

Ocean

News for the Ocean Industry

March 2012

News & Technology

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**Record Year in 2011
200 Platforms Decommissioned
in the Gulf of Mexico**

**Sonar Use in Defense
and Homeland Security**

Feature Story – Page 10





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Photo: Christoffer Christensen

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ABOVE: The VideoRay Pro 4 Remotely Operated Vehicle (ROV) displays its powerful thrusters. Low cost, low volume VideoRay ROVs are ideal for rapid, one man inspections of submerged assets down to 1,000 ft. (305 m) when diving is dangerous or costly. Photo: Christoffer and Henning Klepp Christensen

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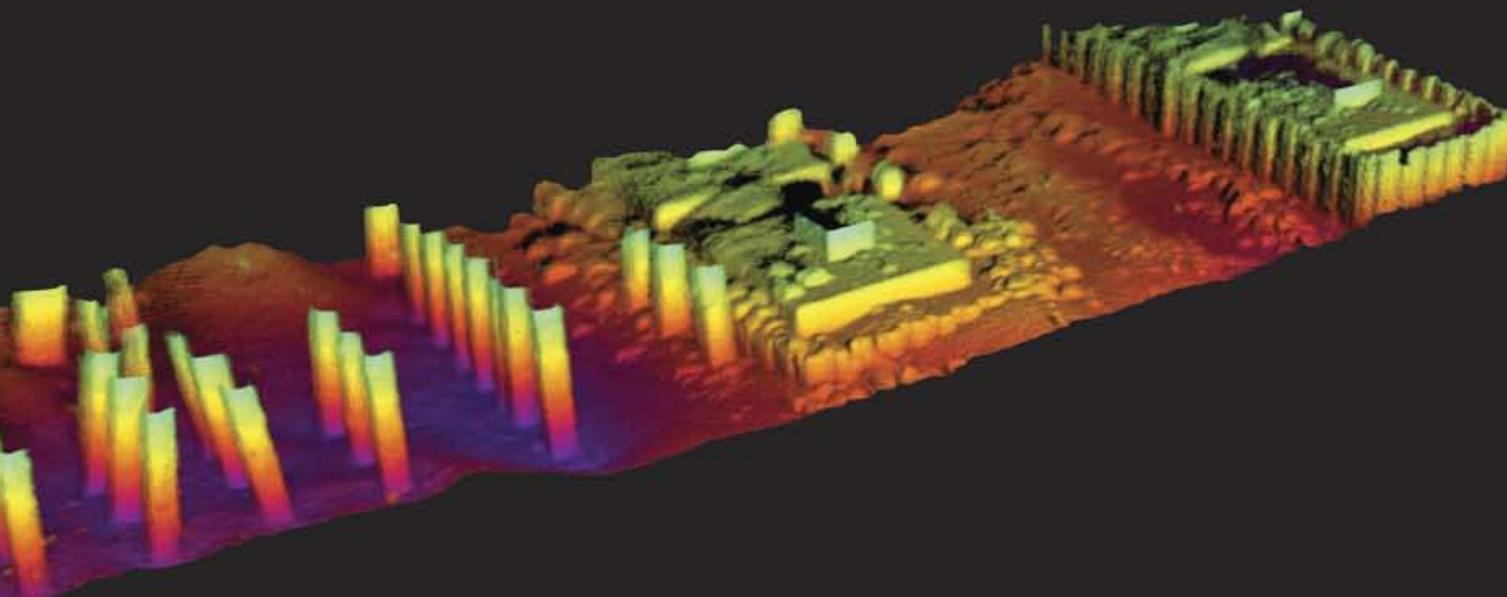
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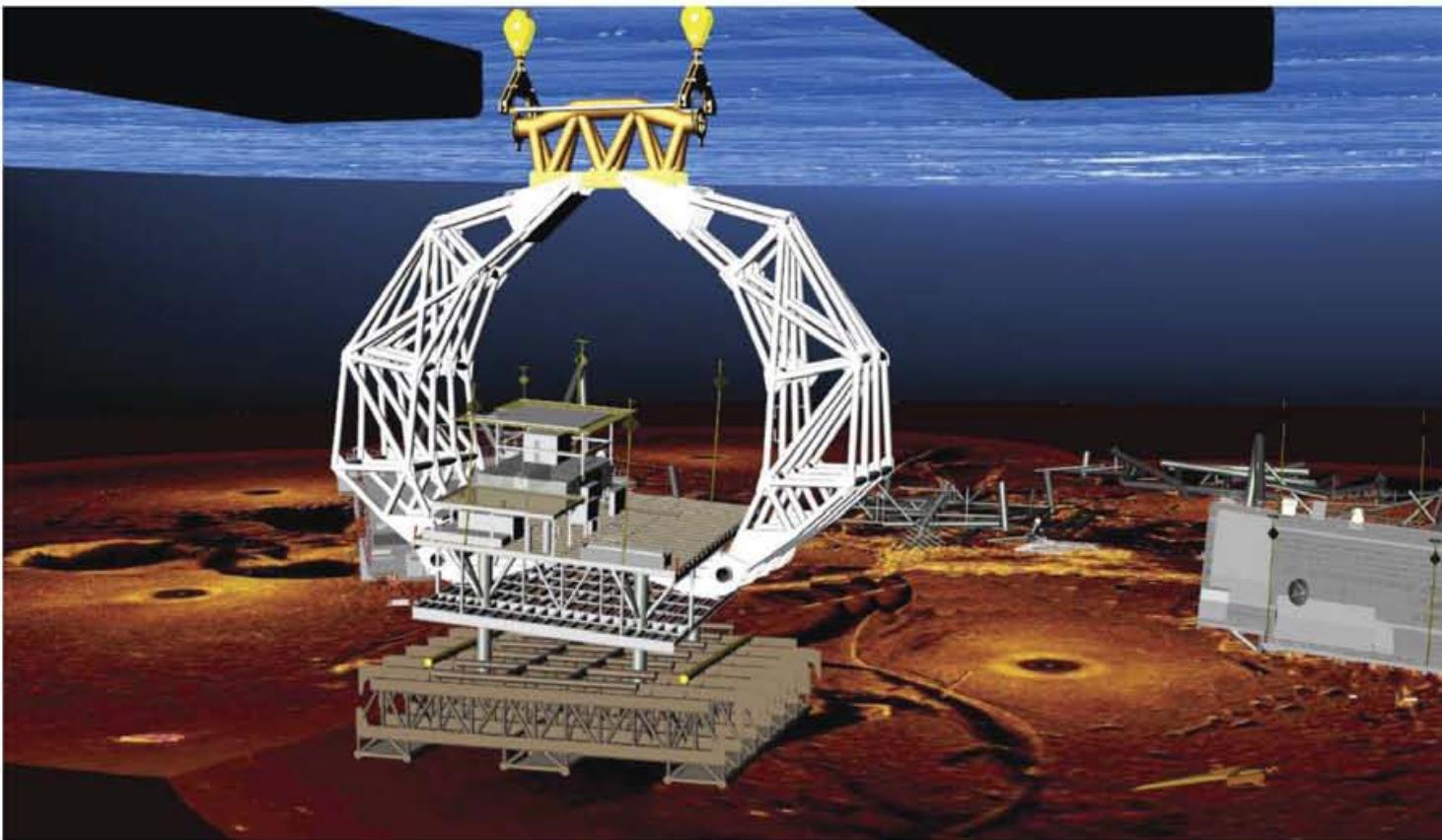
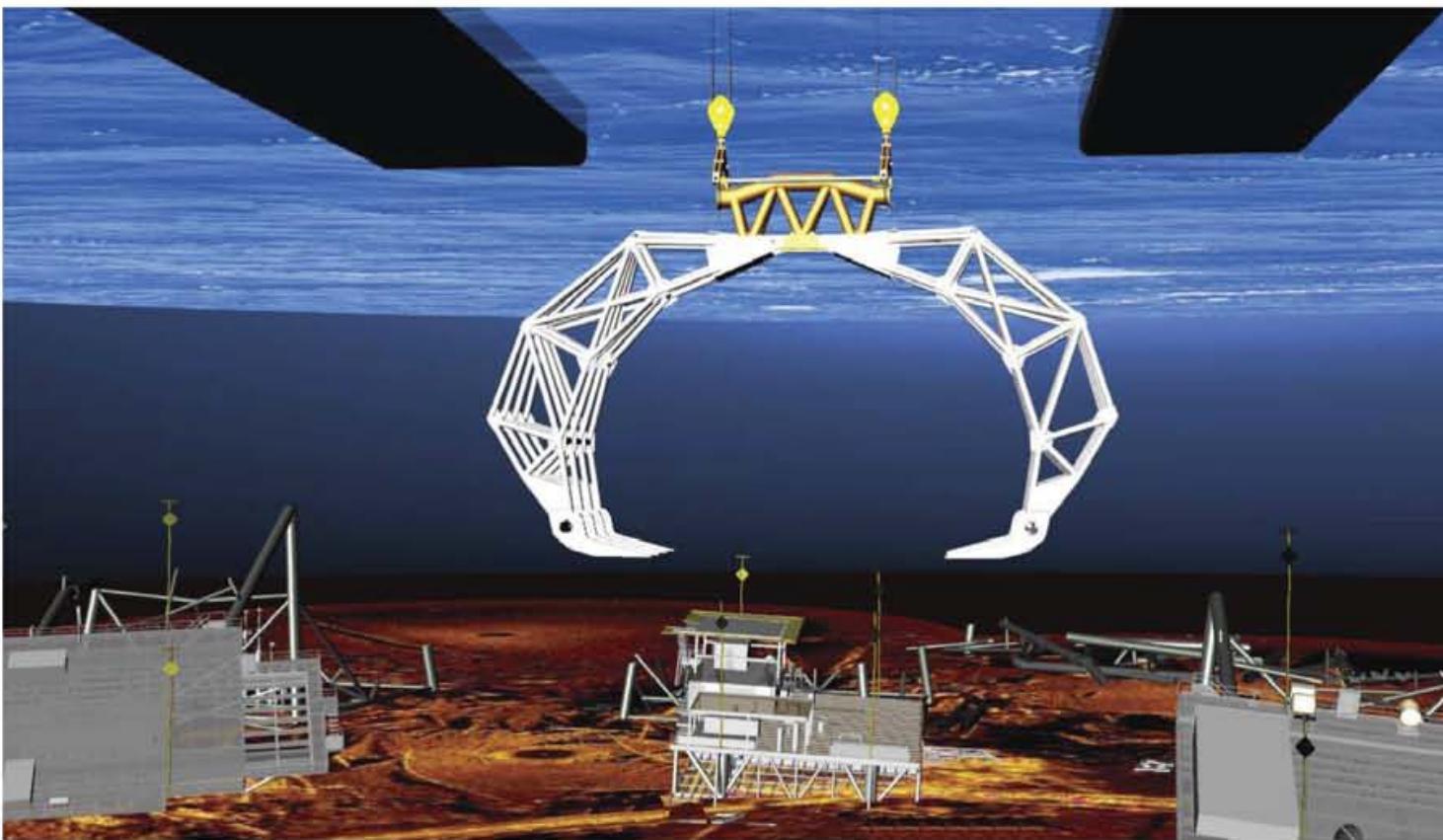


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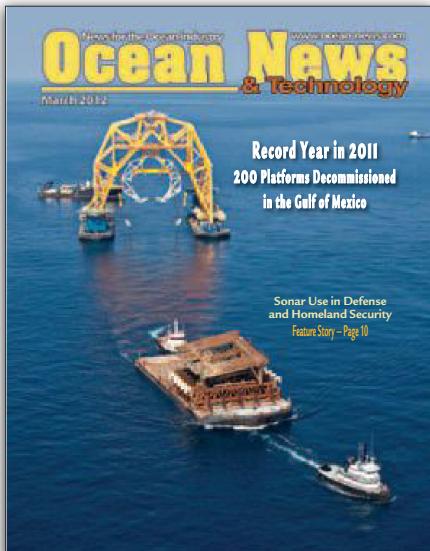
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The Versabar claw system after recovery of a sunken platform

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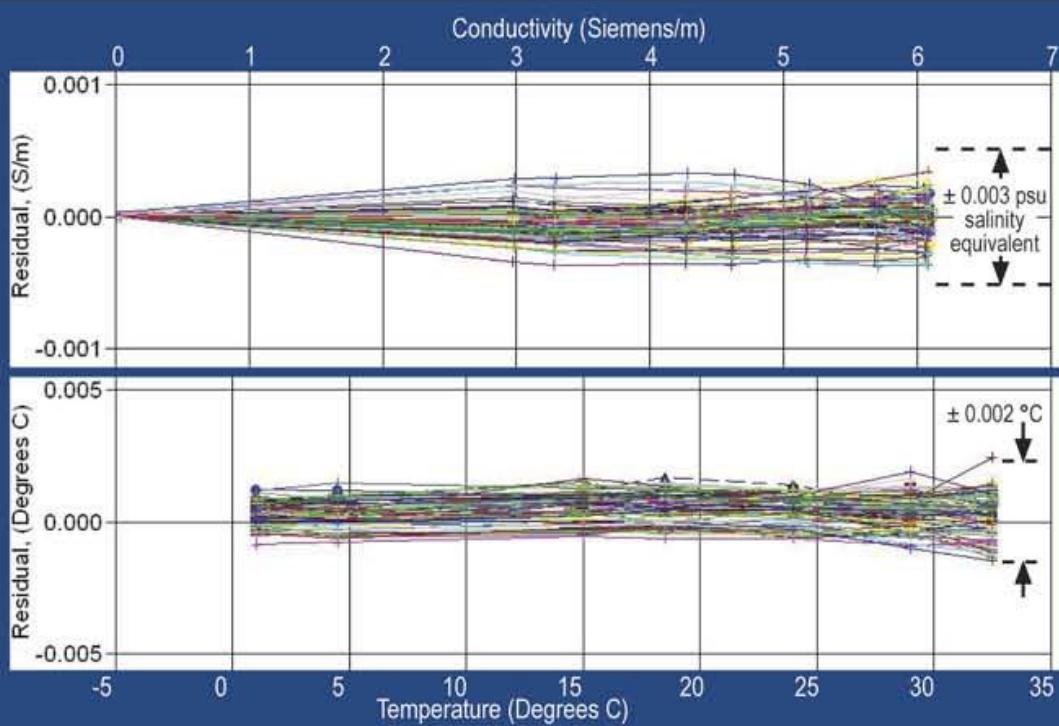


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Ocean News & Technology

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U.S. Navy Defense Budget Request Reveals Future Role

The recent \$613.9 billion DoD budget request that President Obama sent to Congress has made it clear that future military planners will rely more and more on the U.S. Navy.

