby Offshore wanted to share its experience and the lessons learnt in the most effective way, so in collaboration with floating Harbour Productions, created a documentary style film, Lifeline, using real-time footage and reconstruction of the event to recount the remarkable events that took place that evening.

Lifeline demonstrates an example of human reaction to changing and challenging circumstances and how leadership training and the right behaviors, procedures and emergency response actions can tip the balance in a life and death scenario.

Due to the combined effects of unique faults in the dynamic positioning system, Diving Support Vessel (DSV) Bibby Topaz was left 190 m off position. At the time, diver Chris Lemons and his colleague were deployed subsea working in a drilling template. Although both divers got out of the template safely, Chris's umbilical, which provided him with breathing gas, hot water for his suit and communications, became trapped and subsequently parted, leaving him alone and in complete darkness on the seabed.

After 40 minutes in incredibly harsh and life-threatening conditions, the professional and astute actions of the Bibby Topaz team resulted in Chris being rescued and returned to the bell, unconscious, but alive. He made a full recovery, and the incident provided the unique opportunity to improve and enhance diver safety across the entire industry that Bibby Offshore was absolutely determined to grasp.

Lead QHSE Advisor at Bibby Offshore Chris Cleghorn, who was on board the vessel on the night of the incident, said, "Whilst technical safety films are hugely valuable tools, Lifeline does not set out to address safety issues from this point of view, rather it focuses on the human response and personal impact. In addition to the many lessons to be learned from the incident, its aim is to make us consider the consequences of things going wrong, and Lifeline is a vivid reminder of the preciousness of a human life."

Bibby Offshore has used Lifeline extensively to engage with the industry, through regular communication with operators, subsea contractors and industry bodies. The lessons learned from the incident and the initiatives identified are also continually addressed through the company's Diving Safety Workgroup (DSW).

Directly after the incident, Sir Michael Bibby and Bibby Offshore's chief executive Howard Woodcock took the decision to form the DSW to take every step possible to identify how the safety of diving operations can be further enhanced and the risk reduced to as low as possible. The DSW is an output from the incident, and the means by which Bibby Offshore has continued to engage with the industry since the incident. Its scope covers safety in diving operations, technological development in diving equipment, gaining feedback from offshore teams and assisting with the implementation of identified enhancements while monitoring the effectiveness of them.

For more information, visit www.bibbyoffshore.com.



Delivery brought forward for the QTrencher 1000



Following successful completion of factory acceptance testing, SMD is delighted to announce the delivery of a QTrencher 1000 ROV to long-standing customer KT Submarine. The relationship between SMD and KT Submarine began in 1998, with the supply of a standard cable plough, followed by the supply of a latest generation MD3XT 500 kW, jetting assisted telecoms cable plough in 2012.

The combination of the MD3XT and QTrencher 1000 illustrates a significant investment for KT Submarine as they continue to expand and become a key player in the submarine telecommunications and power cable markets.

At the customer's request, delivery of the trenching system was brought forward by 1 month to coincide with the early completion of the refurbishment of KT Submarine's cable ship, Responder. The whole system, including associated control, LARS and spares package, was then loaded directly onto the newly refurbished vessel at A&P Tyne, which is located directly across the river from our trenching production facility. SMD staff will then work with KT Submarine at their Korean base to mobilize the trenching system on board M/V Miraero, the multi-purpose vessel that will be mainly engaged in post-lay inspection and burial (PLIB) works on telecom cables, power cables and smaller O&G pipes.

The QTrencher 1000 already has a proven presence in the trenching market with two of these vehicles already delivered and in service. Positive client feedback indicates the vehicle is the first choice for post-lay burial and protection of power cables.

The 2,000-m rated ROV embraces the latest technologies in jet trenching and ROV design with 1,000 hp of total installed power and up to 940 hp of variable jetting power. The vehicle has been supplied with new launch and recovery equipment including telescopic docking head that will be integrated with an existing A-frame, and a fast response winch and umbilical cable protection system.

The QTrencher 1000 is capable of trenching rigid products, power cables and telecommunication cables up to 3 m in the seabed. This will enhance and improve KT Submarines' cable maintenance capability in this competitive market and allow it to enter the post-lay power cable and rigid product installation markets with its ability to handle up to 500 mm product (and upgrade options for 800 mm product).

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

FMC Technologies expands Bourbon Offshore's ROV fleet

FMC Technologies delivered two of four new HD ROVs to Bourbon Offshore this month and will deliver the remaining two in the fourth quarter of 2015.

Capable of operating at depths of up to 3,000 m (9,842 ft) below sea level, FMC Technologies' HD ROVs will be mobilized onto Bourbon's dedicated fleet of multi-purpose support vessels.

"We provide our clients with highly qualified, experienced ROV operators, capable of piloting and maintaining these next-generation ROVs, ensuring the proper monitoring of operations, upstream and downstream. These new deliveries mark the continuation of Bourbon's commitment with Schilling Robotics that began with the development of our first HD vehicle in 2010. The efficiency and ease of operation of the HD ROVs offer our subsea projects technological advantages," explains Patrick Belenfant, senior vice president of Subsea Services for Bourbon.

FMC Technologies, via its Schilling Robotics business, offers the most sophisticated and advanced robotics technology in the subsea oil and gas



industry. Its ROVs deliver the most power and efficiency in their class, and directly benefit operators through high fidelity, automated control modes: StationKeep™, AutoDisplacement™, AutoTrack™, and intelligent power management that provide precision and stability while performing difficult intervention tasks.

While designed to be robust, FMC Technologies' ROV system maintenance is greatly simplified by providing comprehensive system diagnostics and intuitive maintenance solutions. Subsystems are designed to be quickly maintained without any requirement for

advanced technical skills or specific system knowledge.

"We engineer ROVs that are easy to operate and easy to maintain so that complicated tasks will be easier than anticipated for customers," said Tyler Schilling, president for FMC Technologies Schilling Robotics. "The HD ROVs are highly maneuverable and therefore ideal for activities such as survey, equipment installation, or asset tie-in."

For more information, visit www.fmctechnologies.com.

Total deploy Sonardyne LBL acoustic network at Kaombo

Following the installation of a Long BaseLine (LBL) acoustic positioning network at the giant Egina oil field off the coast of Nigeria, French oil major Total and its project partners have repeated their success using the same Sonardyne Fusion 6G technology offshore Angola at the even larger and deeper Kaombo oil field.

The campaign to deploy, calibrate and make ready for work the field-wide array of transponder frames, was completed in just 31 days using the seabed component of a Fusion 6G system. This was half the time budgeted for, a figure



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that is thought to have set a new unofficial record for this scale of operation.

Covering an area of around 1,300 sq. km, Kaombo lies in water depths up to 1,750 m. Development of the field will involve the drilling of 59 subsea wells, connected by over 290 km of subsea lines leading to two floating production, storage and offloading (FPSO) vessels. The majority of subsea construction work is scheduled for 2016-2017, which will be supported by the permanent transponder frame network. First oil for the initial FPSO is expected in 2017, with production from the other two FPSOs likely to reach an average of 230,000 barrels per day in normal operating conditions out of an estimated reserve of 660 million barrels.



The exceptionally fast deployment of Fusion 6G at Kaombo has been attributed in part to the extensive project planning workshops hosted by project partner Technip in France. Attended by teams from Total, Technip and Fugro, together with personnel from Sonardyne's Survey Support Group (SSG), the sessions were used to review the full scale of the operation and consider the most efficient and cost-effective configuration of the LBL transponder frame network.

The SSG is a specialist department available to clients to support them in the most effective use of Sonardyne's acoustic positioning and inertial navigation technologies. In addition, their role is to feed operational experiences back into Sonardyne's engineering department to help ensure future technologies meet the needs of the markets in which the company operates.

From a Sonardyne perspective, Tom Bailey, acoustics surveyor, said, "The SSG is frequently asked to assist with many different aspects of offshore survey campaigns. On this occasion, we were involved in the planning stages and in the post-project wash-up workshop. It's been very rewarding to see such a well organized and executed project successfully achieve its aims and exceed expectations."

For more information, visit www.sonardyne.com.

Pulse awarded NOV contract for acoustic mooring line monitoring system in Norway

Pulse Structural Monitoring (Pulse), an Acteon company, has been awarded a contract with National Oilwell Varco (NOV) Arendal in Norway to provide an acoustic mooring line subsea monitoring system to measure mooring line inclination and tension.

The contract is for 12 mooring line subsea monitoring sensors and ancillary topside equipment, which have been enhanced to meet specific client requirements. The equipment will be installed in the North Sea.

Eivind Vethe, business development manager, Pulse, said, "Our on-going focus on reliability, combined with maintaining excellent client relationships, has resulted in a significant contract with NOV, which represents an important addition to the Pulse project portfolio. With our established and proven technology and products, Pulse delivers reliable and cost-efficient solutions for global oil and gas operators."

The Pulse system consists of 12 ROV deployable INTEGRIPod™ acoustic data loggers on the mooring line's upper section to measure actual inclinations. The MoorASSURE™ software then regenerates the angles to corresponding tension and horizontal displacement as well as presence detection of the line. The mooring line sensor array is acoustically linked to an innovative acoustic receiver's arrangement in the hull of the ship. Calculated data is communicated back to the NOV control system and ship control room.

For more information, visit www.pulse-monitoring.com.

Bibby HydroMap showcases d'ROP with PanGeo's SBI

Seabed survey company Bibby HydroMap has invited key clients and prospects to witness demonstrations with their survey ROV d'ROP equipped with PanGeo's Sub Bottom Imager (SBI).

As a dedicated survey ROV, d'ROP was launched earlier this year and has been performing trials with a number of cable locating systems before being mobilized to a project on board Bibby HydroMap's 27-m catamaran Bibby Athena.

The d'ROP has been designed to offer a remotely operated survey platform capable of operating effectively and cost efficiently in dynamic marine environments, while accommodating various survey sensors, including the PanGeo SBI. Originally designed for operation from predominantly work-



class ROVs, the PanGeo SBI provides a real-time 3D grid view of the seabed, accurately imaging pipelines, cables, umbilicals, concrete mattresses, ferrous and non-ferrous UXOs and other buried objects. One key benefit of the PanGeo system over traditional pulse-induction technology is that the cable can remain in service throughout survey operations, resulting in a significant cost-saving for the operator.

Equipped with a PanGeo Sub-Bottom Imager (SBI), the d'ROP has already successfully acquired depth of burial data on a 175 km cable length in UK waters. The trials were performed over a very challenging section of seabed dominated by sand waves up to 4 m in height as well as large sections of rock protection. d'ROP team leader Colin Burke comments: "The efficiency and capability of d'ROP when combined with the data quality of the SBI has produced fantastic results so far. From Bibby Athena, the d'ROP has worked successfully in up to 3.5 kts of tide, acquiring up to 40 km/day, which is impressive considering the size of vessel."

For more information, visit www.bibbyhydromap.com.

OceanGate completes new mobile launch and retrieval system for manned submersibles

OceanGate, Inc., an operator of manned submersibles, successfully deployed its new mobile Launch and Retrieval System (LARS) in the Gulf of Mexico during a 2-week expedition to the Flower Garden Banks National Marine Sanctuary.

Operated similarly to a ship dry dock, LARS is ideally suited to launching and retrieving manned submersibles and shock sensitive equipment such as environmental sensors or electronic data collection devices. During operations, LARS is submerged by flooding its flotation tanks with water for a controlled descent to depths of 5 to 10 m to avoid any surface turbulence.

Once submerged, LARS provides a stable underwater platform, well below the effects of surface waves, from which manned submersibles such as Cyclops 1 lifts off of and then returns to after each dive. At the conclusion of the dive, the submersible lands on the submerged LARS and the entire system is brought to the surface in approximately two minutes by filling the ballast tanks with air.

"The benefits of LARS are that it is extremely mobile and it can be cost-effectively deployed because it does not require a large ship with a man-rated crane or A-frame to launch and then retrieve one of our manned submersibles," said Stockton Rush, OceanGate CEO. "This allows us to work in remote areas using smaller, locally available commercial ships at a much lower cost."

LARS was jointly developed by OceanGate and the University of Washington Applied Physics Laboratory and was designed to be primarily constructed of commercially available off-the-shelf components.



During the Flower Garden Banks Expedition, OceanGate deployed LARS at a dive site over 100 mi offshore and performed multiple successful launch cycles, including a Cyclops 1 deep dive.

LARS provides a lifting capacity of 20,000 lbs. LARS is 35 ft long, 15 ft wide, and draws 2 ft when fully loaded.

For more information, visit www.oceangate.com.

ROVOP wins \$3.5M contract

Independent subsea ROV service provider ROVOP has revealed more than \$3.5 million worth of new contract wins in the last month from its Houston and Aberdeen offices across the oil, gas and offshore wind markets.

Work scopes for the projects, extending into Q3 2016, include inspection, repair and maintenance (IRM) on several major operators' platforms, pipeline route survey in the Mediterranean and supporting the installation of an offshore wind platform off Germany. In addition to this, the company has also signed a multi-year frame agreement with a major vessel owner for ROV services.

Steven Gray, ROVOP CEO, said: "ROVOP's approach is to deploy the most advanced, reliable and maintainable ROV technology, world-class business systems and the best offshore personnel trained in our own ROVOP academy."

"The contracts won in the last month see our vehicles and personnel working with four new clients across seven client assets. Following the opening of our Western hemisphere headquarters in Houston in April, appointment of our local team and the successful delivery of our ROV equipment in August, this also includes the first mobilisation from our U.S. facility which is a major step for ROVOP."

For more information, visit www.rovop.com.

Harkand awarded contract with Technip in Ghana

A new joint venture between Harkand and Consolidated Shipping Agencies Ltd has resulted in its first contract win in Ghana, West Africa. The award will see the global inspection, repair and maintenance (IRM) company delivering onshore and offshore support to Technip in the region.

Having formed a strategic alliance with Consolidated Shipping Agencies Ltd, the company's Aberdeen-based Harkand Andrews Survey team will deliver services to Technip on the Tullow Tweneboa, Enyenra and Ntomme (TEN) project situated in the deepwater Tano block, approximately 60 km off the coast of Ghana.

The survey team will manage and support all survey requirements on board Technip vessels during offshore construction activities which includes rigid and flexible lay, structure installations, spool metrology, pre-lay and as-built surveys. The work began October 2015 and is expected to be completed by summer 2016.

Harkand Andrews Survey managing director Stuart Reid said, "We are delighted that Technip has chosen us to support them during this major project in Ghana and continues our successful long term working relationship with Technip."

"This contract award underlines Harkand's commitment to working in the West African region in general and Ghana in particular. I believe that this will be the first of many campaigns that we engage in with our local Ghanaian JV partner, Consolidated Shipping Agencies Ltd."

The joint venture with Consolidated Shipping Agencies Ltd is the latest in a series of high-profile partnerships



Harkand has forged around the globe. Earlier this year, the inspection, repair and maintenance (IRM) specialists announced it had been awarded three major frame agreements which saw it expand its global footprint, including a new venture into Mexico for the first time. The company has also recently started its first decommissioning project in the UK Continental Shelf supporting Maersk Oil North Sea Ltd.

For more information, visit www.harkand.com.

Blue Stream pipeline inspection contract awarded to Fugro

Fugro has been awarded a contract by Blue Stream Pipeline Company B.V. for the provision of survey support vessels and associated survey services to perform the 2015 external pipeline inspection for the offshore, shore approach, and dry section components of the Blue Stream Pipeline System.

The two 24 in. gas export pipelines, E1 and W2, run from the Beregovaya gas compression station in Russia's Arkhipo-Osipovka, 235 mi (378 km) across the Black Sea, with a maximum water depth of approximately 2,150 m, to the Durusu inlet terminal 40 mi (64 km) from Samsun in Turkey. The in-field work in both areas has been completed and the reporting stage is now underway.

The Fugro-owned Atlantis Dweller was successfully mobilised in Istanbul at the end of August and is currently undertaking the external inspection of the offshore section.

For more information, visit www.fugro.com.

Maersk Drilling awards long-term contract to ITC Global

ITC Global has been awarded a multi-million dollar contract by Copenhagen, Denmark-based Maersk Drilling, which is part of Danish shipping and energy company, Maersk Group.

The 3-year contract includes VSAT (Very Small Aperture Terminal) connectivity across more than half of Maersk Drilling's global fleet of offshore drilling rigs, with voice and data services for remote personnel to stay connected with corporate offices and maintain business operations. The turnkey VSAT solution also includes equipment, installation, and 24/7 network monitoring and support. ITC Global will deploy services to nine offshore rigs spanning across the North Sea, West Africa, Gulf of Mexico and Southeast Asia, upgrading the systems on board to provide a faster service to Maersk Drilling's rigs. Installations began in May, following the contract award, and will be completed during the fourth quarter of 2015.

The Maersk Drilling agreement represents the latest in several global offshore communications deals awarded to ITC Global. In June, the company announced it had completed installation and commissioning of communications systems for 35 rigs in the Shelf Drilling, Ltd. fleet.

"As the industry continues to experience some unpredictability, oil and gas customers are reviewing their partner relationships and looking for the most efficient, best overall value solutions," said Richard Elson, vice president sales and business development, ITC Global. "While some VSAT providers are focused on consolidations and cost cuts, ITC Global has responded to the dynamics of today's operating environment by emerging as the go-to provider, focused on reliability and technical excellence to help customers design and implement cost-efficient network solutions."

In August, ITC Global was acquired by Panasonic Corporation of North America and now operates as an independent unit of Panasonic Avionics Corporation. Panasonic Avionics is a leading provider of inflight communications and entertainment systems to the aviation market. Collectively, ITC Global and Panasonic Avionics are one of the world's largest buyers of commercial satellite capacity.

For more information, visit www.itcglobal.com.

OmniAccess teams with Panasonic to serve cruise ships and super yachts

OmniAccess, a leading supplier of integrated communications solutions to super yachts and cruise ships, has entered into a Strategic Cooperation Agreement with Panasonic Avionics Corporation, the industry's leading provider of inflight entertainment and communications systems. OmniAccess will participate in the development of Panasonic's unique XTS "extremely high throughput" satellite-network program, and also foresees extensive cooperation in the areas of entertainment systems and content provisioning.

Panasonic has already announced major commitments to two Intelsat Epic® satellites and Eutelsat's 172B satellite, and is in the process of contracting for XTS high-throughput satellites, which will bring unprecedented levels of capacity and performance to its customers in aeronautical, energy, maritime, and mining. Through this agreement OmniAccess has secured access to Panasonic's existing capacity, currently contracted capacity and the future XTS satellite network, bringing that same capacity and performance to its yachting and cruise ship customers.

Bertrand Hartman, OmniAccess' CEO, said, "This is an important agreement for both OmniAccess and our customers. By leveraging Panasonic's unique XTS solutions and scale of operations, we can guarantee our clients will remain at the very forefront of the exciting new technology developments that lay ahead, for all regions of the world, for many years to come. Furthermore Panasonic's unparalleled expertise in aeronautical entertainment systems and content-delivery solutions offers many promising prospects to further expand our industry-leading Plexus-TV yacht and cruise services-portfolio."

For more information, visit www.omniaccess.com.

Inmarsat partners with Rolls-Royce on autonomous ship project



Inmarsat announced its participation in the Advanced Autonomous Waterborne Applications Initiative (AAWA) recently launched by Rolls-Royce.

The project, funded by Tekes (Finnish Funding Agency for Technology and Innovation), will bring industry partners together with universities, research institutes, ship owners and other stakeholders to explore the economic, social, legal, regulatory and technological factors that need to be addressed in order to make autonomous ships a reality. Inmarsat's role in the project is to provide the satellite communications link and platform, which is essential to remote control capability.

Data transfer between ships, as well as between ships and shore-based control centers, is one of the key development areas for remote controlled and autonomous ship research and forms a fundamental element of the AAWA Initiative. The AAWA Initiative will build on existing ship-to-ship and ship-to-shore communication platforms and their effectiveness for supporting remote control functionality. Inmarsat's Fleet Xpress service, delivered through the company's Global Xpress and L-band constellations, is the world's first hybrid Ka/L-band mobile satellite system, forms the basis of the system.

"The launch of Inmarsat's Global Xpress mobile broadband network, which forms the heart of the new Fleet Xpress service, is a real turning point for the future of the maritime industry and ideally lends itself to the AAWA Initiative," commented Ronald Spithout, president Inmarsat Maritime.

"Fleet Xpress will enable the ship-to-shore communications required to support the remote control functionality fundamental to the realization of the autonomous ship. The high-performance, high-throughput network will open up unlimited possibilities for maritime applications and real-time monitoring and analysis of data, for smarter shipping today and the future," Spithout continued, "We are delighted to be partnering on this project with some of the world's most innovative companies and institutions, and to be working at the forefront of this evolving technology."

"The wide-ranging project will look at research carried out to date, before exploring the business case for autonomous applications, the safety and security implications of designing and operating remotely operated ships, the legal and regulatory implications and the existence and readiness of a supplier network able to deliver commercially applicable products in the short to medium term," said Esa Jokioinen, Rolls-Royce, head of blue ocean team. "The technological work stream," he con-

tinued, "will be led by Rolls-Royce and encompass expertise from across a range of world-leading capabilities within the marine market. We are pleased to have partners, such as Inmarsat, as part of that team, enabling us to take the first concrete steps towards making remote controlled and autonomous ship applications a reality."

For more information, visit www.inmarsat.com.

Orange Business to seamlessly integrate ships into corporate networks

To support digital transformation in the shipping industry, Orange Business Services has developed Maritime Connect. The fully industrialized product delivers the key communications functionality and connectivity required at sea. It allows shipping companies to seamlessly integrate their fleet into the corporate network and provide Internet access for crew and applications.

Maritime Connect is a single, integrated solutions platform that provides the maritime industry with reliable connectivity over diverse communication interfaces and cuts costs at the same time. It delivers voice, VoIP, data and Internet access in one solution, independent of the communication technology used. Shipping companies, IT managers, captains and the crew can control access to data and voice services on board vessels or remotely from shore.

Typical uses of Maritime Connect include secure access to enterprise applications via the corporate network; better route planning to improve fuel consumption and cost control; enriched crew welfare by providing communication with the outside world; tracking and monitoring of ships and cargo; and telemedicine for remote care.

Delivering innovative maritime bandwidth management and optimization features, Maritime Connect manages voice, video and data in limited bandwidth and challenging weather conditions. It can be used on ships equipped with any type of satellite communications systems, including, but not limited to, Fleet Broadband, Iridium or VSAT systems (Ku or C band). The solution was developed over a year as part of a European Union initiative dedicated to improving communications on vessels at sea.

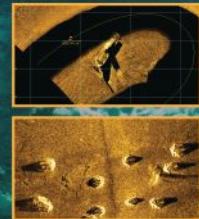
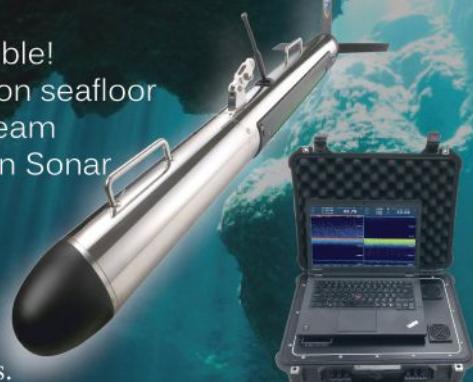
Maritime Connect is available in three tiered versions. The basic version provides on-board access to essential communications services like IP Routing, link switching, quality of service (QoS) and server hosting for applica-

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cations onboard; the next level up adds licenses for increased security, WAN optimization and user accounting; while the premium version provides maximum connectivity for crew and captain with Wi-Fi on board, 3G/4G for near-shore operations.

"Orange Business Services is uniquely positioned in the maritime market because we are able to integrate many different technologies and networks, both onshore and offshore. With the end-to-end integration and satellite connectivity offered by Maritime Connect, vessels on the high seas are now as well connected as terrestrial offices. This enables new ways of working right across the shipping industry," said Michel Verbist, head business development satellite solutions, Orange Business Services.

For more information, visit www.orange-business.com.

KVH extends its line of marine satcom choices

KVH Industries, Inc. has introduced the TracPhone® Fleet One marine satellite communications antenna system, a 28 cm (11 in.) diameter unit designed for vessels needing global satellite phone service and basic satellite Internet access. The TracPhone Fleet One complements KVH's other Inmarsat-based offerings in the FleetBroadband family and its own extensive TracPhone product line for mini-VSAT Broadbandsm service.

Utilizing Inmarsat's airtime service, the TracPhone Fleet One offers satellite phone service everywhere at sea except the polar regions and provides data speeds up to 100 Kbps, typically sufficient for email and limited Internet access along the coast worldwide. The antenna system has an MSRP of \$4,995, and the basic airtime plan provides 50



minutes of voice and 5 MB of data for just \$49.99 per month—an affordable option for even the casual sailor or small fleet.