The Army and Air Force took the brunt of the \$487 billion, 10 year budget reduction, while the Navy came out fairly unscathed with no major cuts and only some programs being delayed or stretched out several years.

Forcing the reduction in defense spending comes from a Congress mandate to trim the budget deficit and from the realities of the world recession. Economic turmoil in Europe has NATO allies looking at their own military reductions and reducing their commitments, such as an early turnover of security forces in Afghanistan. This only puts more of the responsibility and costs on the U.S.

At the same time, there are growing military concerns throughout the world that require a robust U.S. military presence. The funding request preview belied the current administration's views on the shape of future U.S. military presence, with a premium placed on the Navy's role in the Middle East and Asia-Pacific theaters. The Pentagon wants to project power in these theaters with a smaller and leaner force, which is best done with a strong Navy.

In the Middle East, troops are out of Iraq and operations in Afghanistan are winding down. Future missions are expected to be handled with more special operations units that can be launched from mobile Navy and Marine platforms.

Any future conflicts with Syria or Iran are seen as being handled by stand-off weapons and rather than involving American boots on the ground, which would prove to be more costly than the Iraq and Afghanistan wars combined.

This posture can be seen in the reduction of 8 Army brigades and 100 Air Force close air support A-10s. Meanwhile, the Navy keeps its 11 aircraft carrier force and its 10 air wings, remains committed to the 55-ship Littoral Combat fleet, and requests development of a new floating forward staging base that can be dedicated to support missions in areas where ground-based access is not available.

Also, there is a request to redesign future Virginia class submarines to increase cruise missile capacity. The current force of 9 big-deck amphibious assault ships will be maintained. In addi-

tion, development of LCS mission modules are continuing with protecting anti-submarine warfare and counter-mine capabilities high on the priority list.

The DoD briefing held earlier this year also noted that funds will be requested for "forward station LCSs in Singapore and patrol craft in Bahrain."

On the defensive front, the budget request protects funding for development of new sea-based intelligence, surveillance, and reconnaissance (ISR) systems, while surface warships equipped with the Aegis combat system become the keystone to future missile defense systems.

In addition to shifting the Pentagon's efforts to fighting a more limited, stand-off conflict, it also, and more importantly, shifts the Pentagon's priority to the Asia-Pacific region. The obvious threat is the rising strength of China, which is seen as a force that must be countered.

Pacific nations such as Japan and South Korea, as well as many U.S. leaders, have been concerned with America's pre-occupation with the Middle East and long years of warfare there. They are concerned with American war fatigue and defense spending cuts at a time when China is ramping up defense spending.

China's regional threat was largely limited by its coastal Navy, unable to project its power much outside of territorial waters. But recently, China has launched a retrofitted Russian Aircraft carrier and, it seems, is intent on launching more in the future. This is in conjunction with its asserted territorial claims to disputed islands that would give it broad sway over oil and gas rights in the East and South China Seas.

Based on the current White House and DoD budget request, it seems these concerns have been taken seriously.

Other highlights of the Navy budget proposal include:

- The investment of nearly \$13 billion per year in shipbuilding.
- Overall battle force of 284 ships.
- The John F. Kennedy Carrier will be delivered no later than 2022 in order to maintain the 11 carrier force.
- Support for the development of the Ohio class replacement program continue, although at reduced levels.

To view the proposed FY 2013 Navy budget documents, visit <http://www.finance.hq.navy.mil>.

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Sonar Use in Defense and Homeland Security

How Advanced Underwater Sonar Technologies are Protecting Ports and Police and Foiling Drug Smugglers

By Steve Campbell

A diver swims up to a ship docked at portside and quickly detaches something from the hull. Terrorist divers swim up to a ship to sacrifice themselves as suicide bombers, blowing up the ship or, in the case of Mumbai in 2008, attacking tourist hotels. These incidents highlight a hidden weak spot in perimeter security. How are we ensuring the underwater security of our ports?

While extensive security precautions apply to air travel and important land installations, the civilian maritime industry is relatively unprotected. Ports can be entered easily by vessels, especially small and medium-sized ones, and there are virtually no restrictions controlling the presence of scuba divers in a port and what they do once they're in the water. Ports, bridges, ships, and piers are often wide open for access by criminal or terrorist organizations.

Overly focused on above-water security

Perimeter security is often focused on solving land-based vulnerabilities (i.e., the weaknesses and opportunities in plain view that can be addressed through fencing, security cameras, checkpoints, badge systems, etc.). Unfortunately, the underwater vector of intrusion is out of sight and often out of mind. Planners frequently miss the hidden threat presented by divers, drug smugglers, and terrorists coming in under the water. It is a threat that is very real.

“Observation-class ROVs incorporating sonar are finding application by customers in offshore oil and gas operations and inspections, for underwater inspection of ship hulls at sea or at dockside, and by military and civilian police.”

Extremists attacked hotels in Mumbai in 2008 using commandeered boats. In another case, Tamil Tiger suicide divers blew up a naval supply ship docked at portside. Drug smugglers have been known to attach contraband to the underside of ship hulls for transport and then retrieve them once the ship is in dock at its destined port. Underwater or surface intrusion is already a reality, and the integration of sonar into waterside security systems is the solution.

Sonar detection and monitoring advances

Since its invention and usage beginning halfway through the twentieth century, underwater sonar technology has been advanced by such innovations as improved portability, expanded image resolution, and greatly enhanced processing capabilities for incoming data.

Side-scan and scanning sonar are the two main modern product technologies, both of which have different but complementary applications. Side scan sonar emerged in the late 1960s and is useful for mapping very large targets or areas, such as for seabed



surveys that may go on for thousands of meters. In the mid-1980s, scanning sonar emerged as a new technology, enabling a more detailed and rapid examination of complex geometric structures, such as ship hulls.

Advances in sonar technologies are now allowing surveillance operators to set up a multibeam sonar system that can track movements by divers and other small targets of interest in harbors, and around ships and piers. Typical systems can monitor within a range of 400m to 800m and cover a 360° area, detecting and tracking movements of targets exhibiting diver-like characteristics. One innovation is the continuing application of state-of-the-art computing processing speeds to better analyze and organize incoming signals and data from the sonar.

Using advanced computing algorithms, it is now possible to differentiate divers from seals and other animals nearly every time. In all cases, the technology delivers the ability to spot and track divers (or submersibles) and determine their direction and speed. Then a diver interception team is sent out to interdict the intruder.

Sonar-integrated observation-class ROVs are a step up underwater

Advances in enhanced portability through miniaturization means that these sonar technologies can be moved around as

needed (e.g., for times when high-value targets such as naval fleets or cruise ships enter a harbor). Improving the mobility of sonar monitoring technology injects an element of uncertainty for the criminal and terrorist elements.

In addition, as technological advances allow sonar products to shrink — now reaching the size of a bread box — while maintaining or increasing resolution and analytical accuracy, the opportunity has emerged in recent years to integrate sonar onto observation-class remotely operated vehicles (ROVs).

Smaller than a traditional work-class ROV, the observation-class ROV is available for visual inspection and light intervention tasks and is capable of carrying smaller payloads. A range of sensors, indicators, sonars, and cameras can be mounted to the ROV as needed, making the observation-class ROV perfect for undertaking routine maintenance sonar checks of subsea structures, providing additional support to work-class operations and visually checking on unusual objects or divers detected on sonar.

“Observation-class ROVs incorporating sonar are finding application by customers in offshore oil and gas operations and inspections, for underwater inspection of ship hulls at sea or at dockside, and by military and civilian police,” said Phil Andrew, manager of underwater surveillance for Kongsberg Mesotech, the leading provider of underwater surveillance sonar. “The value of these ROVs is that they can eliminate the unnecessary use of dive teams in risky or challenging circumstances and enable unmanned inspections to go on at any time of day or night, as needed.”

Enhancing police dive team safety and productivity

Ultimately, the foundation of underwater security rests with the police or military dive-team members who must submerge in order to enforce the law and maintain security. These divers face extreme risks as part of their regular duties (e.g., freezing cold, turbulent water with poor or zero visibility).

They will often do this work on their own time to solve criminal investigations, locate contraband/or bodies, or map out underwater crime scenes. In murky waters, they regularly have to reach out and feel around by hand, when there could be razor-sharp glass or sheet metal inches from their face or blocking their way. Often, they have absolutely no idea where those hazards may lurk.

“Sending a police officer underwater in zero visibility without scanning sonar is like sending an officer on patrol without a bulletproof vest.”

In many of these cases, sonar equipment in either portable form or on observation-class ROVs becomes their eyes down below as observers on the surface monitoring the sonar screens tell them exactly where the targeted objects and hazards are positioned. From a risk-management and injury-prevention viewpoint, this technology's ability to help safeguard divers while they're working underwater may be its most valuable use to police forces.

Sonar's ability to enhance the safe operation of a police dive team is critical to police departments. According to Sergeant Rob Riffel, dive team supervisor for the Winnipeg Police Service, “Sending a police officer underwater in zero visibility without scanning sonar is like sending an officer on patrol without a bulletproof vest.”

Another critical factor in managing dive teams is making the absolute best use of the limited time divers can remain underwater. Instead of fumbling around a seabed crime scene as if blindfolded in a darkened room, divers are directed exactly where to go by the sonar technology. In a body-recovery situation, for instance, surface observers can send them straight to the correct spot while steering them around any potential hazards.

There is often a large amount of evidence to recover in an underwater crime scene. In these cases, sonar can be utilized to first map out and then take a picture of the scene, providing a detailed record. Later, on the surface, this image can be reviewed such that a productive program of recovery work can be developed and implemented — all of which makes the time spent underwater significantly more productive. This application is not just theoretical: scanning sonar has proved to be a useful tool in underwater searches for weapons in several recent cases in the midwestern U.S.

As long as criminal or terrorist groups desire to enter our ports, security forces will have to be vigilant. Underwater sonar technologies are helping these forces be much more productive — not only in protecting our ports, bridges, and infrastructure from incursion, but also in helping ensure the personal safety of the police personnel whose job is to go “into the deep.”



Making searches and evidence recovery more productive

The use of sonar makes underwater evidence recovery diving operations much more productive. Divers are no longer feeling around in the dark or murky waters trying to guess where the problems are, reaching out blindly, or swimming straight into hidden sharp objects. When the divers are sent down, the operation has a specific target that can be

addressed immediately. Operators are the eyes of the divers, in effect, and can use the sonar with an eye to avoiding dangerous hazards, such that progress can be achieved quickly and safely.

The need to patrol the soft underwater belly of our ports is a growing trend that's gaining public awareness, not to mention focusing attention on the significant safety risks faced by police dive teams every time they conduct police operations underwater. While sonar is helping catch criminals, it's also improving productivity and safety in these dives.

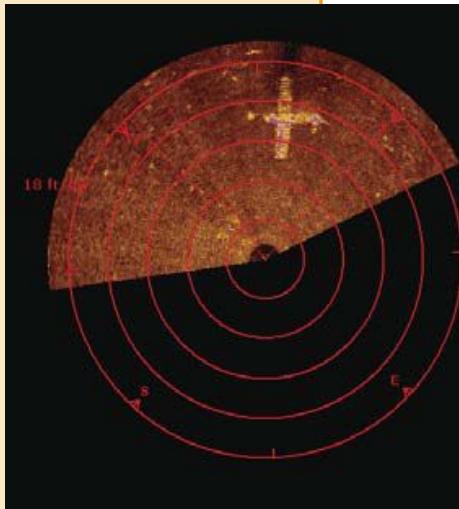
“The safety of police dive teams is the top priority for any underwater search, and these often occur in murky or turbulent waters where you can't see even your hand in front of you,” said Sergeant Jeff Morgan, commander of the San Bernardino County, California, Sheriff's Department Dive Rescue Team. According to Morgan, “Advanced sonar technologies enable the dive operation manager to know exactly what is down there, pinpoint its location for a quick recovery, and make the dive much more efficient and safe for the divers.”

Sonar's value in making diving operations more productive and safe can be seen in one case in San Bernardino County in California. There, a plane crashed into Big Bear Lake, in full view of eyewitnesses (including one deputy sheriff) who pinpointed the exact entry point. What searchers didn't know is that, once in the murky lake, the plane's forward momentum propelled it a further 80yds from the entry point. Given the poor visibility, it might have taken days to find the plane. Instead, using sonar, the sheriff's department was able to locate it quickly and bring it up in a few hours, saving countless hours and budget dollars.

For more information, visit www.kongsberg.com.