In addition, the TracPhone Fleet One system supports the free '505' safety service, directing any emergency calls to a rescue center.

"The demand for satellite phone service and broadband connectivity at sea continues to grow, and KVH offers the most complete line of solutions," said Brent Bruun, KVH executive vice president for mobile broadband. "From the weekend sailor or small fleet owner using Fleet One to the most sophisticated global commercial maritime operators taking advantage of our global mini-VSAT Broadband service, we offer a capability set and price point matched to customers' needs."

For more information, visit www.kvh.com.

Inmarsat's Fleet Media maritime entertainment service selected by Maersk Tankers

Inmarsat announced that Maersk Tankers, the owner and operator of one of the world's largest fleets of product tankers, has chosen to install Inmarsat's Fleet Media maritime entertainment service on 30 of its vessels as part of a pilot scheme.

Maersk Tankers head of vessel IT, Henning Madsen, said, "We have chosen to install the new Fleet Media service as we wish to provide our employees with an entertainment system which is up-to-date, with the most recent content and frequently refreshed. We expect that our crew will welcome this new service and it will increase their level of satisfaction onboard."

Fleet Media is an innovative maritime entertainment solution that uses Inmarsat's satellite connectivity to download the latest in Hollywood movies, international films, sports and TV shows to merchant vessels anywhere in the world. This gives crew members access to hundreds of hours of on-demand content that can be watched on a laptop, computer or an iOS or Android smart device via Wi-Fi or physical network connection.

Implementation of the 12-month pilot scheme will commence immediately across 30 of Maersk Tankers' 80 strong fleet. After evaluation of the pilot, Maersk Tankers will consider if they will continue with Fleet Media and extend the service to cover the entire fleet. The 30 vessels were selected as the company was already in the process of updating communications equipment onboard and

identified an opportunity to also upgrade the crew's entertainment service.

Ronald Spithout, president Inmarsat Maritime, said, "We are extremely pleased that Inmarsat has been selected by Maersk Tankers to deliver entertainment content to their crew. By offering the latest catalog of Hollywood and international blockbusters, news and sports, we anticipate that crew motivation will see a boost and as a result they could see a rise in efficiency. It is a privilege for us to be working with such a leading maritime company and to enable their crews to benefit from the most advanced technology available. We look forward to extending Fleet Media across the entire Maersk Tankers fleet in due course."

The Fleet Media service will be powered initially by XpressLink and eventually via Fleet Xpress, the maritime broadband service of Inmarsat's newly launched Global Xpress high-throughput network.

For more information, visit www.inmarsat.com.

RigNet wins new offshore drilling customer

RigNet, Inc. has been awarded a contract to provide remote communications solutions to a premium offshore driller across its entire global fleet of existing and newbuild rigs.

"RigNet is uniquely positioned to provide the mission critical service and support demanded by the offshore drilling industry," said Mark Slaughter, RigNet's CEO and president. "From service locations and field service technicians positioned in every major energy-producing region to our proven track record in the industry, RigNet provides a degree of tailored service and support that generalist service providers simply cannot match."

RigNet will provide comprehensive managed remote communications solutions across the customer's fleet of jack-ups, drillships and semisubmersibles operating in the U.S. Gulf of Mexico, Asia Pacific, Europe and Africa regions. The contract includes provision and maintenance of both stabilized and fixed antennas to deliver communications across multiple satellite bands for greater flexibility.

"The increasing complexity of offshore drilling operations is driving demand for robust, reliable digital technology solutions," said Hector Maytorena, RigNet's Group vice president, managed services. "RigNet is pleased to have the opportunity to help this new and important customer posi-

tion for continued success with support from scalable and standardized remote communications solutions."

For more information, visit www.rig.net.

Significant growth & consolidation expected in maritime telecom sector

According to Euroconsult's newly published report, Maritime Telecom Solutions by Satellite, Global Market Analysis & Forecasts, the value of the global maritime satellite communications market will double over the next decade, with a CAGR of 6% in terminals and 8% in revenue over the 10-year period. Ever-increasing data communications needs and the massive launch of new generation High Throughput Satellite (HTS) systems are expected to drive both the growth in the market and consolidation in the value chain.

Even though the economic environment is unfavorable due to oversupply in merchant capacity and falling oil prices, the maritime satcom market has maintained its high growth in the last 12 months. Driven by both fast-increasing communications requirements per vessel and aggressive marketing initiatives by service providers, the maritime VSAT market grew by 15% in terminals and 9% in revenues in the last year. The global maritime satcom market reached an unprecedented level of 368,000 terminals, \$816 million in revenue at the satellite operator level and close to \$1.6 billion in revenue at the service provider level. A total of 7 Gbps of C- and Ku-band capacity was used for maritime VSAT business, compared to less than 2 Gbps in 2010.

"Shipping companies are now investing in cloud computing, big data analytics, automation and video streaming applications. Crew applications, in particular social media, have never ceased the growth of their bandwidth hunger," said Wei Li, senior consultant at Euroconsult and editor of the report. "On the supply side, we see the ongoing launch of new generation HTS and conventional satellites giving downward pressure on capacity pricing and causing stronger competition in the sector. All maritime VSAT service providers are aggressively acquiring market share before the launch of Inmarsat Global Xpress. Building global maritime beams requires substantial investment and all service providers need to have scale in their business to improve the profitability. In addition, the technical nature of HTS systems requires more investment of satellite operators in ground infrastructure and even end-user equipment. We definitely see the sector becoming more consolidated both vertically and horizontally in the coming decade."

For more information, visit www.euroconsult-ec.com.

Satcom Global launches IPSignature 4 with crew calling and BYOD connectivity

Satcom Global has launched a maritime system bringing seafarers up to speed with today's "connect anytime anywhere" culture, enabling everyone at sea to keep in touch with the rest of the world simply with their own device.

The latest addition to Satcom Global's product portfolio offers "Bring Your Own Device" technology to vessels at sea, where crew can access web-based services via Internet café hotspots through their own Apple, Android and Windows, tablets, smartphones and laptops.

With the growing demand for technology and communications on board, the satellite communications world is offering bigger data plans and flexible benefits to meet needs of crew, ship managers and owners. With IPSignature 4, captain and crew will be able to make more use of large data allowances, being able to utilize it to make cheap VoIP (voice over IP) calls. Later this year, crew will also be able to make cheap phone calls at the touch of a button on their phone, tablet or

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For use with a range of satellite communications services, including Inmarsat FleetBroadband, IPSignature 4 can be a tool for improving crew welfare to boost crew retention as well as a solution to increase business efficiency. The innovative multi-function device provides centralized control of vessel network connections and communications over satellite, offering simplicity and control for the fleet manager, with easy-to-use interfaces, simple language and intuitive graphics. Vessel owners and managers are also given the flexibility to recover data costs from crew by charging for use where cost reduction is a priority.

On a technical level, firewalls can be managed remotely, IT managers can access integral netflow monitoring reports and manage users and settings via a shoreside portal for full visibility. The dual board design ensures reliability of the device and “out of band management” provides satellite failover.

Ian Robinson, CEO, said, “We’ve listened to what our customers want and have developed a device that ticks all the boxes with regard to what is

required from both business and crew perspectives. IPSignature 4 provides managers with a reliable and secure tool for managing vessel communications, a means of better utilizing plentiful data allowances with low cost crew calling capability and providing Wi-Fi accessibility for crew.”

IPSignature 4 builds on the success of the popular IPSignature software for e-mail and web-based services. It complements Satcom Global’s range of in-house developed value-added solutions including GlobalNet for provisioning management and Encapsule8 for detailed reporting, providing a full portfolio of communications management tools for all vessel needs.

For more information, visit www.satcomglobal.com.

Cobham expands SAILOR multi-function universe

Cobham SATCOM has launched two new SAILOR satellite navigation receivers. Both the SAILOR 656X GNSS (Global Navigation Satellite System) and new SAILOR 657X DGNSS (Differential Global Navigation Satellite System) are black-box products

designed to be part of an innovative eco-system Cobham SATCOM refers to as its “Multi-Function Universe.”

The advanced touch-screen SAILOR 6004 Control Panel forms the heart of the Multi-Function Universe, providing full control for all products connected to it from a single device. The SAILOR 656X GNSS and SAILOR 657X DGNSS join the already available SAILOR 6391 Navtex and SAILOR 628X AIS as new generation SAILOR products designed to work with the SAILOR 6004 Control Panel. Operation of all systems connected to the SAILOR 6004 Control Panel is easy; just select the icon for the product as you would an app on any touch-screen device to be given full control of all set-up, functions and diagnostics.

“The Multi-Function Universe approach means that a variety of products can all be accessed from a single screen on the bridge and anywhere else a repeater is needed, making installation far more flexible than with traditional products that all require their own screen. The approach also saves space on the bridge, and importantly, makes the life of maintenance engineers easier

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as they have a single point of entry to the network," explained Claus Hornbech, business manager, Cobham SATCOM.

The SAILOR 656X GNSS and the SAILOR 657X DGNSS collect satellite data from any available navigation satellites, including GPS and GLONASS, and distribute it to a variety of on board systems such as ECDIS (Electronic Chart Display System), INS (Integrated Navigation System), GMDSS (Global Maritime Distress & Safety System), SATCOM (Satellite Communication System), MCS (Master Clock Systems), and PABX (Telephone Exchanges).

Cobham SATCOM offers four variants of its new satellite navigation products, all of which are designed 100% in-house. The SAILOR 6560 GNSS System and SAILOR 6570 DGNSS System are delivered with the SAILOR 6004 Control Panel and the corresponding SAILOR 6285 GNSS Antenna or SAILOR 6286 DGNSS Antenna, while the SAILOR 6561 GNSS Basic and SAILOR 6571 DGNSS Basic are delivered with the antennas only.

All four variants use the same proprietary SAILOR 6588 DGNSS Receiver, which provides highly accurate data, enhanced by means of Satellite Based Augmentation System (SBAS) from various areas, including WAAS (Wide Area Augmentation System) for the U.S., and EGNOS (European Geostationary Navigation Overlay Service) in Europe in addition to systems from Japan, India and Russia. The SAILOR 6285 GNSS Antenna and SAILOR 6286 DGNSS Antenna are also both new, designed and manufactured according to Cobham SATCOM's highly regarded quality standards.

"The accuracy and availability of satellite positioning and timing data is vital to vessel safety as so many critical navigation and communication systems rely on it to operate," added Jan Kragh Michelsen, VP maritime business development, Cobham SATCOM. "All elements, from the black-box to the antennas, multi-function display and the user-interface of the systems are new and developed 100% in-house at Cobham SATCOM, so customers can be confident in the reliability of our new GNSS and DGNSS products, in addition to our revolutionary Multi-Function Universe operating concept."

For more information, visit www.cobham.com.

RigNet to offer Inmarsat Fleet Xpress to energy maritime industry

RigNet, Inc. has signed an agreement with Inmarsat to offer Fleet Xpress, the maritime version of its Global Xpress service, to the oil and gas maritime sector. The agreement will enable RigNet to extend high-speed communications to offshore service and supply vessels within the oil and gas industry across the globe.

"RigNet differentiates itself in the oil and gas industry by providing fit-for-purpose technologies to help our energy customers operate remotely in a more productive, efficient and safe manner," said Mark Slaughter, RigNet's CEO and president. "The addition of Inmarsat's Fleet Xpress to our energy maritime offerings will enable RigNet to deliver a high degree of service and functionality to this important sector of the oil and gas market."

"We are continually looking to strengthen our partner network through working with organizations that have the length and breadth of experience, industry knowledge and commitment to best service the market," commented Ronald Spithout, president, Inmarsat Maritime. "With the launch of Fleet Xpress, the world's first hybrid Ka/L-band mobile satellite system, we are committed to driving innovation and bringing a new high-speed broadband service that will redefine maritime connectivity. By working with organizations such as RigNet, we can extend our market reach and open up new possibilities to the maritime community, offering competitive and innovative solutions."

For more information, visit www.rig.net.

Seaspan chooses KVH's mini-VSAT Broadband for container ships

Seaspan, one of the world's leading containership owners, operators, and ship managers, has selected for 18 of its newest vessels the complete mini-VSAT Broadband 2.0 maritime communications solution from KVH Industries, Inc. The solution includes KVH's global TracPhone V11-IP satellite communications system, mini-VSAT Broadband connectivity, IP-MobileCast content delivery service, and CommBox network management tools. More Seaspan vessels are expected to receive the mini-VSAT Broadband 2.0 solution in 2016. In addition, other vessels in Seaspan's fleet already utilize such KVH services

as Videotel maritime training and KVH Media Group news and movie services.

"We chose KVH for our newest vessels because of their dynamic and flexible one-stop communications and media solutions and because they can provide us with a level of quality that addresses all of the factors that are so critical to ship owning and ship management today," says David Kramer, director, fleet management, for Seaspan, which is based in Vancouver, British Columbia. "At Seaspan, we require high-quality, continuous global connectivity for optimizing operations, and cost-efficient content delivery services for attracting and maintaining the best crews possible."

KVH's TracPhone V11-IP is a powerful yet compact 1.1 m antenna that seamlessly accesses both the C- and Ku-band satellites of KVH's mini-VSAT Broadband network, providing global coverage with download speeds up to 4 Mbps. Fast, reliable connectivity is important for the Seaspan containerships, which incorporate technological and environmental advancements for fuel efficiency and travel the world's shipping routes on long-term charters. In addition, the Seaspan vessels are utilizing the network management capabilities built into the TracPhone V11-IP's Integrated CommBox Modem (ICM) for onboard IT functions to optimize and manage web and email traffic.

By choosing KVH's IP-MobileCast content delivery service, Seaspan has made it possible for crew members onboard the subscribing vessels to enjoy national and international newspaper editions updated several times daily and new-release movies and popular TV shows from a variety of countries—with new selections added regularly—even while the vessel is at sea. The content is commercially licensed as required by copyright law and helps ship operators meet maritime guidelines for crew welfare.

"Seaspan is known throughout the world as a leader in ship management, with a reputation for best-in-class operations, technologically advanced vessels, and experienced crew," says Brent Bruun, executive vice president of mobile broadband for KVH. "We are thrilled that they have chosen KVH's mini-VSAT Broadband 2.0 complete maritime communications solution to help them meet the demands of modern shipping."

For more information, visit www.kvh.com.

Fugro wins Rampion contract

Fugro has been awarded a contract for the installation and burial of array cables at the Rampion Offshore Wind Farm. The development in the English Channel, 13 km off the Sussex coast, is being built by E.ON alongside partner the UK Green Investment Bank plc.

The engineering and planning will start immediately with installation being carried out in two phases in 2016 and 2017. Fugro will lay and bury 122 array cables with its construction and installation vessels Fugro Symphony and Fugro Saltire and using one of its two Q1400 trenching systems to bury the cables.

The Rampion Offshore Wind Farm will consist of 116 turbines, each with a generating capacity of 3.45 MW. Construction is expected to be completed in 2018.

For more information, visit www.fugro.com.

Nexans to deliver umbilicals to project in Egypt

Nexans has been awarded the contract to deliver 48 km of static umbilicals to BP and partner DEA for the West Nile Delta Taurus Libra project in Egypt. The Taurus Libra development is a subsea project tied in to existing BG Group operated Burullus facilities, and the umbilical delivery forms an important part of this subsea development.

The umbilicals consist of electrical and fiber optic cables as well as hydraulic and chemical lines. They will be designed, engineered and manufactured at Nexans' specialized subsea cable and umbilical facilities in Halden and Rognan, Norway. Nexans will also deliver accessories for this project. The delivery will take place in May 2016.

"This contract forms part of the 10-year frame agreement Nexans concluded with BP to supply umbilical cables, DEH systems, accessories and services for various deep-water oil and gas projects across the globe," said Krister Granlie, executive vice president, hybrid underwater cables division, Nexans Norway. "It represents further recognition of Nexans as a key player in the umbilical market and builds on a long relationship between BP and Nexans for the deliveries of umbilicals."

For more information, visit www.nexans.com.

DARPA awards contract for rapidly deployable undersea network

LGS Innovations LLC has been awarded a \$1.9 million contract for the Defense Advanced Research Projects Agency's (DARPA) Tactical Undersea Network Architectures (TUNA) program. The goal of the program is to ensure that our armed forces retain an information advantage even in contested environments where potential adversaries may attempt to disrupt other communication channels.

LGS Innovations LLC—along with Linden Photonics and Tethers Unlimited—will aim to develop the world's strongest neutrally-buoyant undersea cable for an undersea fiber optic based network. Under the terms of the contract, LGS will provide model simulations, design, and analysis as well as scaled development and demonstration for the technology over a period of 15 months.

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

The DARPA TUNA program seeks to temporarily restore tactical data network connectivity in contested environments through the use of novel optical-fiber-based technology. Currently in an initial phase, the program emphasizes concept and technology development in three technical areas: system design, small fiber optic cable systems, and buoy nodes. DARPA plans a second phase focused on the implementation of an integrated end-to-end network prototype.

For more information, visit www.lgsinnovations.com.

ABB to supply record-breaking oil field cable



ABB has won an order worth around \$90 million from leading international energy company Statoil, for a high-voltage cable system to supply power from shore to the Johan Sverdrup offshore oil field.

Located 155 km west of Stavanger in the North Sea, Johan Sverdrup is considered one of the largest offshore oil fields on the Norwegian Continental Shelf (NCS). Once fully operational, production is estimated at 550,000 to 650,000 barrels of oil per day, accounting for nearly 40% of total oil production from the NCS.

ABB will design, manufacture and install an 80-kilovolt (kV) extruded direct current (DC) cable system with a capacity of 100 MW to transmit power from the Norwegian power grid to the Johan Sverdrup offshore production facility. At around 200 km in length, it will be the longest extruded submarine cable system to an offshore oil and gas platform facility in the world. Supplying electric power from shore for offshore oil and gas production avoids the need to burn diesel or gas out at sea to power the equipment and machinery on the platforms, resulting in substantial reductions in CO₂ and nitrogen oxide emissions. In addition to the environmental benefits of powering the cluster of platforms from shore, the cable solution is safer and more energy-efficient than generating the power offshore using fossil fuels.

"Delivering enhanced customer value through close customer collaboration is an important element of ABB's Next Level strategy and we are delighted to be supporting Statoil with this cable system as well as the HVDC converter stations," said Claudio Facchin, president of ABB's power systems division. "With this 'power from shore' cable solution, ABB will once again be pushing the boundaries of technology and lowering environmental impact, in line with our vision of power and productivity for a better world."

In March, ABB was awarded an order to supply the two High Voltage Direct Current (HVDC) converter stations for the same project. One will be located onshore at Haugsneset, where it will turn alternating current (AC) from the grid into DC, which can be transmitted efficiently over 200 km to the second station on one of the oil platforms. There, the DC current will be converted back into AC and distributed to the rest of the field.

For more information, visit www.abb.com.

OMM completes cable protection project

Offshore Marine Management (OMM) has successfully completed another mattressing project in the German North Sea.

The contract, which required the firm to install mattresses at all cable crossings along the 70-km route from Sandbank offshore windfarm to the converter station SylWin Alpha, was awarded in June 2015.

Mobilization for the project occurred within 30 days of the contract award, demonstrating OMM's ability to react rapidly to and meet clients' requirements by utilizing an extensive network of personnel and suppliers.

Jonathan Everest, technical manager from OMM, who managed the project, said, "Our team efficiently developed project-specific technical procedures and QHSE documentation to meet the client's high standards for conducting the work."

"Our effective communication with the client, suppliers, as well as internally, meant the project could be completed in such a short space of time, to the highest quality standards."

This is one of a number of mattressing projects completed by OMM so far this year. The firm most recently delivered mattress installation work for another client that saw it using its new multi-mattress deployment tool, the MDS3.

For more information, visit www.offshoreomm.com.

Prysmian selects ESS for wind farm trenching work

Ecosse Subsea Systems (ESS) has been awarded its second Baltic Sea renewables project, having been appointed by main contractor Prysmian Group to carry out pre-cut seabed trenching prior to Prysmian's cable laying on the Wikinger offshore wind farm.

The 350-MW Wikinger project is Iberdrola's first offshore project in Germany. Located in the northeast of the island of Reugen, the windfarm will have 70 turbines and an offshore substation, generating enough energy to power more than 350,000 German homes.

Using its versatile SCAR Seabed System, ESS will perform first pass and multi-pass trenching in preparation for Prysmian's installation and burial of 81 km of submarine cables that will connect the 70 turbines to the offshore substation.

ESS has built up a reputation for seabed preparation projects in the renewables sector and believes the suc-

cessful completion of a £5 million project on behalf of Siem Offshore Contractors on the EnBW Baltic 2 windfarm helped secure this new work.

Keith McDermott, ESS commercial director, said, "Our previous experience of boulder clearance and trenching on the Baltic 2 windfarm has proven the versatility of the SCAR system and in particular its suitability for the soils in this region. Whilst our SCAR technology was originally designed for oil and

gas sector projects, we have steadily built up a reputation in the renewables industry for being able to provide a robust, cost-effective option for major cable-laying workscopes, helping reduce the leveled cost of energy production."

Ecosse expect to mobilize from Aberdeen in mid-2016 and have already started pre-engineering work at its Banchory headquarters near Aberdeen.

McDermott added, "With the downturn in the hydrocarbon sector and well

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publicized project cancellations or delays, Ecosse have quickly responded to the changing market and our focus on renewables and interconnectors is paying off. We have tendered for more than £280 million worth of projects and are confident that SCAR will prove an attractive option for other developers and installation contractors on a number of those projects in the coming years."

For more information, visit www.ecosse-subsea.com.

Alcatel-Lucent to retain undersea unit as wholly-owned subsidiary

Alcatel-Lucent is to continue to operate its undersea cables business, Alcatel-Lucent Submarine Networks (ASN), as a wholly owned subsidiary. ASN will continue to execute its strategic roadmap, strengthen its leadership in submarine cable systems for telecom applications and pursue further diversification into the oil & gas sector.

ASN leads the global submarine cables industry with more than 575,000 km of fiber-optic cable systems deployed worldwide, along with the maintenance of 330,000 km of undersea systems. ASN's scope of operations comprises traditional undersea telecommunications networks and, increasingly, serving the oil & gas sector with mission-critical ultra-broadband communications for offshore production facilities.

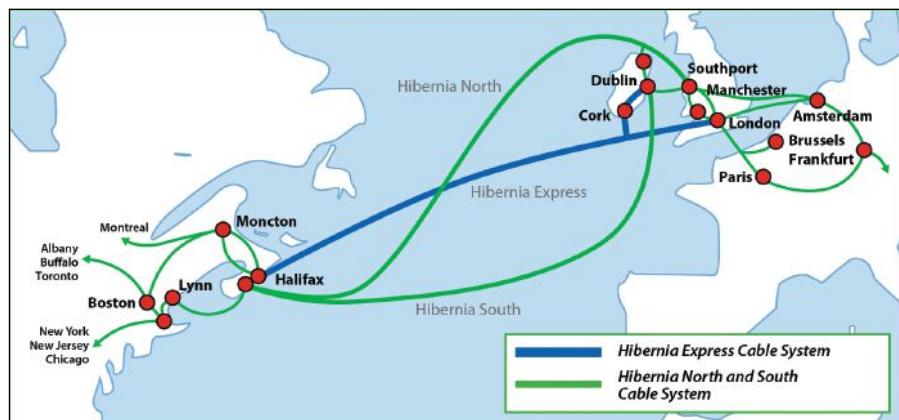
Headquartered in Villarceaux, France, and with cable manufacturing and loading facilities in Calais, France, and repeater and branching unit production in Greenwich in the UK, ASN provides a turnkey product and service offering, including project management, installation and commissioning and marine operations and maintenance performed by its fleet of seven cable-laying ships.

Retaining ASN has no impact on Alcatel-Lucent's intention to complete its proposed combination with Nokia.

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

First transatlantic cable in 12 years enters service

Hibernia Networks announced that Hibernia Express, its new 4,600-km ultra-low-latency submarine cable connecting Halifax, Nova Scotia to Slough, England and Cork, Ireland is ready for service. The first transatlantic cable built in over 12 years, the Hibernia Express launch marks a milestone for global communications, addressing the strong demand for fast, high-performing global network services. According to



TeleGeography, demand for bandwidth between North America and Europe is projected to increase 40% annually over the next 6 years driven by the surge in cloud computing, large data transfer and storage requirements.