About the author:

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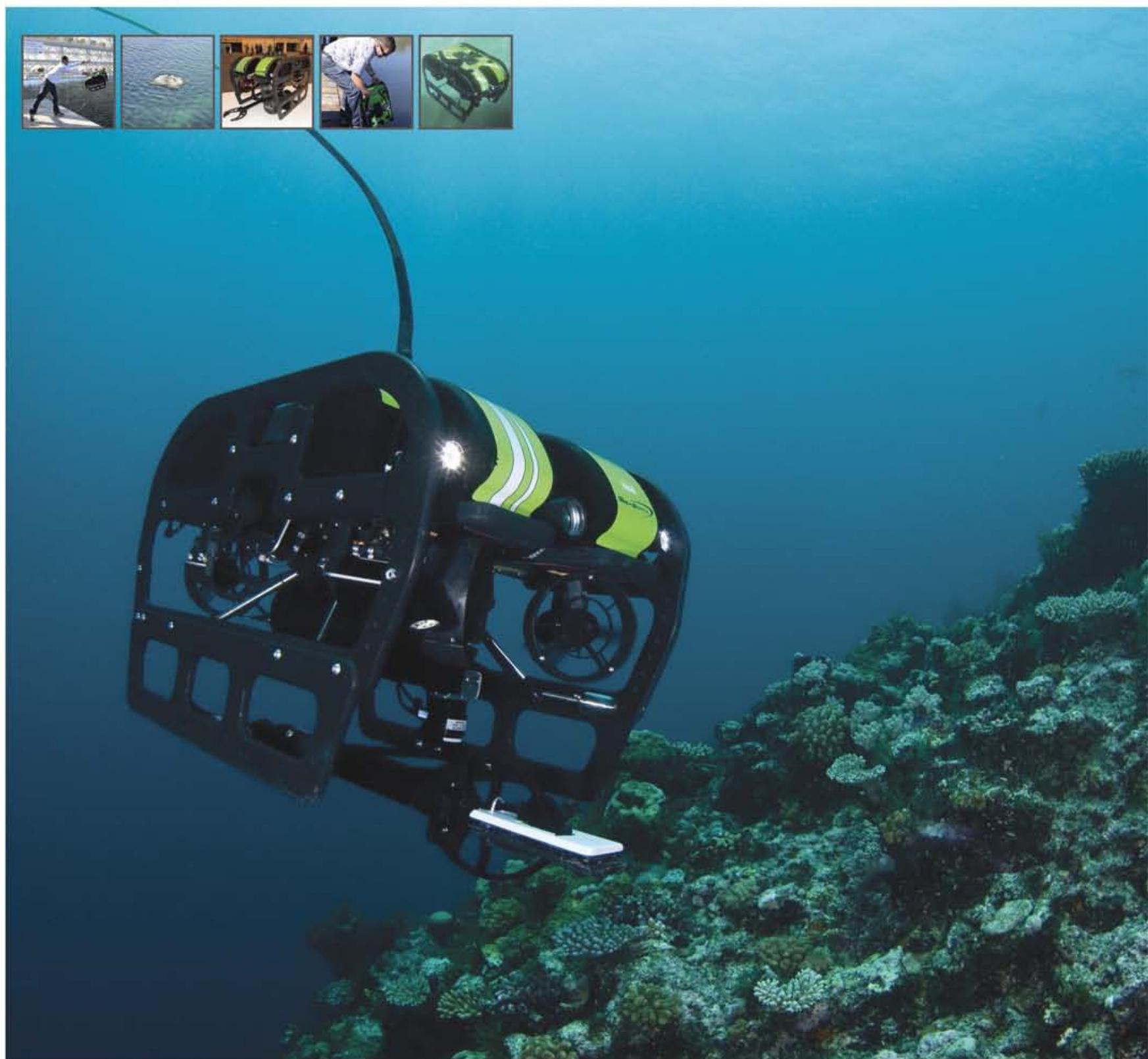
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OCEAN INDUSTRY

Hunley now fully visible for first time since 1864

Seeing the Hunley has never been easy. For over a century, the submarine was hidden by the depths of the sea. Since the Hunley was recovered in 2000, she has been obscured by a steel truss mega-structure that was used to lift her from the ocean. Recently, that changed and the Hunley is completely visible for the first time since 1864.

The 50ft, 17,000lb truss that has long been a view-blocking appendage sitting on top of the Hunley was carefully removed by experts in what was, at times, a delicate procedure. Though necessary for the Hunley's safety, the truss has also completely obstructed a full viewing of the submarine until now.

Next, modifications will begin on the Hunley's 90,000gal (U.S.) conservation tank. The tank, which currently holds chilled fresh water to stabilize the submarine as she awaits treatment, needs to be altered in order to accommodate the chemicals necessary for conservation.

Scientists hope to have the submarine soaking in the chemical bath by the end of this year. The solution is designed to slowly leach out the salts that infiltrated the Hunley's iron during her 136-year stay on the ocean floor. Those salts are toxic to iron and threaten the very survival of the world's first successful combat submarine. After several months of soaking in the solution, the layer of concreted sand, shell, and silt that encases the Hunley will be carefully removed, allowing for a faster pace of conservation.

For more information, visit www.hunley.org.



Image courtesy of Friends of the Hunley

General Dynamics awarded \$26M task order from the U.S. Department of Interior

General Dynamics Information Technology, a business unit of General Dynamics (NYSE: GD), has been awarded a task order by the U.S. Department of Interior, Bureau of Safety and Environmental Enforcement to support the Offshore Energy and Minerals Management (OEMM) program. This 3-year task order has a potential value of \$26.2 million if all options are exercised.

General Dynamics will deliver mission-specific infrastructure and applications to support the OEMM program as it manages oceanic energy resources. The company will develop and maintain new applications and provide system integration, infrastructure and operations support, and project management. General Dynamics has provided the OEMM program IT and information management support for the past 7 years. The work on this task order will be performed primarily in New Orleans, Louisiana; Camarillo, California.; and Anchorage, Alaska.

The OEMM program is responsible for minerals resource management on more than 1.7 billion acres of the Outer Continental Shelf (OCS). There are currently about 43 million acres leased to private industry for oil and gas development. Production from these leases accounts for almost 27% of U.S. domestic production of crude oil and 15% of its natural gas.

For more information, visit www.geraldynamics.com.

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Apology to our readers

In the last issue of ON&T, a publisher's nightmare occurred. An uncorrected version of several pages of the magazine, including the cover, made its way into print. We have incorporated new procedures to our QA checks to make sure this never happens again. We apologize to our readers and advertisers for these errors.

Thank you, Dan G. White, Publisher.

ORE Offshore is adopting the EdgeTech brand name

The two divisions have been operating successfully under one roof for many years, and the company is excited to continue building its strong reputation under one common name moving forward. The talented engineering, manufacturing, and services personnel have been working in collaboration for over 10 years, and the organization is looking forward to this natural progression of events. This migration to a single, industry-recognized and respected name, EdgeTech, should make it easier for customers to understand who we are and will provide them the comfort of placing one call to an organization that is knowledgeable and willing to help in the field of underwater acoustics, imagery, and related technology.

BOEMRE awards \$5.6M for arctic environmental study

The Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) announced it has signed a cooperative agreement with the University of Texas at Austin and a team of highly qualified and experienced Arctic researchers for a comprehensive study of the Hanna Shoal ecosystem in the Chukchi Sea off Alaska's northwest coast. BOEMRE analysts and decision makers will use the information developed by this study in future National Environmental Policy Act (NEPA) analyses and decision-making regarding potential energy development in the Chukchi Sea.

Greenpeace: defending our oceans is not a crime in Taiwan

Greenpeace East Asia oceans campaigner Yufen Kao received a not guilty verdict in Taiwanese court on charges of aggravated defamation brought by Taiwanese shipping company Chang Soon, owner of the Vanuatu-flagged fish carrier ship MV Lung Yuin. Greenpeace staged a peaceful protest against the vessel in January 2011 over its apparent failure to meet a registration requirement under Taiwanese laws and its reported history of involvement in illegal activities in 2004. Greenpeace hailed the verdict as a step forward and urged the government to take a more progressive role in protecting the Pacific for the future of the region's people and economy.

CSA develops seabed restoration methodology program

CSA International, Inc. (CSA) has initiated a program to develop a remediation methodology that can be successfully utilized with marine sediments that have been subjected to excessive loading with organic compounds, particularly in deepwater environments where biodegradation processes are slowed due to low temperature. To address this problem and in consideration of the inherent difficulties associated with working in deepwater, CSA has combined proven mechanical and biologic technologies to be applied in a unique way.

CSA has assembled the engineering and scientific team to take the program forward and has now completed the Preliminary Design Effort. The concept incorporates proven subsea equipment modified to deploy specific tools developed by the program to properly restore the deepwater seabed through the use of both mechanical and biological systems.

"The capability and capacity advancement of free flying and seabed crawling remotely operated vehicles (ROVs) has finally allowed us to deploy technology to the seabed in a way not previously possible," stated Kevin Peterson, President and CEO of CSA. "By combining proven ROV tooling technology with the application of known biological compounds, we're able to positively affect the remediation of marine sediments, speeding up its natural recovery."

Phase II of the program includes a Pilot Study, during which the efficacy of the prototype will be evaluated in the lab. Phase III will build and test the full size tooling required to be deployed by ROVs of opportunity.

For more information, visit www.csaintl.com.

First European human-powered submarine races

Building and racing human-powered submarines may not be an Olympic sport, but the inaugural European International Submarine Races (eISR) being held at Gosport, Hampshire, UK during the week of 25 June 2012 is set to capture the imagination – and test the engineering expertise and stamina of enterprising university students from three continents.

The eISR will take place in QinetiQ's Ocean Basin, the largest freshwater tank in Europe, which, at

122m x 61m and 5.5m deep, has the capacity of 16 Olympic swimming pools and is normally used to assess the manoeuvrability of scale ship and submarine models in different sea conditions. From 25 to 28 June, it will be the setting for teams from Canada, France, Oman, UK, and U.S. They will all have designed and built their own submarines to race them flooded, piloted, and pedalled by a scuba diver, with the teams constantly modifying their craft during the week to perfect their performance. Typically, the submarines range in length from 3m to 4m and travel at up to 7kts.

Currently, registered teams participating in the event include École Polytechnique de Montréal; École de Technologie Supérieure, Quebec; Sultan Qaboos University, Oman; University of Bath, UK; University of Michigan, U.S.; and Texas A&M University, U.S.

For more information, visit www.subrace.eu.

Triton Submarines launches revolutionary submersible

Triton Submarines (Triton) announced that its newly completed submersible, the Triton 3300/3 (3,300ft capable/3 passenger) took its maiden dive off Grand Bahama Island this December. Triton was joined by a group of the world's leading marine scientists, representatives of the international media, and a select group of yacht owners who are potential Triton customers.



Image courtesy South Florida Dive Journal

The transparent pressure hull of the Triton 3300/3 is the largest and thickest acrylic sphere ever manufactured for a submersible at 84in. diameter and 6.5in. thick. The transparent hull provides an unmatched underwater viewing experience ideally suited to exploration, filming, observation, and scientific research.

Triton's goal is to create renewed interest in the world's oceans by providing scientists, researchers, explorers, and filmmakers with the ability to observe and present the sub-sea environment in spectacular fashion com-

mensurate with today's technological advances. The 3300/3 is another step in realizing Triton's vision.

Earlier, Triton announced its plans to build the Triton 36000/3, a full ocean depth submersible, capable of diving to the deepest spot in the ocean, the Challenger Deep, utilizing a fully transparent, high-pressure glass hull as the passenger compartment. The Triton 36000/3 will employ many of the design elements of the Triton 3300/3, including an almost identical internal chassis.

For more information, visit www.tritonsubs.com.

Obama administration announces steps toward leasing for offshore wind projects in mid-Atlantic

Echoing President Obama's State of the Union call for an "all of the above" energy strategy, the Department of the Interior marked a major milestone for offshore wind energy along the Atlantic coast.

Secretary of the Interior, Ken Salazar, and Bureau of Ocean Energy Management (BOEM) Director, Tommy P. Beaudreau, announced that the department's renewable energy initiative has cleared an important environmental review, allowing the Interior to move forward with the process for wind energy lease sales off Maryland, Virginia, New Jersey, and Delaware.

BOEM's NEPA assessment found that there would be no significant environmental and socioeconomic impacts from issuing wind energy leases in designated (OCS) areas off the mid-Atlantic Coast. BOEM also published Calls for Information and Nominations for Maryland and Virginia to solicit lease nominations from industry and request public comments regarding site conditions, resources, and multiple uses of the Wind Energy Areas.

Additionally, the Bureau announced the finalization of a first of its kind lease form that will help streamline the issuance of renewable energy leases on the OCS. An essential tool to provide access rights to renewable energy resources, the Bureau solicited public comment and conferred with industry, environmental non-governmental organizations, and other stakeholders in the development of the form. Financial and other terms, as well as any site-specific mitigation measures, will be added to each individual lease before it is executed.

For more information, visit www.boemre.gov.



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Kongsberg Maritime Polaris Bridge Simulator approved to latest DNV standard

Kongsberg Maritime's cutting-edge Polaris Bridge Simulator has received new DNV approval for the product category Bridge Operation Simulator, which includes notifications for training on integrated bridge systems, including integrated navigation systems. The simulator enables flexible training in ship handling, manoeuvring, and navigation based on cutting-edge visuals and realistic hydrodynamic modeling. Polaris may be delivered as a full-mission, 360°, motion platform-based integrated simulator, a part task simulator (ECDIS, radar etc.), a PC-based desktop simulator, or as any combination of these.

Veripos positioning for BP vessels

Veripos, a world leader for supply of high-precision GNSS positioning support to the offshore oil and gas industry, has been awarded an extension to its contract with BP under which it will continue to provide precision positioning for the energy company's turret monitoring system aboard its floating production storage and offloading unit in the West Shetland Basin, BP Schiehallion. With the extended contract, Veripos remains responsible for supplying the vessel with its dual-beam standard positioning service to ensure meter-level accuracies, with seamless correction data being delivered by two independent satellite broadcasts.

World Wide Supply orders 2 additional Damen platform supply vessels

Norwegian shipowner World Wide Supply (WWS) has ordered another two PSV 3300 CDs with Damen Shipyards. The two platform suppliers are added to the four that WWS announced to be built in December 2011. The extra vessels will be delivered end of 2013 and operated by Remøy Management AS. The PSV 3300 is designed according to Damen's E3 principles: environmentally friendly, efficient in operation, and economically viable. Hull shape, coatings, the location of oil tanks, refrigerants, recovery of waste heat, and engine emissions have all been thoroughly researched and (re-)designed accordingly in order to create cost-efficient and emission-friendly offshore supply vessels.

AMPOL completes shallow water skimmer

American Pollution Control Corp. (AMPOL), a leading oil spill response and total environmental solutions provider, has completed the acquisition and reconstruction of a newly restored shallow water skimmer vessel. AMPOL's shallow water skimmer is one of the best of its kind. Unique in its design and engineering, the vessel was altered to incorporate a dual outboard system and an independent hydraulic engine to a belt-driven hydraulic system. Vessel construction began with the hull. Subsequently, a conveyer assembly, hydraulic system, and an outboard engine system were added to the skimmer. This specific skimmer took 6 months to complete and is now response ready. A test run was conducted on January 19 and garnered exceptional results.

More U. S. flagged LNG-powered vessels ordered



Harvey Gulf International Marine ordered two additional 302ft X 64ft Dual Fuel Offshore Supply Vessels, bringing its total order to four. The contract signed with Trinity Offshore is a follow-on to the first two-vessel order placed in October of 2011. Trinity will build all four vessels at their Gulfport, Mississippi shipyard where the first Harvey Gulf LNG-powered vessel hull fabrication was started in February 2012.