"The Hibernia Networks team has demonstrated an unwavering commitment towards completing the first transatlantic subsea cable in over a decade and we are thrilled to announce its official launch," stated Bjarni Thorvardarson, CEO of Hibernia Networks. "We are proud to have accomplished this transformational milestone, and more importantly, we are proud to deliver the lowest latency, highest performance capacity required to facilitate real-time access to information and content by the ever growing global communications community."

The Hibernia Express cable features the most advanced cable infrastructure and optical transmission technologies, which enable performance capabilities superior to any existing transatlantic cable systems. Hibernia Express features optical transport services up to 100Gbps speeds and is capable of 200Gbps service on select segments. The 6-fiber-pair cable is optimized for lowest latency performance, offering an unmatched roundtrip delay of sub-60 milliseconds on the New York to London route. Leveraging a state-of-the-art dense wavelength division multiplexing (DWDM) platform, Hibernia Express is engineered to potentially scale up to 400Gbps per circuit and beyond, enabling customers to meet bandwidth requirements as they increase over time.

Hibernia Express benefits numerous customer segments, including but not limited to those within the financial markets and media and broadcast industries, as well as web-centric companies and other telecommunication service

providers. In May 2015, Microsoft and Zayo Group signed on to Hibernia Express and were among the cable's initial customers.

For more information, visit www.hibernianetworks.com.

Global Marine upgrades x-ray camera software

Global Marine Systems Limited has been working in collaboration with radiography specialists JME Ltd to update the software for its class-leading DXr1 digital x-ray camera. The DXr1 was first unveiled in 2013 to replace traditional film as a new standard for subsea cable repair capability. The new software is the camera's first upgrade and means users will be able to x-ray not only the universal joint, but other jointing solutions too.

The DXr1 facilitates the digital capture of a cable joint during repairs, with real-time review as the x-ray images are taken. As a process, it reduces the time and costs associated with image capture and assessment using traditional cable repair methods – it requires no film, chemicals or processing time.

To provide an indication of the savings on offer, the time needed to take one x-ray image is reduced from 15 seconds with film to 0.5 seconds using the DXr1, not including film processing time. For a complete joint, the time from commencement of radiography to the start of the assessment is 2 to 2.5 hours with conventional film and approximately 20 minutes using the DXr1. However, with the DXr1, assessment can start as soon as the first image is available, thus further reducing the overall time.

The DXr1 also enhances the quality, efficiency and record-keeping capability of the cable jointing assessment process.

To use the DXr1, the joint is first loaded into the cabinet and job details

are entered via the touch-screen. After the statutory warning beacons and sounder, the first image is captured and sent to the operator so the x-ray assessment stage can start immediately. The image is also displayed on the screen. The cabinet is then rotated and the remainder of the images, typically around 30, are collected. The images are subsequently sent to the server for assessment before a final report is generated. If one of the images shows a feature that should be rejected, the joint can be re-moulded without waiting for the final results.

The camera is Windows compatible and offers a simple operating interface and image assessment software, which has now been enhanced.

Global Marine's DXr1 is proven technology first launched at the SubOptic conference in 2013. In addition to Global Marine's fleet, it is also used by blue chip customers including E Marine, Orange Marine, SBSS, KCS, Nexans, and NTT, to list but a few. For future developments, Global Marine hints that the DXr1 may be developed to x-ray power cables as well as fiber optic cable and joints, thus boosting system flexibility even further.

For more information, visit www.globalmarinesystems.com.

Hexatronic supplies cable for UK network

Hexatronic Cables & Interconnect Systems has secured a contract with A-2-Sea Solutions Limited, a privately owned British-based company that installs and maintains subsea cable for some of the biggest operators in the market.

In the contract worth 10 million Swedish Crowns, Hexatronic will supply approximately 20 km of rock armored submarine ribbon cable for the Isle of Wight to Portsmouth installation project. The three-layer armored cable is designed to withstand demanding undersea conditions.

Hampshire-based A-2-Sea Solutions is a global submarine installer within the fiber optic subsea and subaqueous industries utilizing their own land, beach and marine joint technology. Hexatronic offers solutions for submarine cables and the entire passive fiber infrastructure including design, manufacturing and supply.

"The contract with A-2-Sea Solutions is important for Hexatronic as we break into a new market with our comprehensive and future-proof subma-

rine cable solutions. This agreement strengthens Hexatronic's global presence in the subsea telecom cables industry," said Henrik Larsson Lyon, CEO of Hexatronic Group AB.

For more information, visit www.hexatronic.com.

Alcatel-Lucent to deliver fiber connectivity offshore Angola

Alcatel-Lucent Submarine Networks, the undersea cables subsidiary of Alcatel-Lucent, has been awarded the development of the Sonangol Offshore Optical Cable (SOOC), a critical infrastructure project that will dramatically reduce the cost-per-bit associated with the delivery of data traffic to Angola, including its offshore oil and gas production facilities.

Spanning 1,900 km, the SOOC submarine fiber optic network will connect to landing points at four locations along the Angolan coast and will allow the country's oil and gas industry to benefit from very large offshore data bandwidth with high availability, high reliability and low latency.

SOOC will enable better operational efficiency and optimize operational costs and will also bring significant benefits to the Angolan economy, as a high-speed connection will be established between the Luanda area and Cabinda to fulfill national telecom needs. The development phase is under way and construction work is scheduled to start in second half of 2016.

Yohann Bénard, Oil & Gas General Manager of Alcatel-Lucent Submarine Networks, said, "After connecting Angola to the global network through several undersea cables, ASN is pleased to further contribute to the development of the Angolan fiber optical infrastructure. This award is a prime illustration that submarine fiber-optic technology is becoming the standard telecommunication medium for offshore assets. It further demonstrates our leadership in the platform connectivity market, which is one of the priorities of ASN's industrial plan to diversify into the oil and gas sector."

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



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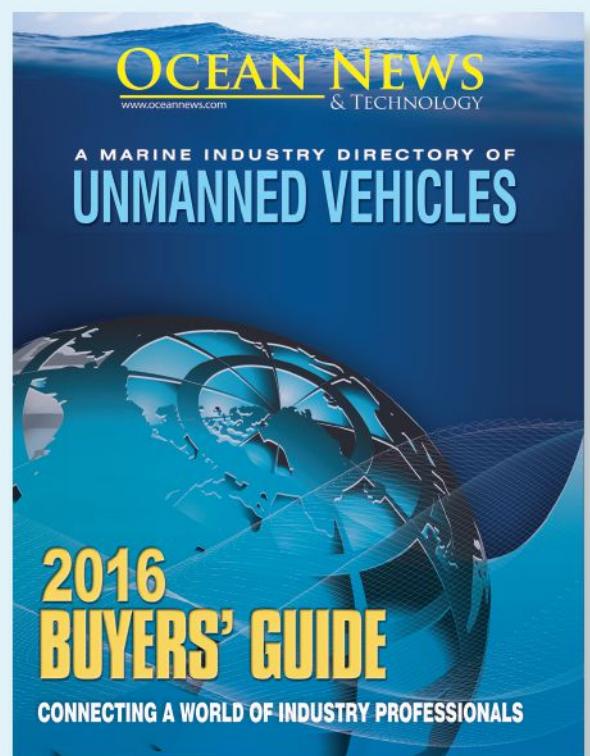
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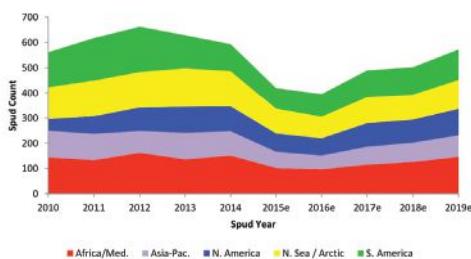


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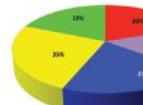
Global Total Well Demand History and Forecast 2010-2019e
(Mean Case 5,427 spuds)



Global Total Well Demand Forecast Only 2015e-2019e
(Mean Case 2,377 wells)

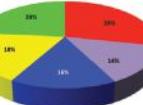
Total Well Demand	2015e	2016e	2017e	2018e	2019e	Total E&A	Total Dev
Africa/Med.	102	97	115	126	146	200	386
Asia-Pac.	64	54	73	76	85	137	193
N. America	71	66	91	88	101	204	213
N. Sea / Arctic	98	85	103	108	116	160	252
S. America	83	76	92	109	125	166	220
Other	418	393	487	499	569	1,004	1,942

E&A Wells (1004)



Since June, Forecast has been reduced by a further 12% (124 wells) over the five year period.

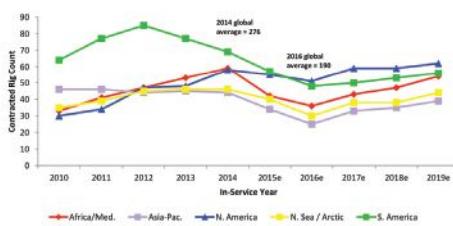
Dev Wells (1362)



Since June, Forecast has been reduced by a further 3% (40 wells) over the five year period.

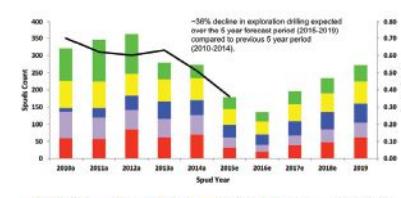
Global Contracted Floating Rig Supply History and Forecast 2010a-2019e

>30% erosion in the average contracted floating rig count forecast from 2014-2016

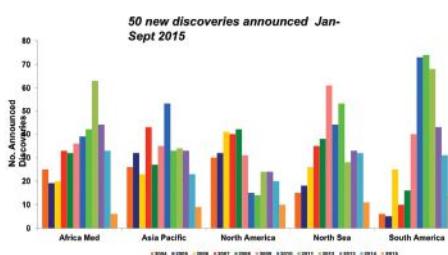


Global Exploration & Appraisal Drilling 2010a-2019e (2,584 spuds)

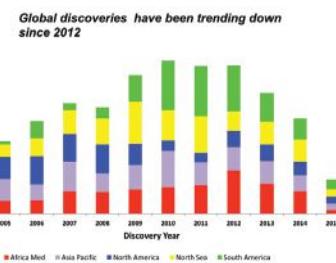
Spud Year	2010a	2011a	2012a	2013a	2014a	2015a	2016a	2017a	2018a	2019a	2010-14	2015-19
Africa/Med.	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100
Asia-Pac.	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100
N. America	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100
N. Sea / Arctic	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100
S. America	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100
Other	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100	~100



Discoveries by Hemisphere 2004-2015 (1885)



Discoveries by Year Announced 2004-2015 (1885)



FOR MORE DETAILED INFORMATION

(281) 491-5900 - USA • 44 (0) 1737 371704 - London • e mail: corp@questoffshore.com
www.QuestOffshore.com • www.SubseaZone.com • www.FloatingProductionZone.com

Monthly Stock Figures & Composite Index

Industry Company Name	Symbol	Close(Mid) October	Close(Mid) September	Change	Change %	High 52 week	Low
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	55.43	53.53	1.90	3.5%	70.45	44.11
Cameron Intl. Corp.	CAM	66.93	64.38	2.55	4.0%	67.76	39.52
Drill-Quip, Inc.	DRQ	64.64	64.37	0.27	0.4%	93.54	53.37
Halliburton Company	HAL	39.46	36.94	2.52	6.8%	58.00	30.93
Tenaris SA	TS	25.51	25.35	0.16	0.6%	12.65	22.85
Newpark Resources, Inc.	NR	5.96	6.13	-0.17	-2.8%	12.65	4.89
Schlumberger Ltd.	SLB	76.95	73.46	3.49	4.8%	100.54	66.57
Superior Energy Services, Inc.	SPN	15.71	13.84	1.87	13.5%	26.95	12.35
Weatherford International, Inc.	WFT	10.12	9.96	0.16	1.6%	17.27	7.21
Deep Down, Inc.	DPDW	0.55	0.63	-0.08	-12.7%	1.21	0.44
FMC Technologies	FTI	32.99	33.79	-0.80	-2.4%	57.87	27.94
Total Diversified, Production, Support and Equipment.....	394.25	382.38	11.87	3.1%	518.89	310.18	
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	3.45	3.94	-0.49	-12.4%	10.50	3.34
Mitcham Industries, Inc.	MIND	4.20	3.79	0.41	10.8%	10.88	3.54
Compagnie Gnrale de Gophysique-Veritas	CGV	4.43	4.21	0.22	5.2%	10.95	3.45
Total Geophysical / Reservoir Management.....	12.08	11.94	0.14	1.2%	32.33	10.33	
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	18.19	16.10	2.09	13.0%	43.72	14.15
Diamond Offshore Drilling, Inc.	DO	20.82	22.24	-1.42	-6.4%	40.74	16.51
ENSCO International, Inc.	ESV	16.69	16.21	0.48	3.0%	41.99	13.26
Nabors Industries, Inc.	NBR	10.65	9.95	0.70	7.0%	19.38	8.94
Noble Drilling Corp.	NE	13.04	11.91	1.13	9.5%	22.35	10.34
Parker Drilling Company	PKD	3.04	2.81	0.23	8.2%	5.09	2.34
Rowan Companies, Inc.	RDC	19.73	17.22	2.51	14.6%	25.35	14.63
Transocean Offshore, Inc.	RIG	15.93	14.89	1.04	7.0%	31.11	11.26
Total Offshore Drilling.....	118.09	111.33	6.76	6.1%	229.73	91.43	
Offshore Contractors, Services, and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	6.97	6.23	0.74	11.9%	27.70	4.57
Gulf Island Fabrication	GIFI	12.15	11.7	0.45	3.8%	23.57	8.74
McDermott International, Inc.	MDR	5.44	4.74	0.70	14.8%	5.93	2.10
Oceaneering International	OII	46.91	40.88	6.03	14.8%	72.19	37.00
Subsea 7 SA	SUBCY.PK	8.05	8.15	-0.10	-1.2%	12.40	7.05
Technip ADS	TKPPY.PK	13.25	12.37	0.88	7.1%	19.67	11.30
Tetra Technologies, Inc.	TTI	6.99	7.07	-0.08	-1.1%	9.79	4.62
Total Offshore Contractors, Service, and Support.....	99.76	91.14	8.62	9.5%	171.25	75.38	
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	64.07	61.05	3.02	4.9%	83.12	57.77
Gulfmark Offshore, Inc.	GLF	7.70	7.37	0.33	4.5%	32.65	5.85
Bristow Group	BRS	34.78	30.30	4.48	14.8%	75.00	24.95
PHI, Inc.	PHII	26.31	22.69	3.62	16.0%	43.05	18.75
Tidewater, Inc.	TDW	15.11	16.02	-0.91	-5.7%	39.82	12.75
Trico Marine Services, Inc.	TRMAQ.PK	11.66	11.07	0.59	5.3%	14.35	10.22
Hornbeck Offshore	HOS	15.91	16.67	-0.76	-4.6%	33.54	13.20
Total Offshore Transportation and Boat	175.54	165.17	10.37	6.3%	321.53	143.49	

Monthly Stock Figures & Composite Index

Industry	Close(Mid) October	Close(Mid) September	Change	Change %	High 52 week	Low
Diversified, Production Support & Equipment Companies	394.25	382.38	11.87	3.1%	518.89	310.18
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Total Offshore Transportation and Boat	175.54	165.17	10.37	6.3%	321.53	143.49
Total Offshore Source Index	799.72	761.96	37.76	5.0%	1,273.73	630.81

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.

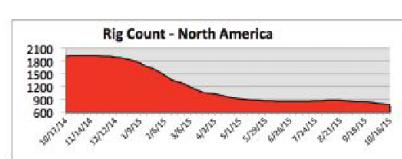
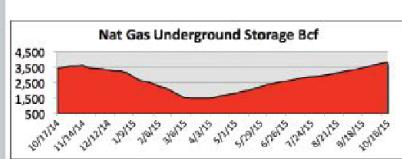
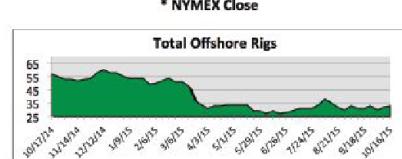
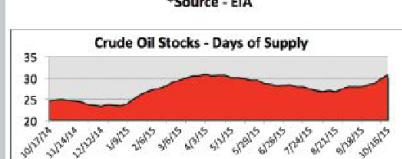
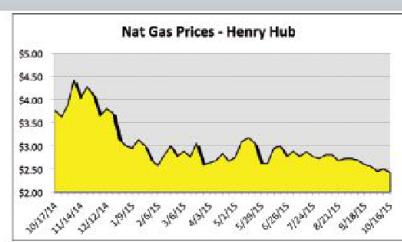
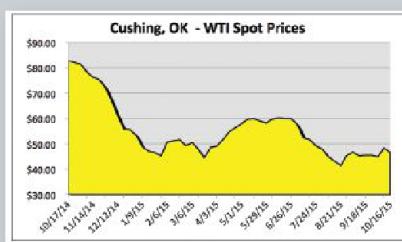
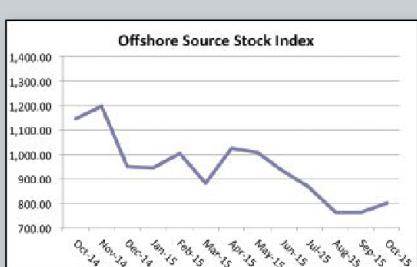
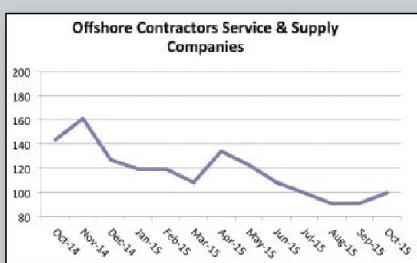
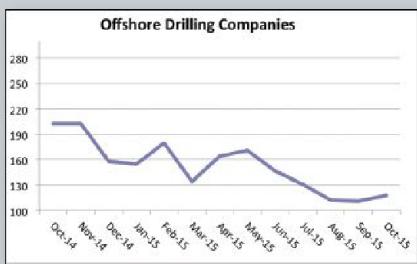
November 2015

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Ocean News & Technology

Oil & Gas Industry Trends

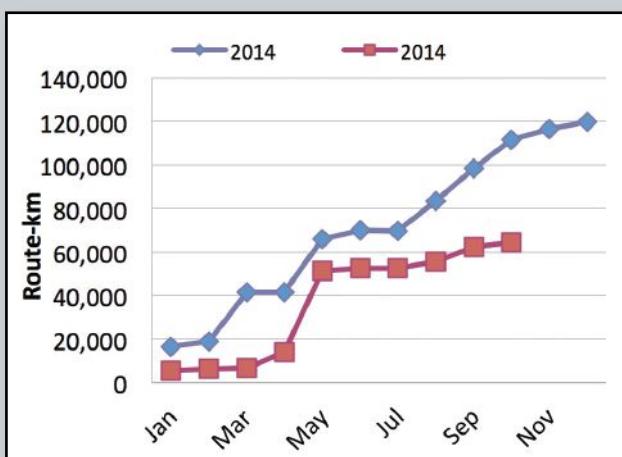
Monitoring the Pulse of the U.S. Offshore Oil & Gas Industry



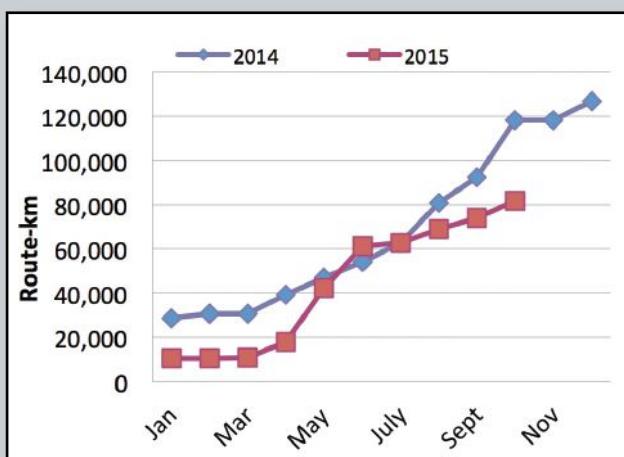
Positive trend, at least 3 weeks
Changing trend, less than 3 weeks
Negative trend, at least 3 weeks

Subsea Telecom & Power Cable Data

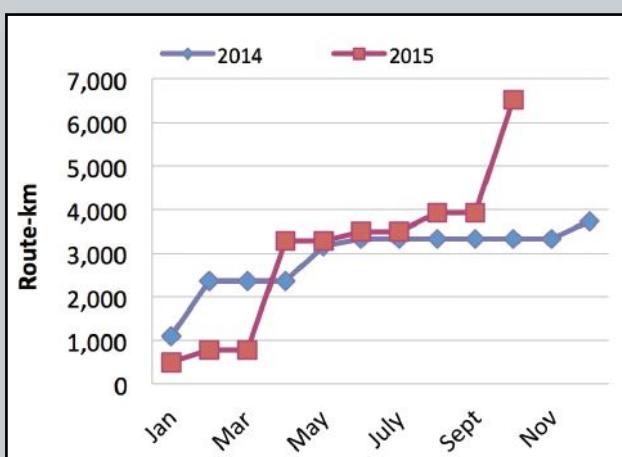
FO Cable Awards by Month



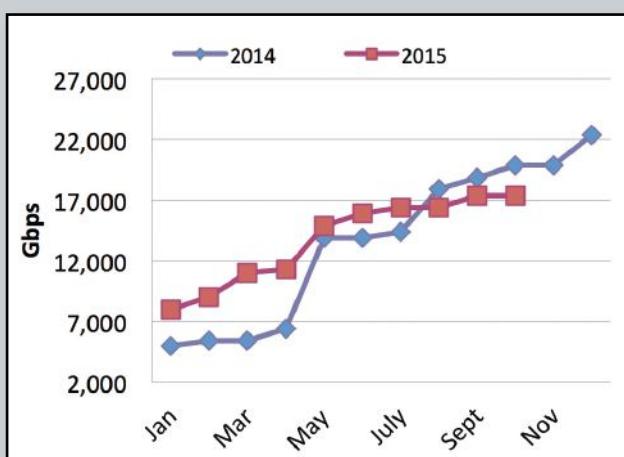
FO Cable Announcements



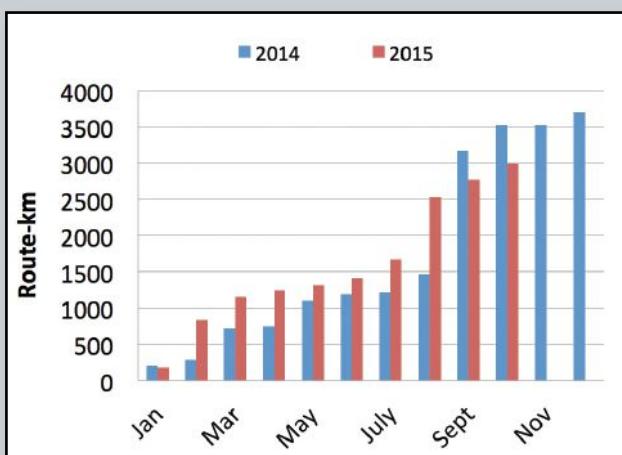
Submarine FO Cables Entering Service in Route-km



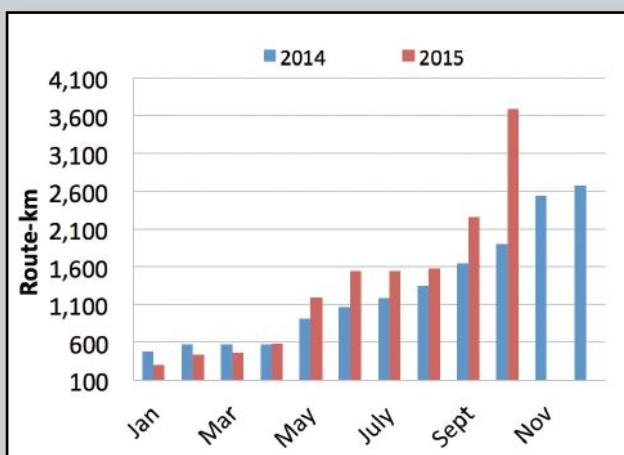
Upgrades of Existing Cable Systems in Gbps