In addition to being powered by cleaner burning natural gas, the vessels will achieve "ENVIRO+, Green Passport" Certification by the American Bureau of Shipping. The requirements for this certification include, among others, that the vessels be continuously manned with a certified Environmental Officer, be completely constructed with certified environmentally friendly materials, and have advanced alarms for fuel tanks and containment systems. Along with Harvey Gulf's other vessels under construction, these will be the first OSVs to achieve this certification, making them the most environmental friendly OSVs in Gulf of Mexico.

Harvey Gulf CEO, Shane J. Guidry, announced the signing: "Harvey Gulf's decision to become the leader in "Clean" Gulf of Mexico operations has been enthusiastically accepted by oil company executives and was the impetus for adding two additional LNG dual fuel vessels to the fleet. These vessels, like their two sisterships, will meet the highest emissions standards that exist today and even higher standards that haven't been created yet. We recognize the strong stance on environmental protection by the administration in the wake of the oil spill and are doing our part to respond to it and provide our customers support for their environmental commitments."

John Dane III, Trinity's President and CEO, stated "This follow-on order is a significant milestone for our shipyard and will increase employment by hundreds at its peak during the next 36 months."

Founded in 1955, Harvey Gulf International Marine is a marine transportation company that specializes in towing drilling rigs and providing offshore supply and multi-purpose support vessels for deepwater operations in the U.S. Gulf of Mexico.

For more information on Harvey Gulf, please visit www.harveygulf.com.

Fishery inspection surveillance vessel for Angola launched at Damen Shipyards Galati

Damen Shipyards Galati is building the Ngola Kiliuange, a Fishery Inspection Surveillance Vessel (FISV) 6210, for the Angolan Ministry of Agriculture, Rural Development and Fisheries. With another two ships under construction, the Angolan government is set to strengthen its knowledge of and control over its rich fishing grounds.



Given the exclusive economic zone of West Africa's Atlantic coast holding vast and rich fishing grounds, the acquisition of these vessels represents a real opportunity for the Angolan Ministry. The fishing sector is one of Angola's largest economic sectors, and its territorial waters are extremely alluring for illegal fishing. Under a SADC regional program, the country collaborates with Namibia and South Africa to protect and survey the fishing grounds. The FISV Ngola Kiliuange can also be brought into action for salvaging and various other jobs. Damen has a long history and proven experience in building hydrographic research vessels. Their standardized system allows them to meet with every requirement in terms of hull shape, sensor suite, systems, and regulations.

New inter-island ferry for Tahiti

Austal has secured an order for a highly efficient, medium speed ferry with leading French Polynesian operator and existing customer, SNC Aremiti Ferry. The 80m vehicle-passenger catamaran is scheduled for delivery in October 2013.

This is the fourth vessel Austal has sold to Aremiti and its associated companies. The new ferry is expected to operate alongside an existing Austal catamaran between the islands of Tahiti and Moorea, expanding access to the area for locals, tourists, and business operators.

With a fully loaded speed of 20kts,

the new design brings the efficiency and other operating cost advantages that result from Austal's expertise in aluminum construction and multi-hull vessel design to the medium speed RoPax ferry market.

With a capacity for up to 967 passengers and up to 146 cars (or a mix of cars and trucks), the new ferry will be French-flagged and is designed to meet EU domestic voyage rule requirements. In addition to enabling local tourism

and personal transport, the ferry will support inter-island trade.

For more information, visit www.austal.com.



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U.S. Navy to build two new oceanographic research vessels

The U.S. Navy has awarded \$70 million to a West Coast-based shipyard to begin building the second of two modern oceanographic research vessels for the Office of Naval Research (ONR).

Dakota Creek Industries Inc. of Anacortes, Washington, will begin detail design and construction on the Ocean-class Auxiliary General Oceanographic Research (AGOR) 28. Naval Sea Systems Command previously awarded a contract for AGOR 27, the first of the two new research ships. The recent award brings the Navy's combined shipbuilding investments in the program to \$145 million.

"The ships are indispensable research tools," said Dr. Frank Herr, director of ONR's Ocean Battlespace Sensing Department. "They are the primary means by which we go to sea and engage the oceanographic research community to learn about the ocean - and to develop oceanographic and atmospheric prediction systems to help the fleet understand the ocean and plan for its operations around the world."

The Navy, through ONR, has been a leader in building and providing large research ships for the nation's academic research fleet since World War II. The latest ships will replace two vessels previously Navy-built and owned.

Designed as single-hull ships, AGOR 27 and AGOR 28 are approximately 238ft long and incorporate the latest technologies, including high-efficiency diesel engines, emissions controls for stack gasses, new information technology tools both for monitoring shipboard systems and for communicating with the world, and hull coatings to reduce maintenance requirements. Each vessel will operate with a crew of 20 with accommodations for 24 scientists.

The construction phase will last 30 to 36 months per ship, with delivery expected in late 2014 and early 2015. Once delivered to Woods Hole Oceanographic Institution and to Scripps Institution of Oceanography, respectively, the ships will allow scientists to continue with ongoing research efforts in the Atlantic, western Pacific, and Indian Ocean regions.

For more information, visit www.onr.navy.mil.

SeaStrider (SWATH): trailblazing modern crew transport vessels

Danish Yachts is to launch its advanced new range of commercial vessels - SeaStrider. Designed for high-speed passenger transport, SeaStrider is groundbreaking in terms of design technology and build and is the first carbon fiber SWATH to be built. The first boat under construction in the range is the SeaStrider SWATH for carrying service personnel and cargo to the offshore wind farms and for transit between the wind towers.

This pioneering new vessel has already been tank tested to significant wave heights, permitting operation in almost all weather conditions while maintaining safety and comfort. This version is designed to an overall length of 25m, providing ample space for 24 passengers and 5 crew over a range of around 500nmi.

The purpose of this rugged high-speed craft is to initially carry the construction teams and then the maintenance and emergency repair teams to and from the offshore windmill turbine farms efficiently, safely, and in total comfort. The

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twin hull configuration with a beam of 10.6m provides lateral stability.

SeaStrider is easy to maneuver in high winds using precision controls to ensure safe placement of the turbine maintenance teams onto the wind tower dock at the base of the turbine. In addition, the vessel is to be fitted with the base for use of a gyro transfer gangway on the transom for passenger and crew safety during the transfer to the platform.

This SWATH design has a clear bridge area with good all-round vision, boasts comfortable seating and dining areas for passengers, and provides com-

fortable crew sleeping quarters with three single and one double cabin.

For more information, visit www.danishyachts.com.

Bergen Group awarded contract for advanced offshore vessel

Bergen Group Fosen has signed a contract with Volstad Maritime AS to build a large high-end offshore vessel. The contract has an estimated value of more than NOK 800 million, and the ship is scheduled for delivery in Q3 2013.

The signed contract, which is subject to final board approval and financing, is for the construction of a large and advanced Offshore Construction Vessel (OCV) with a length of 125m and a beam of 25m. The ship is a ST-259 CD design from Skipteknisk in Ålesund, Norway.

Arnar Utseth, CEO of Bergen Group Fosen, is looking forward to starting the build of vessel number seven, which is to be delivered to Volstad Maritime AS.

"We are very pleased that the company wants to continue the well-established partnership with us, and we look

forward to building another top modern, advanced, and future-oriented vessel to Volstad Maritime. This contract will also give us a solid extension of the period, with high outfitting activity already secured by Fosen throughout 2012", says Arnar Utseth.

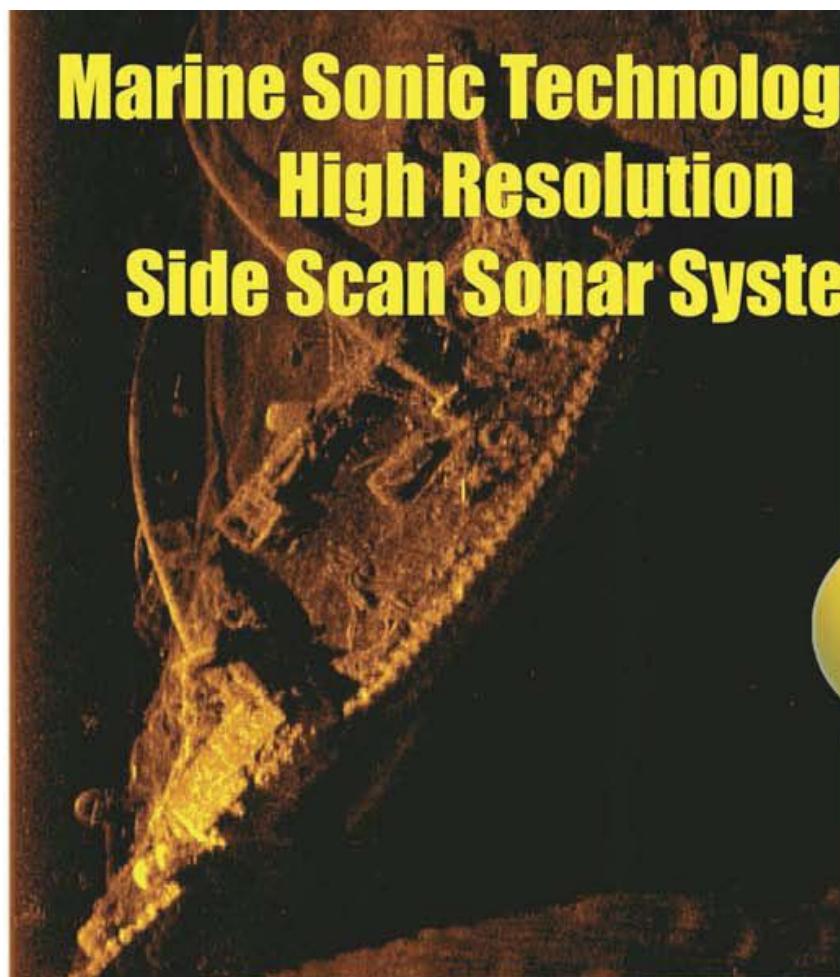
Volstad Maritime AS is a privately owned Norwegian offshore shipping company headquartered in Ålesund, Norway. The company is well established in the international market, with a modern fleet of advanced offshore vessels.

Since 2005, Volstad Maritime AS has ordered all its new buildings, a total of seven vessels, from Bergen Group Fosen. Five of them have already been delivered. One vessel is under full production and will be delivered in summer of 2012.

Bergen Group has, during the last 4 years, delivered a total of 16 advanced offshore vessels to different customers, both nationally and internationally. The group's shipbuilding division will deliver another four vessels in 2012 with a total contract value of NOK 2.7 billion.

For more information, visit www.bergen-group.no.

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Google Earth ocean terrain receives update

Internet information giant Google updated ocean data in its Google Earth application, reflecting new bathymetry data assembled by Scripps Institution of Oceanography, UC San Diego, NOAA researchers, and many other ocean mapping groups from around the world. The newest version of Google Earth includes more accurate imagery in several key areas of ocean using data collected by research cruises over the past 3 years. Google Earth now has 15% of the seafloor image derived from shipboard soundings at 1km resolution. This new version includes all of the multibeam bathymetry data collected by U.S. research vessels over the past 3 decades including 287 Scripps expeditions from research vessels Washington, Melville, and Revelle.

UNH ocean scientists shed new light on Mariana Trench

An ocean mapping expedition has shed new light on the deepest place on Earth, the 2,500km long Mariana Trench in the western Pacific Ocean near Guam. Using a multibeam echo sounder, state-of-the-art equipment for mapping the ocean floor, scientists from the University of New Hampshire Center for Coastal and Ocean Mapping/UNH-NOAA Joint Hydrographic Center (CCOM/JHC) found four "bridges" spanning the trench and measured its deepest point with greater precision than ever before. Research professor James Gardner and affiliate professor Andrew Armstrong, both of the CCOM/JHC, presented their findings at the recent American Geophysical Union meeting in San Francisco, the world's largest annual meeting of Earth and planetary scientists.

Russian drill reaches subglacial lake in Antarctica

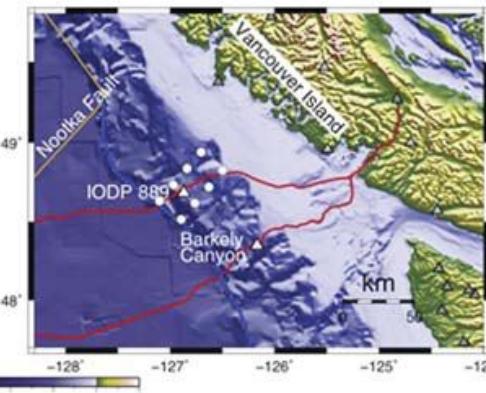
The Russian Artic and Antarctic Research Institute confirmed it has finished drilling more than 2mi through the Antarctic ice sheet to Lake Vostok. The drilling began over 2 decades ago and it will not be until next year that the scientists can recover water samples. Some believe Vostok, the largest of hundreds of lakes beneath the ice, has been sealed off from the outside world for 15 to 20 million years or more and speculate that it may reveal unknown species of microbes and other life forms living in extreme conditions of cold, dark, and high pressure.

NOAA designates additional critical habitat for leatherback sea turtles

NOAA announced the designation of additional critical habitat to provide protection for endangered leatherback sea turtles along the U.S. West Coast. NOAA is designating 41,914 sq. mi of marine habitat in the Pacific Ocean off the coasts of California, Oregon, and Washington. This designation will not directly affect recreational fishing, boating, or other private activities in critical habitat. Critical habitat designations only affect Federal projects that have the potential to adversely modify or destroy critical habitat. Critical habitat designations aid the recovery of endangered and threatened species by protecting habitat on which the species rely.

First real-time seafloor earthquake observatory

One of the most dangerous faults in North America is the Pacific Northwest's Cascadia fault – an offshore, subduction zone fault capable of producing a magnitude 9 earthquake that would damage Portland, Tacoma, Seattle, and Victoria (British Columbia) and generate a large tsunami. Yet, there are currently no instruments installed offshore, directly above the fault, for measuring the strain that is currently building up along the fault.