Submarine Power Cable Awards in Route-km



Submarine Power Cable Announcements in Route-km



Gulf of Mexico Data

Current Deepwater Activity

Operator	Area	Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
Shell Offshore Inc.	WR	508	G17001	NOBLE JIM DAY	Stones	9,568
ExxonMobil Corp.	WR	584	G20351	MAERSK VIKING	Julia	7,120
Union Oil Co. of California	WR	677	G18753	PACIFIC SHARAV	Saint Malo	7,038
Shell Offshore Inc.	MC	566	G08831	NOBLE GLOBETROTTER	Fourier addition	7,015
Chevron USA Inc.	WR	758	G17015	T.O. DISCOVERER CLEAR LEADER	Jack	6,968
BP Exploration & Production, Inc.	GC	743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	6,853
BP Exploration & Production Inc.	GC	743	G15607	SEADRILL WEST AURIGA	Atlantis	6,826
Marathon Oil Co.	WR	225	G32668	MAERSK VALIANT		6,779
Murphy Exploration & Production Co.	DC	134	G23488	DIAMOND OCEAN BLACKRHINO	Dalmation	6,167
Repsol E&P USA Inc.	KC	686	G33341	ROWAN RENAISSANCE		6,162
Noble Energy, Inc.	MC	948	G28030	ATWOOD ADVANTAGE	Gunflint	6,094
BP Exploration & Production Inc.	MC	778	G14657	THUNDER HORSE PDQ	Thunder Horse North	6,031
Statoil Gulf of Mexico LLC	WR	160	G34634	T.O. DISCOVERER AMERICAS		5,861
Anadarko Petroleum Corp.	WR	51	G31938	DIAMOND OCEAN BLACKHAWK	Shenandoah	5,857
BP Exploration & Production Inc.	MC	775	G09866	SEADRILL WEST VELA	Thunder Horse North	5,673
Murphy Exploration & Production Co.	MC	819	G27312	T.O. DISCOVERER DEEP SEAS	Thunder Horse North	5,672
Eni U.S. Operating Co. Inc.	MC	772	G16647	ENSCO 8500	Triton	5,639
BP Exploration & Production Inc.	MC	776	G09867	SEADRILL WEST CAPRICORN	Thunder Horse North	5,636
Freeport-McMoRan Oil & Gas LLC	MC	127	G19925	NOBLE TOM MADDEN	KOQV	5,511
Freeport-McMoRan Oil & Gas LLC	MC	84	G08484	ROWAN RELENTLESS	King west	5,422
Anadarko Petroleum Corp.	GC	903	G24194	NOBLE BOB DOUGLAS	Heidelberg	5,254
Chevron USA Inc.	GC	807	G31752	PACIFIC SANTA ANA	GC 807 (Anchor Well)	5,183
LLOG Exploration Offshore, LLC	MC	253	G35491	SEADRILL WEST NEPTUNE	Delta House	4,927
ExxonMobil Corp.	AC	65	G09249	COIL TUBING UNIT (L.J. #3)	Diana (South)	4,852
Cobalt International Energy, LP	GB	958	G30876	ROWAN RELIANCE		4,846
BP Exploration & Production Inc.	MC	383	G07937	ENSCO DS-3	Kepler	4,727
ExxonMobil Corp.	EB	946	G08212	COIL TUBING UNIT (L.J. #3)	Diana	4,657
Anadarko Petroleum Corp.	GC	726	G24179	ROWAN RESOLUTE	Tonga	4,655
ExxonMobil Corp.	EB	946	G08212	T.O. DEEPWATER CHAMPION	Diana	4,652
Anadarko Petroleum Corp.	GC	683	G18421	DIAMOND OCEAN BLACKHORNET	Caesar-Tonga	4,473
BP Exploration & Production Inc.	GC	782	G15609	MAD DOG SPAR RIG	Mad Dog Phase 2	4,428
Hess Corp.	MC	725	G22898	STENA FORTH	Tubular Bells	4,311
Chevron USA Inc.	GC	640	G20082	TRANSOCEAN DEEPWATER ASGA	Tahiti 2	4,292
BHP Billiton Petroleum (GOM) Inc.	GC	609	G16764	T.O. DEEPWATER INVICTUS	Shenzi	4,288
Shell Offshore, Inc.	AT	18	G33863	STENA ICEMAX	Gnome	4,253
Statoil USA E&P Inc.	MC	942	G24130	MAERSK DEVELOPER	Mirage	4,200
Chevron USA Inc.	GC	596	G16759	T.O. DISCOVERER INSPIRATION	Tahiti North	4,023
Freeport-McMoRan Oil & Gas LLC	GC	643	G35001	NOBLE SAM CROFT	Holstein Deep	3,885
Shell Offshore, Inc.	MC	809	G05868	NOBLE DON TAYLOR	Ursa	3,848
Chevron USA Inc.	GB	978	G26693	T.O. DISCOVERER INDIA		3,836
Shell Offshore, Inc.	MC	809	G09883	H&P 204	Ursa	3,797
Anadarko Petroleum Corp.	EB	602	G14205	WIRELINE UNIT (L.J. DIST)	Nansen	3,678
Eni US Operating Co. Inc.	MC	35	G26234	ENSCO 8506		3,525
Shell Offshore, Inc.	MC	807	G07963	OLYMPUS N88	Mars	3,037
Shell Offshore, Inc.	MC	807	G09882	H&P 201	Mars	2,945
LLOG Exploration Offshore, LLC	GC	39	G34066	SEADRILL SEVEN LOUISIANA	GC039	1,955
LLOG Exploration Offshore, LLC	MC	794	G34909	NOBLE AMOS RUNNER		1,462
Hess Corp.	GB	216	G14224	NOBLE PAUL ROMANO	Penn State	1,450
Stone Energy Corp.	MC	26	G31474	ENSCO 8503	Amethyst	1,113
Fieldwood SD Offshore LLC	EB	165	G06280	WIRELINE UNIT (L.J. DIST)	East Breaks 164	863
Whistler Energy, LLC	GC	18	G05809	NABORS MODS 201	Boxer	760
Chevron USA Inc.	GB	189	G06358	WIRELINE UNIT (L.C. DIST)	Tick	718
Ankor Energy LLC	MC	21	G22850	NABORS MODS 200		668
Fieldwood SD Offshore LLC	EB	110	G02650	NONE RIG PA OPERATION (LJ)	Tequila	660
W&T Offshore, Inc.	EW	910	G13081	H&P 203		557

Deepwater prospects with drilling and workover activity: 55

Current Deepwater Activity as of Monday, 5 October 2015

Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,280	36,250	2,281
201 to 400	86	1,130	20
401 to 800	192	897	10
801 to 1,000	305	579	9
1,000 & above	2,930	2,071	28

Rig Activity Report 9 October 2015

Location	Week of 10/09	Week +/- Ago	Week +/- Ago	Year Ago
Land	760	-16	776	-1099
Inland Waters	3	0	3	-10
Offshore	32	2	30	-26
U.S. Total	795	-14	809	-1135
Gulf of Mexico	31	2	29	-25
Canada	180	1	179	-240
N. America	975	-13	988	-1375
				2350

Activity by Water Depth Information current as of Monday, 5 October 2015

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

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

Teledyne RESON introduces the SeaBat® T50-P for faster operational surveys, deliverables and reduced processing time

Teledyne RESON, one of the world's leading providers of hydrographic sonar solutions, announces the launch of the ultra-high resolution, portable multibeam echosounder, the SeaBat T50-P. The SeaBat T50-P is a new addition to the SeaBat T-series, introduced in the beginning of 2013 as a completely new product generation, built from the ground up.

Combined with the Portable Sonar Processor, the SeaBat T50-P delivers unprecedented clean survey data, providing faster operational surveys and reduced processing time. The SeaBat T50-P is fully frequency agile from 190 to 420 kHz allowing for improved swath performance and reduced survey time under difficult conditions.

It is designed for fast mobilization on smaller vessels and is optimized for shallow water survey companies, port and harbor authorities, dredging companies and other users looking for an ultra-high resolution system. The Portable Sonar Processor and sonar head form a compact system, securing minimal interfacing and low space requirements.

"The new SeaBat T50-P is the outcome of a dedicated product development effort over the last several years. The SeaBat T50-P is built on customer feedback and experiences gathered

in the market for compact multibeam echosounders, and utilises our foremost technology and performance whilst still delivering a competitively priced product," says Tim Lysholt Jensen, VP of technology and product management for acoustic imaging Products in Teledyne Marine. "With the incredibly clean data produced together with features like normalized backscatter, multi-detect and very advanced beamforming modes, the product provides fantastic customer value."

For more information, visit www.teledyne-reson.com.



New model of integrated pan & tilt (IPT2)

66

Coda Octopus announces the launch of its new onward developed Integrated Pan and Tilt (Model Number 2).

Our Model Number 2 incorporates a number of enhancements which draw from direct operational experience and invaluable feedback from our users to improve the effectiveness and ease of operation.

With nearly 40 units in operation in the field since this product was launched last year, the IPT has proved to be an extremely effective tool which, for a number of key applications have increased the scope and effectiveness of Echoscope operations. These operations have included cable and pipeline installation, ROV survey, static survey mapping, and breakwater construction. One of the key benefits of the IPT is being able to precisely control the movement of the real-time 3D Echoscope sonar head directly from our Underwater Survey Explorer (USE) software. This gives the user full control over the resultant survey data.

The enhancements include new faster speed of operation, new physical stop positions with engraved labelling and improved fixings.

Customers with Model Number 1 will be able to upgrade their systems through a competitively priced upgrade pack. This will incorporate all the enhancements included in the new model IPT2, plus complete servicing of the IPT and 12 months TEAM support.



For more information, visit www.codaoctopus.com.

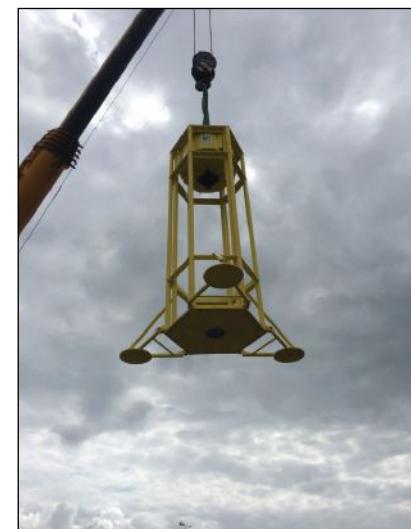
OSIL announces new lightweight Vibrocorer

UK-based Ocean Scientific International Ltd (OSIL) is pleased to announce a new addition to their coring portfolio—a lightweight version of their popular Vibrocorer.

The lightweight vibrocorer is roughly half the weight of the high-power version, but still retains sufficient structural strength and vibration force (30 kN) to drive the barrel up to 6 m into densely compacted sediments in up to 250 m water depth, courtesy of the vibrating motor contained within the sealed pressure housing.

The OSIL Vibrocorders have been designed as robust, easy-to-use, and easy-to-transport modular systems that minimize dockside assembly for quicker mobilisation and benefit from a simple deployment and recovery procedure, which suits its use on vessels of opportunity.

The system can either be assembled dockside or on the vessel itself into a 3 or a 6 m system before deploying over the stern. The unit has been designed for straightforward horizontal recovery on to the vessel and effortless removal of the core barrel and sample once back on deck.



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

Open Ocean launches Metocean Analytics

After 4 years of data collection and research, Open Ocean is now launching Metocean Analytics, a SaaS platform that reduces computation time by several months through its four major features: data catalog, analysis, visualization and reporting.

Metocean Analytics is a relevant decision-making tool for any company involved in the development of offshore projects (environmental department of large companies, operational departments, builders or contractors, subcontractors of these companies...). These companies must analyze the historical atmospheric and ocean data to learn about the working conditions in the area of interest, to identify wave or tidal energy potential, to design the structure to be installed, or maintenance planning. Currently, companies work with consultancy firms that produce data and analysis entirely by hand requiring 3 to 6 months to be able to provide useful deliverables.

Metocean Analytics gives users 24/24 instant access to meteorological and oceanographic data, statistical analysis results at the exact geographical points requested by the client and automatically generates accurate reporting. The time saving is significant and decreases from several months to a few hours. Metocean Analytics is a combination of expertise in ocean numerical, Maritime Big Data management and business and industry knowledge in the form of a SaaS software.

"Our customers (GDF-Suez/Engie, Siemens...) have a critical need for reliable and comprehensive ocean information. To build our offer, we integrate software components developed in-house with modeling techniques designed in public research laboratories, our knowledge of the sector as well as open data, correlated with our decision-making tool. With the launch of Metocean Analytics, we will address new markets such as offshore wind and offshore oil & gas", says Renaud Laborde, executive chairman of Open Ocean.

For more information, visit www.openocean.fr.

SULIS Subsea making big waves with new 4K imaging technology

During Oceans 2015, SULIS Subsea Corporation recently unveiled its newest deep-ocean imaging technology, centered around the Z70: a pioneering subsea camera product with unparalleled 4K optical capability.