But, a recent \$1 million grant from the W. M. Keck Foundation to scientists at the Woods Hole Oceanographic Institution (WHOI) will change that. An interdisciplinary project led by WHOI geologist Jeff McGuire, an expert in global earthquake seismology and geodesy, and John Collins, director of WHOI's Ocean Bottom Seismometer Lab, will build and install the first seafloor geodesy observatory above the expected rupture zone of the next great Cascadia earthquake.

The Cascadia subduction zone is a very long sloping fault that stretches from mid-Vancouver Island to Northern California. It separates the Juan de Fuca and North American plates. For many years, according to conventional wisdom, the Cascadia subduction zone slipped without earthquakes. But in the last 30 years, geologists have uncovered sedimentary records as well as historical records in Japan showing that "indeed, the fault repeatedly had these huge earthquakes with big tsunamis," said McGuire.

Cascadia's last big event occurred in 1700 and was likely very similar to the March 2011 Japanese earthquake – a magnitude 9 quake and tsunami that traveled all the way across the Pacific. This similarity is foreboding for earthquake scientists, as a key scientific lesson of the Japanese earthquake has been that the standard datasets collected onshore are completely inadequate for characterizing the upcoming ruptures on an offshore subduction zone thrust fault.

One key limitation in the seismic hazard estimation for subduction zones is the use of geodetic data recorded onshore, primarily GPS data, to determine the extent to which offshore faults are locked and building up strain for the next big earthquake. GPS can detect surface motion to unprecedented precision – a fraction of 1mm per year – but land-based GPS is too far away from offshore faults to be sufficiently sensitive to that motion.

"So you have to have instruments out there to be really sensitive to it," said McGuire. "We know the fault is locked around the coast, but we don't know how far offshore it's locked. So one of our goals is to determine if the fault really is locked all the way to the trench or not. One reason that's important is for understanding what the next tsunami will be like. So figuring out exactly where the locking starts at the shallow end of the fault is one of our primary goals."

To do this, McGuire and Collins will install tiltmeters at a location approximately 4km above the Cascadia subduction zone thrust interface. "Tiltmeters are standard instruments on

land – most volcano observatories have them,” said McGuire. “These instruments are very, very sensitive to tiny little deformations that occur in the rock,” adds Collins. “The movements can be subtle. They can be slow. Something a seismometer is not sensitive to.”

The tiltmeters will be located within a 300m deep borehole, a study site established by the Integrated Ocean Drilling Program, and will take advantage of an existing seafloor cable infrastructure – NEPTUNE Canada – enabling immediate access to the data collected by the instrument. The instrument array should be installed and returning data by summer 2013.

For more information, visit www.whoi.edu.

World's most extreme deep-sea vents revealed

Scientists have revealed details of the world's most extreme deep-sea volcanic vents, 5km down in a rift in the Caribbean seafloor. The undersea hot springs, which lie 0.8km deeper than any seen before, may be hotter than 450°C and are shooting a jet of mineral-

laden water more than 1km into the ocean above.

Despite these extreme conditions, the vents are teeming with thousands of a new species of shrimp that has a light-sensing organ on its back. And having found yet more “black smoker” vents on an undersea mountain nearby, the researchers suggest that deep-sea vents may be more widespread around the world than anyone thought.

During an expedition in April 2010 aboard the Royal Research Ship James Cook, the scientists used the National Oceanography Centre's robot submarine called Autosub6000 and a deep-diving vehicle, HyBIS, manufactured by the British firm Hydro-Lek to locate and study the vents at a depth of 5km in the Cayman Trough, an undersea trench south of the Cayman Islands.

The vents, which the team named the Beebe Vent Field after the first scientist to venture into the deep ocean, are gushing hot fluids that are unusually rich in copper and shooting a jet of mineral-laden water four times higher into the ocean above than other deep-sea vents.



The team found a new species of pale shrimp congregating in hordes (up to 2,000 shrimp per sq. m) around the 6m tall mineral spires of the vents. Lacking normal eyes, the shrimp instead have a light-sensing organ on their backs, which may help them to navigate in the faint glow of deep-sea vents. The researchers have named the shrimp *Rimicaris hybisae*, after the deep-sea vehicle that they used to collect them.

The researchers also found black smoker vents on the upper slopes of an undersea mountain called Mount Dent. Mount Dent rises nearly 3km above the seafloor of the Cayman Trough, but its peak is still more than 3km beneath the waves. The mountain formed when a vast slab of rock was twisted up out of

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the ocean floor by the forces that pull the plates of the Earth's crust apart.

The vents on Mount Dent, which the team has named the Von Damm Vent Field to commemorate the life of geo-chemist Karen Von Damm, are also thronged with the new species of shrimp, along with snake-like fish and previously unseen species of snail and a flea-like crustacean called an amphipod.

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

Ocean microbes changing

As oceans warm due to climate change, water layers will mix less and affect the microbes and plankton that pump carbon out of the atmosphere – but researchers say it's still unclear whether these processes will further increase global warming or decrease it.

The forces at work are enormous and the stakes huge, said Oregon State University scientists. But inadequate ocean monitoring and lack of agreement on how to assess microbial diversity has made it difficult to reach a consensus on what the future may hold, they said.

"We're just beginning to understand microbial diversity in the oceans and what that may mean to the environment," said Stephen Giovannoni, an OSU professor of microbiology. "However, a large portion of the carbon emitted from human activities ends up in the oceans, which—with both their mass of water and biological processes—act as a huge buffer against climate change. These are extremely important issues."

The interest is growing, scientists say, because nearly half of the world's photosynthesis is contributed by microbial plankton, and the process of marine carbon production and consumption is much faster than on land. A turnover of terrestrial plant biomass takes 15 years, they say, while marine turnover takes just 6 days.

As the ocean surface warms, evidence shows that it will become more "stratified," or confined to layers that mix less than they did in the past. This should reduce overall ocean productivity, Giovannoni said, but so little is known about the effect on ocean microbes that the implication for carbon sequestration and global warming is less clear.

As warmer oceans become a more long-term and global phenomenon, researchers need to know more about these microbes and whether their behavior will amplify or reduce atmospheric carbon and the greenhouse effect.

For more information, visit www.oregonstate.edu.

OceanWorks upgrades the NEPTUNE Canada Subsea Instrument Interface Module design

OceanWorks International has been contracted to provide the next generation design and manufacture of the Subsea Instrument Interface Module (SIIM) with new features to streamline the operation of the existing NEPTUNE Canada observatory.



OceanWorks initially delivered 14 SIIMs to NEPTUNE Canada in 2008 and 2009. The SIIMs (also known as Junction Boxes) are used to interface multiple science instruments to a single port on a node. The upgraded SIIM is a flexible, software configurable design with two key custom developments: a Variable Voltage Power Supply (VVPS), with a software selectable output voltage from 12VDC to 48VDC; and a Communication Selection Board that will allow the software selection of either serial or Ethernet communications on each port. In addition, the SIIM serial ports have been upgraded to provide Pulse-per-Second (PPS) and Time-of-Day (ToD) signals using Precision-Timing-Protocol (PTP).

The upgrade allows for both the voltage and its communication protocol on the downstream ports to be changed by software without the need to open the pressure vessel. Since this change can be done in the lab or on the vessel, the versatility of the SIIM is much improved, allowing NEPTUNE to reduce operational and maintenance costs and reduce deployment risk by allowing common sparing of a single SIIM design rather than customizing a SIIM for each instrument platform.

For more information, visit www.oceanworks.com.

Scripps, NOAA, and TE Subcom to implement science ports on transoceanic fiber optic lines

A new agreement between marine scientists and a commercial telecommunications company could dramatically advance scientists' ability to observe and study ocean processes, provide early alerts for potential disasters, and study deep Earth geodynamics.

Scientists from Scripps Institution of Oceanography at UC San Diego and

engineers at NOAA's Pacific Marine Environmental Laboratory (PMEL) will work with TE SubCom, a TE Connectivity Ltd. Company and an industry pioneer in undersea communications technology, to integrate scientific instruments onto thousands of miles of seafloor communication cables across the Pacific Ocean. The data collected will be open and available to the global scientific community.

The initial project will be along a cable route spanning 12,950km (8,105mi) from Sydney to Auckland and across the Pacific Ocean to Los Angeles. Initial efforts are exploring the use of seismometers, pressure gauges, and temperature sensors for hazard warning and mitigation. As funding develops, sensors could be deployed on future cables at an unprecedented 75km (47mi) spacing apart. As planned, the instruments will allow NOAA scientists to measure the size and direction of tsunamis propagating across the ocean more precisely and to alert disaster management officials and first responders more quickly. The installation on the seafloor cable has the potential to greatly reduce long-term costs for tsunami monitoring, while at the same time dramatically increasing sensor density, accuracy, and reliability.

For more information, visit scripps.ucsd.edu.

UGA receives \$1.3M grant for Deepwater Horizon research

University of Georgia marine scientist Samantha Joye and colleagues Patricia Medeiros and Christof Meile have received a \$1.3 million grant from the Gulf of Mexico Research Initiative that will enable UGA researchers and scientists from 13 other institutions to more thoroughly understand the ecosystem impacts of the 2010 Deepwater Horizon oil spill.

The 3-year grant, awarded through a competitive merit-review process by a board comprising of researchers from academic institutions, will allow scientists and emergency responders to better predict and respond to future spills, should they occur.

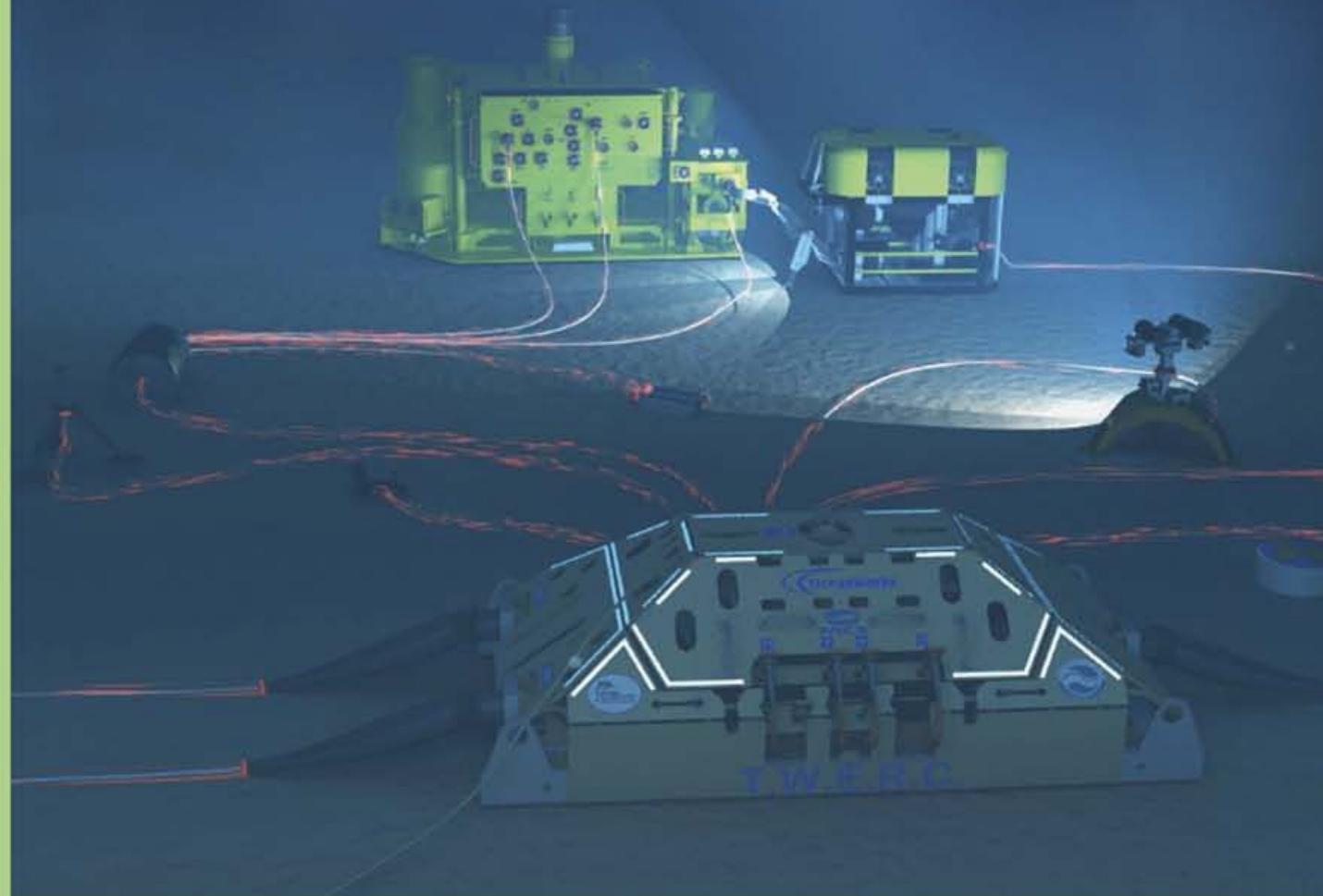
The researchers will compare food webs, carbon cycling, and other ecosystem processes at these naturally occurring seeps with areas impacted by the blowout. The team also will compare their findings with previous data on sites in the Gulf that are not impacted by either the seeps or the blowout.

For more information, visit www.niust.org/griproject.



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- Tsunami and seismic warning systems
- Pipeline and infrastructure security monitoring

Gulf of Mexico: Price and Regulatory Stability Crucial for 2012

By Dan McCue, U.S. correspondent

After a relatively slow year due mainly to a backlog of permit approvals, the Gulf of Mexico abandonment and decommissioning market should heat up in 2012 – barring the unpredictable impacts of a major hurricane during the prime working months or renewed volatility in the price of oil, industry insiders say.

What speculation there is among commercial oil and gas entities along the U.S. Gulf Coast revolves around the magnitude of action. The current consensus is that the market is slow enough that one could literally pick up the phone and secure a derrick barge or piece of marine equipment – at a good rate – if they needed it.

By the same token, the widely held belief among contractors is that they'll certainly be paying more for equipment and crews if decommissioning work ratchets up as expected.

"It's just your typical supply and demand situation," says Win Thornton, Global Managing Consultant – Decommissioning, at Worley Parsons in Houston, Texas.

No silver bullets

So where do the opportunities for cost savings lay? According to Thornton, they lay not in new equipment or best practices – aspects of the industry that evolved substantially in the aftermath of Hurricane Katrina in 2005 – but rather in the planning of this season's decommissioning work, with the emphasis being on working "campaigns" or the stringing together of multiple jobs that require similar equipment and expertise.

"Basically, it's the idea of organizing your work into a campaign portfolio so that you maximize your opportunities to achieve a reduction in costs," Thornton says.

"If you work a one-off here and a one-off there, doing a project for BP one month and another for Apache a month-and-a-half after that, you're missing out on the savings you could have achieved through using the same equipment and subcontractors, reducing your mobilization costs, and capitalizing on the other efficiencies gained from having a crew move from one project to another," he says.

"To date, the industry has probably decommissioned about 2,000 platforms, and what that experience has shown is that there are no silver bullets out there, there is no technology that's going to drive your costs down 50%," Thornton continues.

"That's why the best strategy is to be smart and optimize your project strategy as much as possible," he adds.

But Thornton, whose long experience in the field includes having been manager of international decommissioning for Chevron, admits that there's a certain art to taking the campaign approach.

"At Chevron, because we had enough in-house, we would put our own little mini-campaigns together, and while that worked well for us, in fact because we didn't expand the net outside of Chevron, we probably only caught about 60% of

the savings that could have been achieved through a more regional approach," he says.

"We might have had Apache next door to us or Stone next door to us, but because they were other companies, those synergistic opportunities were missed," Thornton says. "At the same time, I also know how difficult organizing a campaign can be from an independent's position."

"I had my own firm, WinMar Consulting Services, that specialized in decommissioning services, and we took a 35-platform portfolio from a half-dozen operators and strung it all together, and man, it was like herding cats," he says. "Each operator had its own agenda for timing, where they wanted to be in the queue, where you had access, where you might not have access because of other things that were outside of your control. So there are a lot of things that can make putting a campaign together difficult."

Price stability

While any activity taking place in a region the size of the Gulf is fraught with unknowns, a factor that's likely to make such campaign strategizing easier this year is the continued stability in the price of oil. That stability allows decision-makers to better determine what's economical and what's not, and to make clearer cut decisions on whether to keep a well producing, and make capital investments to keep it going or whether its economics no longer work and it's time to plan and fund decommissioning.

"When we have erratic price changes or, if say, the price of oil were to drop to \$50/bbl, a lot more wells will be deemed uneconomical and be driven toward decommissioning," Thornton says. "The problem right now is that everybody's cash flow is so horrible that they might not necessarily be able to handle that amount of decommissioning right now."

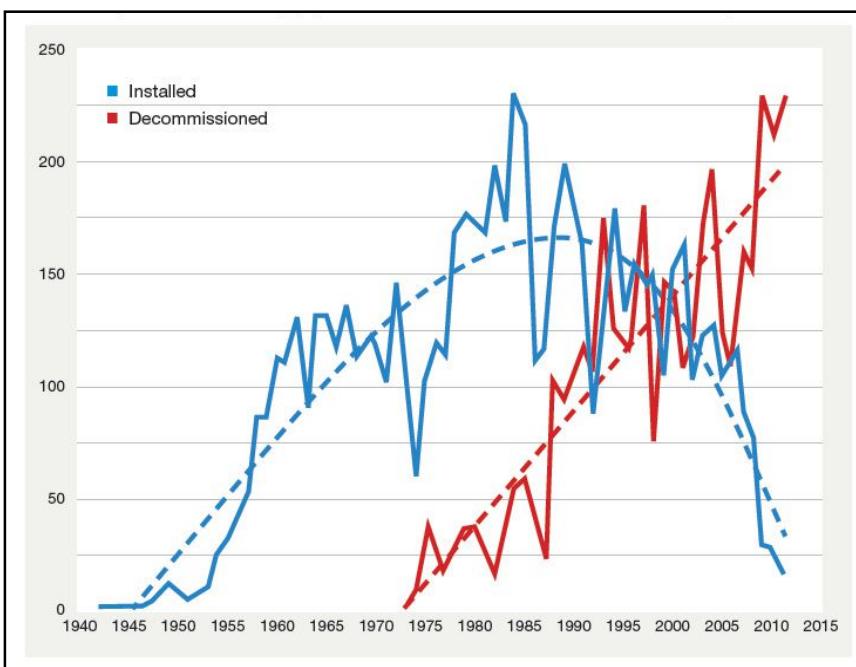
"That's why having a steady price of oil right now is actually a good thing: it keeps the market chugging along," he continues. "If we're lucky and get a good weather season and continue to see low volatility in the price of hydrocarbons, it would be great for keeping the decommissioning business in a steady state of affairs."

Regulatory stability

When it comes to the state of the Gulf of Mexico oil and gas market in 2012, Thornton, like others, sees mainly stability in the offing.

"Basically, the state of the market is simply one where people are trying to get geared up for business," he says. "There's no real big issue that people are buzzing about – there's no big drive to change regulations or balk at them. I think the biggest 'want' along the Gulf Coast is for the agencies to issue the permits on a dependable basis."

"Aside from that, I think the biggest thing happening right now is preparation," he says. "There's a strong belief that there's going to be more decommissioning work, and so you



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have to be planning with a little bit of line of site: And if you haven't already got your bids out for your derrick barge, then you might be later in the queue with the vendors than earlier."

"The wild card is hurricanes and how they impact the work season," Thornton says. "If you have damage from a hurricane, work resources and manpower are going to be prioritized toward getting production back on like and cleaning

up any damage before it goes back to decommissioning. So I think right now, that's the big wild card, so to speak; how hurricanes impact the region this year and if and how long they'll drive priorities away from decommissioning."

GoM Operators and BSEE discuss decommissioning

Win Thornton will be joining other leaders from BSEE, Apache, Chevron, Shell, BP, Stone Energy, Black Elk Energy, Taylor Energy, and more at the 4th Annual Decommissioning & Abandonment Summit (March 22 to 23, Houston).

This meeting is recognized as a "must attend" event for decommissioning professionals in an industry valued between \$30 to \$40 billion. The Summit, in its fourth blockbuster year, is the only forum for serious decommissioning industry professionals in the Gulf of Mexico that offers these networking and information sharing opportunities.

Organizers DecomWorld have said, "This is the reason the conference not only grows by more than 60% year on year—it always sells out. Operators have to deal with their decommissioning portfolios in compliance with BSEE regulations and it's an unavoidable cost for them. As a result, contractors see this as the business development opportunity of the year."

For more information about the conference, visit www.decomworld.com/decommissioning.

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World's largest offshore wind farm off the coast of Cumbria breaks industry records

The £1 billion Walney wind farm, which is a joint venture between DONG Energy (50.1%), SSE (25.1%), and OPW (24.8%), is being officially opened by Edward Davey, Secretary of State for Energy and Climate Change. With 102 turbines and a total capacity of 367.2MW, Walney can supply up to 320,000 households a year with renewable power. The wind farm, which combines the Walney 1 and 2 projects, has already set a number of industry records and will create approximately 60 jobs at its new operations centre in Barrow-in-Furness. Not only is it the world's biggest wind farm, but it has been built in the fastest time ever, just 5 months and 13 days.

DOE reports show major potential for wave and tidal energy near U.S. coasts

The U.S. Department of Energy (DOE) released two nationwide resource assessments showing that waves and tidal currents off the nation's coasts could contribute significantly to the total annual electricity production of the U.S. These new wave and tidal resource assessments show that water power, including conventional hydropower and wave, tidal, and other water power resources, can potentially provide 15% of our nation's electricity by 2030. DOE estimates that the maximum theoretical electric generation that could be produced from waves and tidal currents is approximately 1,420TWh per year, approximately one-third of the nation's total annual electricity usage.

EU offshore wind power market remained stable in 2011

A stable year for the offshore wind industry, 2011 had 235 new offshore wind turbines grid connected, worth approximately 2.4 billion Euros. The European Wind Energy Association (EWEA) published its annual offshore wind statistics for 2011 in Brussels, showing that 235 new turbines with a total power capacity of 866MW were fully grid connected across nine offshore wind farms. An additional nine offshore wind farms currently under construction will bring an additional 2,375MW online increasing the EU's total installed offshore wind power capacity by 62%. Across the EU, a total of 1,371 offshore turbines have now been grid connected, with a total power capacity of 3,813MW in 53 wind farms in 10 European countries.

Marine and hydrokinetic installed capacity to increase seven-fold by 2017

According to a new report from Pike Research, the marine and hydrokinetic market should see robust growth in capacity, increasing from 760MW in 2012 to 5.5GW in 2017. That will translate into total revenue from hydrokinetic and marine power generation deployed in North America of \$161.2 million in 2017. By 2017, Pike Research forecasts worldwide tidal stream capacity will reach 2.4GW. The top-producing countries will be South Korea (750MW), the United Kingdom (529MW), and Canada (300MW), followed by India, China, New Zealand (200MW each), and Australia (100MW).

Alstom and SSE Renewables create joint venture

Alstom and the leading Scottish marine developer SSE Renewables have signed a new joint venture agreement to develop the Costa Head Wave Project, an up-to-200MW wave energy site located north of mainland Orkney in The Crown Estate's Pentland Firth and Orkney Waters Strategic Area.

Alstom and SSE Renewables will work together to obtain the necessary permits and intend to populate the site with AWS-III wave energy converters, a technology currently under development by AWS Ocean Energy Ltd, in which Alstom acquired a 40% equity share.

The Costa Head site is located in water depths of 60m to 75m approximately 5km to the north of Orkney Mainland. SSE Renewables and Alstom propose to carry out detailed site surveys and an environmental impact assessment to develop the site with an initial phase of around 10MW before moving on to install the full site capacity.

AWS Ocean Energy is focused on the development and delivery of its AWS-III wave energy converter, a floating device with a rated power output of 2.5MW. A 1:9 scale model of the AWS-III was tested in Loch Ness in 2010. Full-scale component testing will commence in 2012 with the support of the Scottish Enterprise-administered WATERS fund (Wave and Tidal Energy: Research, Development and Demonstration Support), with a full-scale prototype planned for deployment at the European Marine Energy Center in 2014.

The AWS-III technology consists of a multi-cell array of flexible membrane absorbers that convert wave power to pneumatic power through compression of air within cells that are inter-connected. Turbine-generator sets are provided to convert the pneumatic power to electricity.

A typical AWS-III device will comprise an array of 12 cells, each measuring around 16m wide by 8m deep, arranged around a structure with overall beam of up to 60m. Such a device has a capacity of 2.5MW, while having a structural steel weight of less than 1,300tons. The AWS-III will be slack moored in water depths of 65 to 150m using standard mooring spreads. Devices will be arranged in arrays or "farms" of up to several hundred megawatt total rating. Each AWS-III will be connected to a central offshore substation via a high-voltage umbilical link.

For more information, visit www.alstom.com or www.awsocean.com.

Ecotricity 'seas' the potential

Green energy company Ecotricity is adding the power of the sea to that of the wind and the sun to make its Green Electricity.

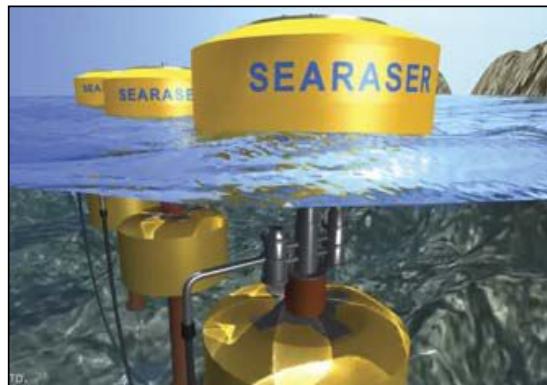
Ecotricity is developing a radical wave-powered device called Searaser – which it believes can address two of the biggest barriers to the deployment of renewable energy on the scale that Britain needs – the issues of cost and intermittent output.

Inventor Alvin Smith said the main barrier to making wave power efficient and, therefore, cost-effective was resilience against the hostile ocean environment.

"Most existing wave technologies seek to generate electricity in the sea itself. But as we know, water and electricity don't mix – and seawater is particularly corrosive – so most other devices are very expensive to manufacture and maintain."

But Searaser doesn't generate the electricity out at sea. It simply uses the motion of the ocean swell to pump seawater through an onshore generator.

Searaser pumps seawater using a vertical piston between two buoys – one on the surface of the water and the other suspended underwater and tethered to a weight on the seabed. As the ocean swell moves the buoys up-and-down the piston pumps volumes of pressurized seawater through a pipe to an onshore turbine to produce electricity.



This opens up the additional option for Searaser units to be used to supply energy on-demand. By pumping seawater into coastal storage reservoir, it can be released through a generator as required – thus, making not just energy from the sea but energy that can be turned on and off as required. Such a system will go a long way to solving the problem of renewable energy's naturally intermittent output on Britain's electricity grid.

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

Turbines off NYC East River will create enough energy to power 9,500 homes

As part of the Roosevelt Island Tidal Energy project, 30 turbines are being installed along the strait that connects the Long Island Sound with the Atlantic Ocean in the New York Harbor. The project, led by Verdant Power, Inc., is the first ever commercially licensed tidal energy project in the U.S.

The turbines are scheduled to be fully installed by 2015 and will use the flow of the river and tides to generate 1,050KW of electricity – enough to power 9,500 New York homes.