SULIS's founder, Adam Gobi, designed the entire imaging pathway for James Cameron's Deepsea Challenger, including the world's first full-ocean depth 3D HD and 5K camera systems, and the submersible's full suite of imaging and recording subsystems. With an eye to offer the same level of imaging capability to underwater vehicles worldwide, he then headed home to Newfoundland to start SULIS and was immediately awarded several contracts to design new technology for the Schmidt Ocean Institute whose mission is to advance the frontiers of ocean research and exploration.

"I wanted to create a company that walked the line between commercial entity and research organization. While we will continue to seek commercial success, our principal mission is to conduct world-class R&D."

Born out of this work, SULIS now offers the total 4K package, covering the entire signal path. OCEANS 2015 will serve as a showcase for these innovations, including the Z70, a deepsea camera featuring 4K zoom optics and an ultra-wide angle field of view; the Brain box, a multi-faceted 4K video processing and recording solution; and Hyllum, a high-output hybrid video/flash lighting system.

For more information, visit www.sulissubsea.com.

Seanic delivers steel-tube flying lead flushing/parking frames

Seanic Ocean Systems Inc. (Seanic) is pleased to announce the successful testing and delivery of two steel-tube flying lead (SFL) flushing/parking frames to an oil & gas operator in the Gulf of Mexico. The SFL Frames were designed by Seanic's Engineered Solutions group and will be used exclusively in the pre-commissioning phase of an SFL, which includes the filling, testing and eventual flushing of the SFL and related components.

Each frame is designed for deep-water use and is rated to 15,000 PSI. Standing at 10 ft high, 15 ft wide, and 10 ft long, the frame incorporates a mudmat designed per all relevant

American Petroleum Institute (API) specifications, allowing the work to be performed on the seabed. The SFL flushing/parking frames are engineered for the short-term connection to flush the SFL's and are designed so they can be easily reconfigured for a range of future applications.

Seanic was approached by the oil & gas operator for the engineering and fabrication project earlier this year and was able to complete delivery within 4 months. "The SFL frames provide the necessary interface required by a work class remotely operated vehicle (ROV) to perform these vital tasks subsea," said Dane Ewing, project engineer at Seanic. "We took great care in building these components around the client's specific needs and upon the same principles used when designing our world renowned subsea tooling—Simple, Rugged and Reliable."



Tom Ayars, Seanic's president says, "Our new facility, which is currently under construction in Katy, Texas, will allow for large engineering projects like these to be fabricated from start to finish on site. With continuous client collaboration similar to what took place with the SFL flushing/parking frames, we can almost always save our customers time and produce a cost-effective product."

For more information, visit www.seanicusa.com.

New diveable control system for Deep Trekker ROV

Deep Trekker Inc. has released their new military underwater diveable control system at the Defence & Security Equipment International (DSEI) event.

The underwater diveable control system integrates seamlessly with the Deep Trekker ROV. The controller is depth rated to 75 m (250 ft) and can be equipped with up to 150 m of tether.

This advancement in underwater technology will increase the safety of military and stealth dive missions as well as give divers the ability to investigate areas too dangerous or remote for them to access. The underwater control

system provides the same easy to use controls for the Deep Trekker ROVs, while providing an integrated super-bright screen for viewing what the ROV camera sees, all while underwater.

Never before has there been a remote surveillance tool that can be controlled and operated while completing a dive. Surveillance missions or unknown territories can first be investigated by the Deep Trekker remotely operated vehicle while the diver remains a safe distance away.

"This is all possible through the unique Deep Trekker remotely operated vehicles design," stated Sam Macdonald, Deep Trekker president. "With on-board batteries, our ROVs do not require generators or topside power, meaning the unit is completely self-contained."

This completely portable underwater system from Deep Trekker enhances their line of products to include a solution to support divers throughout their missions and reduce their dive times.

For more information, visit www.deptrekker.com.

Intelligent load test system saves Technip time and money

Red Marine, based in Hexham, has delivered the load test system for the periodic load testing of the pipelay system onboard the Skandi Africa. The vessel has been specifically designed for pipelaying in harsh environments and in water depths of up to 3,000 m.

The innovative load test system allows all key pipelay system elements to be load tested safely and efficiently with a single, purpose built tool. This significantly reduces the time required to complete static overload testing prior to first operations and throughout the life of a pipelay system.



Each Load Test System delivered by the engineering powerhouse is tailored to meet its client's specific requirements. The Technip system was designed, manufactured, assembled and fully tested by the Red Marine team in only 14 weeks. Providing a test load of up to 850 tonnes, the system has already been used to complete the acceptance testing of the Skandi Africa pipelay system prior to the vessel commencing operations.

For more information, visit www.redmarine.com.

New low-light SeaCam® offers impressive performance in a tooling camera package

DeepSea Power & Light has expanded its camera offerings to include the Low-Light SeaCam® (LLSC). With a minimum faceplate illumination of 4.5×10^{-4} lux, the LLSC provides performance competitive with SIT technology for a fraction of the price. The compact form factor measures 124 mm long and 56 mm in diameter. The standard titanium housing is rated to 6,000 m with a glass dome port that enables an 85° horizontal field of view.



Swathe Services first to offer the new Valeport SWiFT for rental

World leaders in sound velocity technology, Valeport launched the new SWiFT SVP earlier this year and now Swathe Services are the first company to offer the profiler for hire.

Featuring high accuracy SV, pressure and temperature plus integral GPS, rechargeable battery, LED status indications for GPS, battery and communications, this hand-held profiler has been positioned by Valeport as their best, most professional and affordable SVP yet.

Benefiting from over 40 years of experience in the design and manufacture of precision instruments, this new profiler has been made from titanium to provide durability. It is easy to handle at just 2 kg and with a battery life of up to



a week, charging has been made easy via USB.

Official distributors of Valeport products, Swathe Services now offer the SWiFT for rental as part of a survey package, integrating seamlessly with all survey equipment, or as a standalone product. The SVP is ideal for coastal, harbor and inland hydrographic surveys.

For more information, visit www.swathe-services.com.

Suretank announces delivery of complex offshore engineered cabin

Suretank, the world's leading provider of engineered solutions to the offshore oil and gas industry, has successfully delivered its most advanced engineered cabin for the offshore market.

Designed for use as a control cabin, the highly complex A60 engineered cabin will be installed on an oil rig in a hazardous location. Up to six operators at a time can be seated in front of the control equipment while viewing the activity on the rig in front of them through special safety rated windows.

Donal Duggan, group research and development manager at Suretank, commenting on the unit said, "The design of this unit has been innovatively configured to suit the customer's specific requirements, whilst complying with the relevant codes, including DNV 2.7-1 and DNV 2.7-2. Our research and development engineers worked very closely with the customer throughout to ensure that the final product exactly met their requirements."

Suretank provides a range of A60 offshore workspace and accommodation modules to the global oil and gas and renewable energy industries.

For more information, visit www.suretank.com.



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Aker Solutions named **David Clark** regional president of the UK and Africa. Clark, a UK national, has more than 30 years of experience from the oilfield services, projects and contracting industry, most recently as vice president of production facilities for Schlumberger. He has also held leadership positions at Wood Group and Technip and has broad international experience in overseeing operations and new business developments. Clark will be based in London and work on expanding Aker Solutions' international presence with a special focus on the African market. He assumed the position on September 21 and reports to chief executive officer Luis Araujo.

David Beathard, former vice president of business development, strategy and planning for Linn Energy, was named a director in Tudor, Pickering, Holt & Co.'s upstream advisory business. Beathard, 56, will be based in Houston, Texas, and joins a team of roughly 30 professionals at TPH & Co. focused on upstream transactions. Beathard joined Pogo Producing Co. in 1982 after graduating from Texas A&M University with a bachelor of science in petroleum engineering. There he served as senior vice

president of engineering until November 2007 when Pogo was sold. Beathard then became managing partner of private equity-backed Arenite Western Energy from 2009-2010 until he joined Linn Energy in his most recent role as vice president of business development, strategy and planning. Beathard also serves on his alma mater's board of directors at the Strake Jesuit School.

EMAS Offshore Ltd. appointed **Capt. Adarash Kumar** as chief executive officer. **Jon Dunstan**, prior CEO, resigned to pursue other interests but will remain with EMAS until February 2016 to facilitate the change, the company said. Kumar, 55, has more than 25 years of experience in the marine industry. Prior to his appointment as CEO, he was Ezra Holdings group's CEO. Before joining Ezra Holdings, he was an assistant general manager of Bumi Armada Navigation Sdn Bhd. Kumar is a qualified Master Mariner and holds a Certificate of

Competency as Master of a Foreign Going Ship issued by the Malaysian Marine Department.

Newpark Drilling Fluids appointed **Tim Armand** as vice president of U.S. offshore operations. He most recently served as global account manager at M-I SWACO. Armand is a Louisiana native and graduate of Nichols State University.

Anadarko Petroleum Corp. elected **Dr. Sean Gourley** to serve as an independent director of the company. Dr. Gourley is the founder and CEO of Primer, an early-stage, venture-backed company building software to power artificial intelligence applications. Additionally, Anadarko said **Amanda M. McMillian**, formerly vice president, deputy general counsel, corporate secretary and chief compliance officer, was promoted to senior vice president, general counsel, corporate secretary and chief compliance officer. Anadarko's **Robert K. (Bobby) Reeves**, formerly executive vice president, general counsel and chief administrative officer, will assume the new title of executive vice president, law and chief administrative officer, and will continue to serve as a member of the company's executive committee.



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Dr. Richard McLaughlin has been appointed by the National Academy of Sciences to serve on its newly created Committee on Environmental Sciences and Assessment for Ocean Energy Management. McLaughlin is the endowed chair for Marine Policy and Law at the Harte Research Institute (HRI) for Gulf of Mexico Studies at Texas A&M University-Corpus Christi, specializing in marine and coastal law and policy. He is an expert on legal issues including the international law of the sea, ocean energy policies, trans-boundary resource management and marine ecosystem-based management.

John Bradshaw has joined the technical team at the International Marine Contractors Association (IMCA) as a technical adviser. Eight technical advisers work with the Association's technical director, technical manager and technical committees from the global membership formulating IMCA's work programme and developing guidance documents and reports aimed at increasing safety and efficiency within the industry. John joins from Lloyd's Register where initially in 2011 he was Lead Technical Specialist, and from April 2014 took on

the role of Principal Technical Specialist, developing rules and regulations for the safe construction and classification of ships and providing engineering consulting services.

Global inspection, repair, maintenance (IRM) and light construction company Harkand has united its African presence under the leadership of **Doug Fieldgate** as Africa general manager. Fieldgate has 23 years of experience in the African oil and gas market primarily focused on West Africa—he will be based in the North America and Africa operations headquarters in Houston and will lead the company's continued expansion into the region working closely with its consortium partners.

BIRNS, Inc. has announced that its Quality Management System (QMS) recently had its successful ISO 9001:2008 recertification audit carried out by DNV-GL. BIRNS' QMS was thoroughly reviewed across all applicable company departments and all standard elements to ensure proper implementation, procedure compliance and proof of continuous process improvements, as required by the Standard.

To ensure high-quality service and support to all of their Asian Pacific customers **Focal Technologies Corporation**, a Moog Inc. company, has entered into a sales and service partnership with their Focal global marine partner **MacArtney Singapore Pte. Ltd.** Serving as a one-stop service hub for all of the Singaporean region MacArtney Singapore holds extensive experience, expertise and a profound track record as a Moog Focal product service provider. In addition, they are backed by dedicated workshops already in place at MacArtney Group operations in Denmark, Norway, the UK, U.S., France and the Netherlands.

The **Stavanger Service Center** in Norway recently moved to new premises, with improved facilities that will enable more efficient workflows to accommodate the workload which has increased in recent months. Specializing in solutions for pumping applications, the new facility will expand the portfolio of services on offer to include turbomachinery services, which will enable the service center to become a single source supplier to the oil and gas sector.

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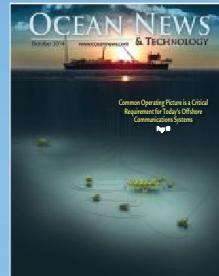
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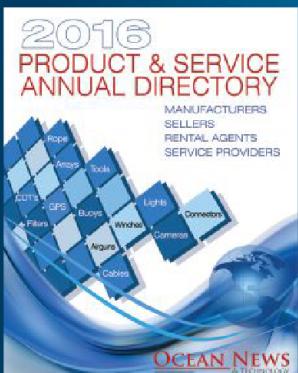
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