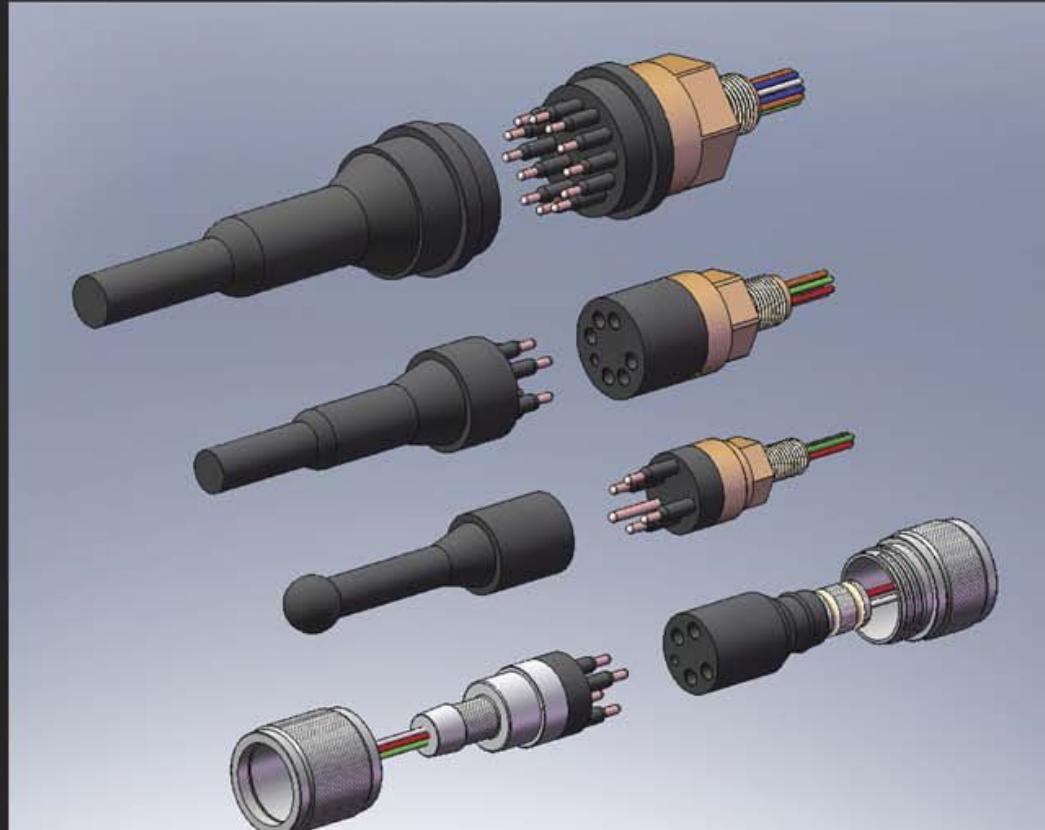
The turbines will also collect important data about environmental impacts on fish and river sediment and provide jobs to a team of technicians who will maintain and monitor the equipment.

The Energy Department began pro-



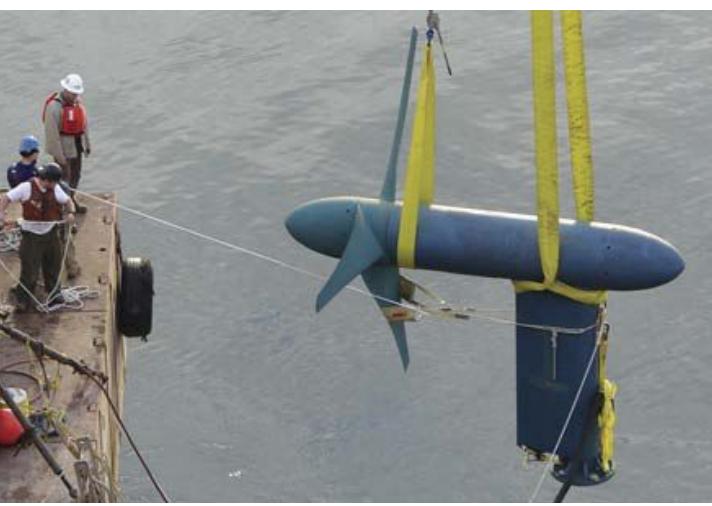
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viding Verdant Power with funding in 2008 to improve the turbines' blade design. Verdant had been successfully developing and testing turbine prototypes in the East River since 2002, but those turbine rotors were not durable enough to be scaled up for commercialization. With the Department's assistance, Verdant designed and tested new blades, which are stronger and more reliable, allowing them to capture more energy from faster currents at greater depths and at a lower cost.

For more information, visit www.verdantpower.com.

Voith teams with SCHRAMM group to develop special vessels

Voith and the SCHRAMM group will pool their vessel design expertise and jointly develop special vessels for the transfer of staff and material to wind farms in the North and Baltic Seas. In addition to the vessel design, Voith will supply the propulsion systems. The SCHRAMM group contributes all services, from the supervision during the vessel building process up to the vessel management. If service technicians have to enter wind turbines in waves of to 4m to carry out repair or maintenance work, the Voith Schneider Propeller (VSP) is the ideal propulsion concept for added safety. It ensures that such special vessels can precisely keep their position, even in high seas, and dampens vessel movements.

The specialists of Voith and of the SCHRAMM group have evaluated the seaway data prevalent in the areas of operation. The result of the technical study shows that a single-hulled vessel with a length of 30m to 35m is ideally suited to meet the demands of wind farm operators. With a maximum speed of 15kts, the vessel can serve wind

farms close to the shore. Wind farms further offshore can be reached via a supply station. The vessel can carry sufficient supplies to stay at sea for 2 weeks without having to call at a port. Depending on the customer requirements, 12 to 24 service technicians can safely and comfortably be brought to their destination.

For more information, visit www.voith.com.

World Ocean Council welcomes Total as new member

Total has joined the 40 companies that are already members of the World Ocean Council. Total is a world leader in the oil and gas sector and the first French company to become part of the unique multi-sectoral business alliance on Corporate Ocean Responsibility. Total has offshore exploration and production activity in Nigeria, Angola, Norway, and Indonesia.

"The World Ocean council provides a critical means for TOTAL to work with other responsible companies on science-based solution to ocean issues," said Manoelle Lepoutre, senior vice president.



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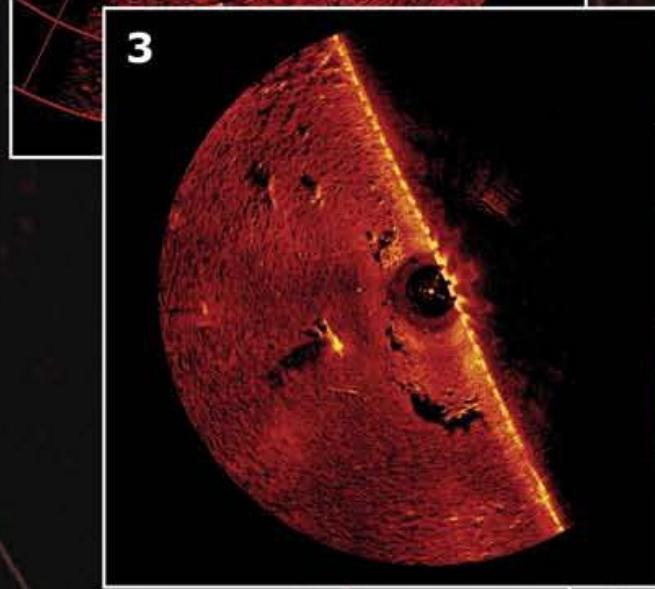
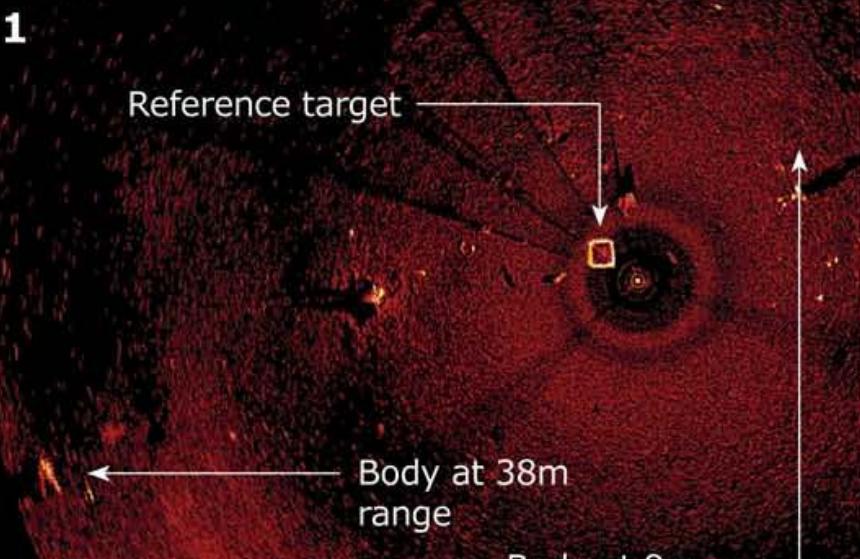


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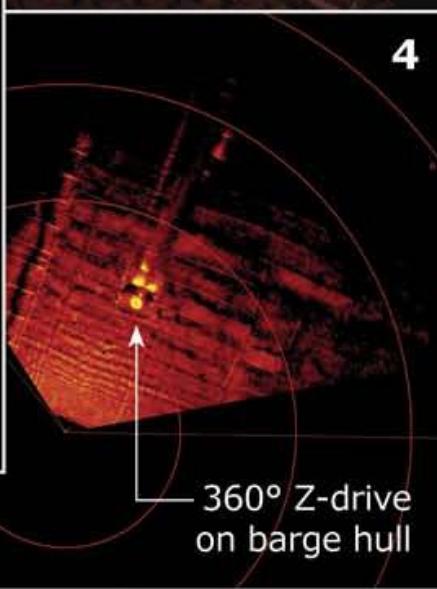


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THE FULL PICTURE



The Claw: Innovation In Offshore Salvage Operations

By Cassie Schott



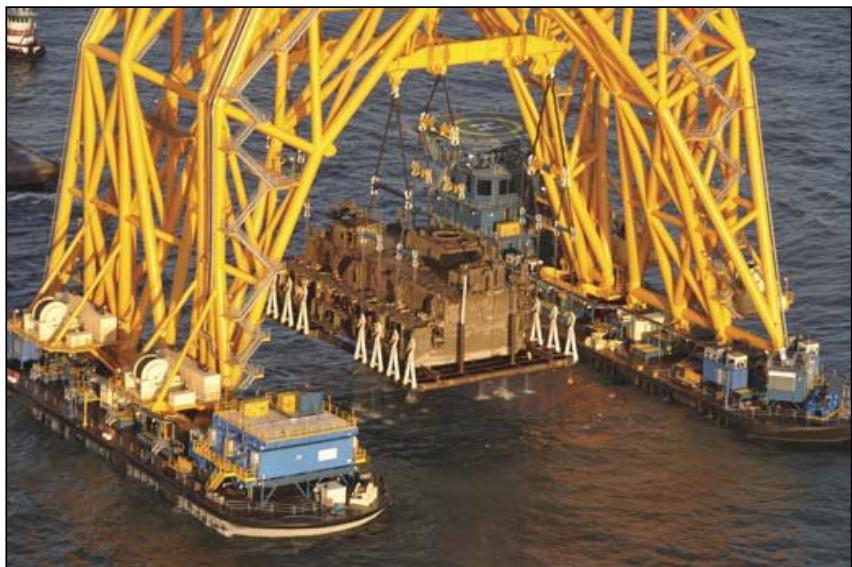
The flurry of hurricane activity off the Texas and Louisiana coasts in the last decade has created complex challenges for the offshore salvage industry in the Gulf of Mexico. From 2004 to 2008, five major hurricanes (Ivan, Katrina, Rita, Gustav, and Ike) left hundreds of structures either damaged or destroyed, elevating the demand for removal. Salvage operations of toppled platforms typically required extensive diver involvement, numerous subsea cuts, and many separate lifts to the surface to remove the wreckage piece by piece.

In 2007, Versabar provided a breakthrough in offshore salvage operations with the development of new catamaran lifting technology, named the "Bottom Feeder." The dual barge-mounted truss system's ability to perform single-piece topside retrievals provided a safe and efficient alternative to time-consuming and hazardous piecemeal recovery.

With the Bottom Feeder's initial success and a large

stream of hurricane-related cleanup remaining in the Gulf, the demand for a second system became apparent. Versabar decided to build a larger system that could not only handle heavier lifts of toppled platforms, but could also perform above-water decommissioning of damaged or abandoned platforms as well. The VB 10,000 was completed in a 12-month span and launched in October 2010 as the largest lift vessel built in the U.S.

After retrieving dozens of sunken platforms with the Bottom Feeder and VB 10,000 lift systems, Versabar engineers found themselves with a new set of challenges. In a number of cases, the sunken topsides were too fragile to remain intact during the lift to the surface. Versabar engineers designed and fabricated large steel "baskets" with multiple lift points to assist in these lifts. Lowered to the seafloor adjacent to the damaged structures, these baskets provide a stable base to enable the damaged topside to be retrieved intact.



As subsea work progressed, Versabar continued to search for more efficient, safer recovery methods that would minimize diver involvement in subsea operations. Diving is inherently dangerous under normal conditions. Sending divers to the seafloor to attach hooks to unstable structures in a debris field with swirling currents and poor visibility exposes divers to significantly greater risks. Challenged to remedy the situation, Versabar president, Jon Khachaturian, came up with a solution that would require minimal subsea preparation in topside retrievals: a new lift device that would eliminate the need for using hooks as lift points. Named, "The Claw," the new device would scoop up the sunken topsides from the sea floor and deposit them on baskets to be retrieved using the VB 10,000 lift system.

The Claw project began in December 2010 with a series of rough sketches as Khachaturian communicated his concept to his team of engineers and draftsmen. The draftsmen then went to work to produce a series of drawings that would evolve into the final documents that fabricators would use for construction. Fabrication began in March 2011 as welders began cutting and fabricating the primary elements of the Claw structure at Gulf Marine Fabricators in Aransas Pass, Texas. By April, assembly had begun, and the large structures began to take shape as the pipe sections were joined.

Meanwhile, four identical baskets to be used in conjunction with the device were engineered and fabricated at Versabar and C&C Marine in Belle Chasse, Louisiana. The baskets, each with a support capacity of 1,250tons, were designed with built-in outward-facing hooks, in order to be lifted from underneath by a steel pipe. The new design would allow for a more efficient recovery procedure and gave the baskets the flexibility of being lifted either by the Claw, or a customized rigging solution.

As work progressed at Gulf Marine Fabricators, the Claw began to resemble the drawings and models. By August, the two identical Claw assemblies were ready to be installed on the VB 10,000 lift system and undergo testing prior to deployment.

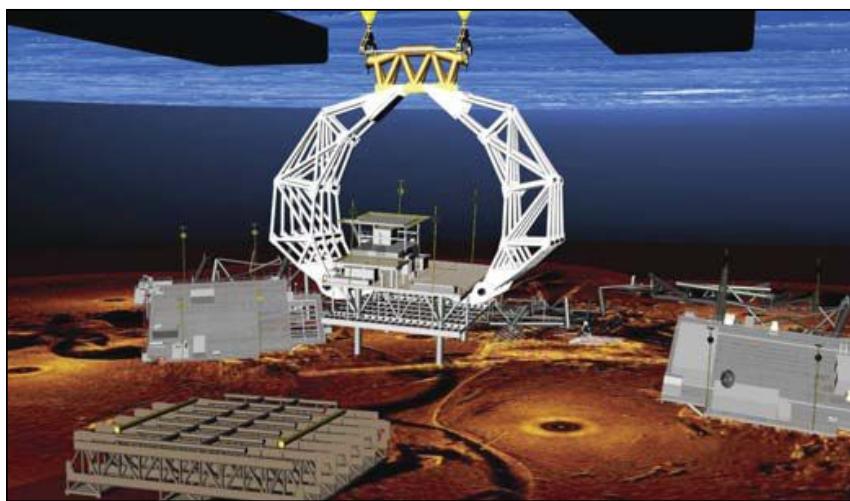
The Claw design consists of two identical

grappling devices suspended from each of the gantries of the VB 10,000. Each Claw assembly operates independently from the other, but they can be used in tandem for a double Claw lift. Each Claw is made up of two halves, joined at the top by a pin connection to a girder. Each Claw girder is attached to the VB 10,000 by two 9-part slings. This sling connection allows the Claw to easily attach to the VB 10,000 and detach for lift operations when it is not used.



The main hoist blocks of the VB 10,000 lift system control the raising and lowering movement of the Claw assembly. A second set of blocks, operated by 100ton hydraulic winches, control the opening movement. These blocks are connected to each Claw half by using a long-throat pelican hook and a 3-part sling. The pelican hook can easily attach to the sling, eliminating the need for manpower in assembling the rigging. When each Claw block is raised, the Claw half rotates on the pin at the girder, resulting in the opening of the Claw. When the block is lowered, gravity pulls the jaws of the Claw back to a closed position. As a backup to real-time surveys, an angle indicator located on the girder allows an ROV to determine the exact position of the Claw when it is underwater.

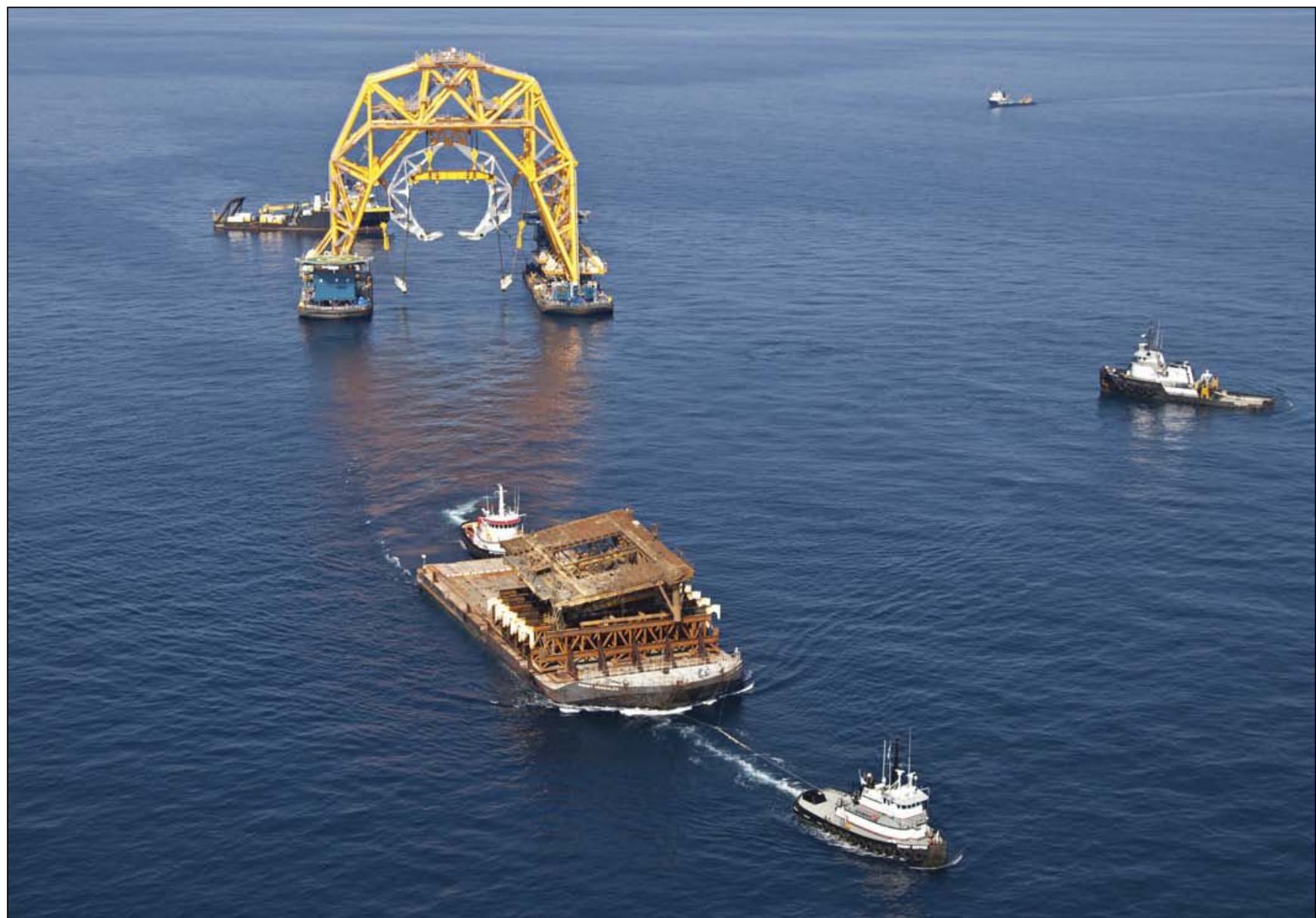




The jaws of each Claw assembly have eight steel tines weighing 11tons apiece. The tines are connected in an offset fashion, allowing them to interlock when the Claw is in the closed position. When retrieving a topside from the seafloor, the blocks open each Claw half, allowing the tines to be positioned around the sunken topside. The tension in the blocks is then released, the Claw moves back to a closed position, and the topside is retrieved in a scooping motion in the process. Depending on the structure, the tines are either inserted into the topside or interlock beneath it, securing it for lifting. The main hoist blocks then raise the Claw assembly as it clutches the topside, and the GPS thrusters of the VB 10,000 position the system above the basket that has previously been lowered to the seafloor. The Claw deposits the topside on top of the

basket, and the entire lift package is now ready to be brought to the surface.

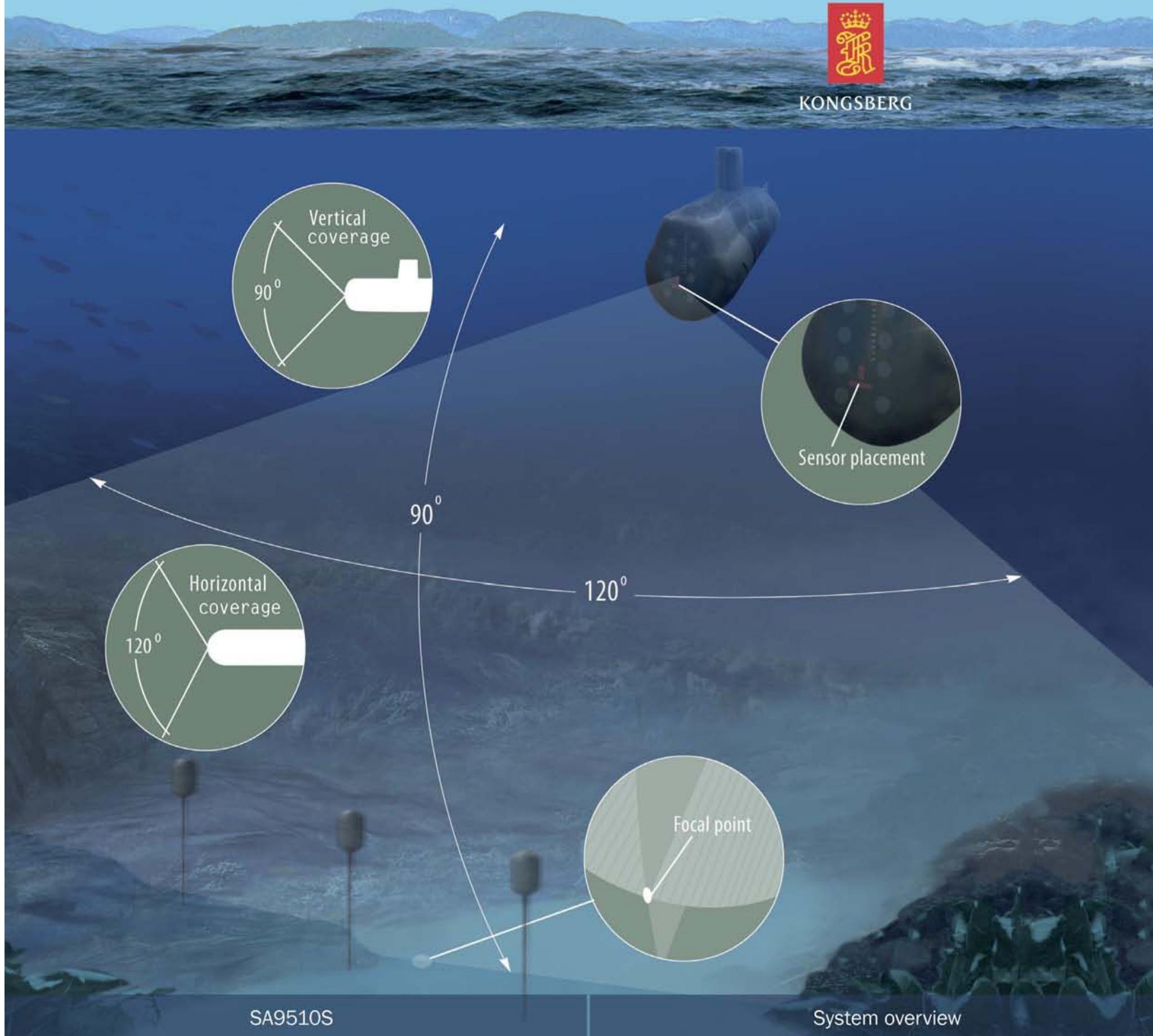
In a 4-day span in September, the VB 10,000 used the Claw to retrieve five sunken topsides from the Gulf of Mexico. One gantry was used to perform the underwater lift of each topside with the Claw, while the other gantry of the VB 10,000 used a counterweighted lift bar rigging setup to lift each basket, resulting in the quick, efficient recovery of approximately 3,500tons of hurricane debris.



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SAIC awarded modification to Deep Sea Operations Program

Science Applications International Corp., McLean, Virginia, has been awarded a \$10,647,009 modification to a previously awarded, cost-plus-fixed-fee contract (N66001-11-C-4116) for the Deep Sea Operations Program to introduce surveillance that operates at extreme ocean depths to detect quiet submarines. The exercising of this 15-month option brings the cumulative value of this contract to an estimated \$12,199,237. Work is expected to be completed 11 April 2013. The contract was competitively procured through the Defense Advanced Research Projects Agency Broad Agency Announcement number 11-24 published via the Federal Business Opportunities website, with 16 offers received. The Space and Naval Warfare Systems Center Pacific, San Diego, California, is the contracting activity.

Navy names five new ships

Secretary of the Navy, Ray Mabus, announced the names of the next five Navy ships. Three Arleigh Burke-class guided-missile destroyers will be named the USS John Finn, USS Ralph Johnson, and USS Rafael Peralta. Two littoral combat ships (LCS) will be named the USS Sioux City and USS Omaha.

First MS degree in Maritime Security offered

The world's first MSc in Maritime Security has been launched by the University of Greenwich. The course is designed to help the expanding international shipping industry tackle threats such as piracy and terrorism on the high seas. It will also deal with new issues affecting environmental and energy security and aims to equip graduates, security personnel and serving and former members of the armed services with the professional skills they need to succeed in senior management roles in this growing professional sector.

India becomes 6th nation to join elite nuclear submarine club

India's long hunt for a nuclear submarine is finally over. But it will take the country another 10 to 12 months to get an operational nuclear weapon capability to fire nukes from the sea. India became the world's sixth country after the U.S., Russia, France, the UK, and China to operate nuclear-powered submarines when the Russian Akula-II class submarine K-152 Nerpa was commissioned into the Indian Navy as INS Chakra on a 10-year lease under a secretive, nearly \$1 billion contract inked in 2004.

SPAWAR selects winning bidder for CANES design

Northrop Grumman Space and Mission Systems Corp. was issued a \$36,646,047 delivery order for the procurement of the CANES network infrastructure to include guided missile destroyer (DDG) variant first article; DDG variant production unit; and multipurpose amphibious assault ship (LHD) variant first article. This contract includes options that, if exercised at the maximum quantities, would bring the cumulative value of the contract to an estimated \$637,773,236. CANES is the consolidation and enhancement of five shipboard legacy network programs and will provide the common computing environment infrastructure for C4I – command, control, communications, computers, and intelligence – applications that currently require system specific infrastructure to operate legacy systems.

Russia to acquire 10 nuke submarines

The Russian Navy will acquire at least 10 new Borey class strategic nuclear submarines in line with a revised state armament procurement program aimed at raising the submarine fleet as the core of the country's naval force in future, the *Kommersant* daily reported. The revised document also envisions the procurement of 10 Graney class nuclear attack submarines and 20 diesel-electric subs, including 6 Varshavyanka class vessels.

OceanWorks completes ADS 1200' major survey and upgrades for Turkish Navy

OceanWorks International is pleased to announce the successful delivery of a major system upgrade, Lloyd's certification renewal, and completion of sea trials for the Turkish Navy's Atmospheric Diving Suit system. After 5 years of operation, the Turkish HARDSUIT™ Atmospheric Diving System (ADS) was returned to OceanWorks International to complete the major Lloyd's survey and upgrade the system electronics to the latest configuration.

The HARDSUIT™ Quantum has been upgraded to include new LED lights, a new low-light pan and tilt camera, and an updated pilot control system that allows for redundant surface controls. A new electronic panel system inside the suit also improves accessibility for maintenance. The upgrade to the QUANTUM II configuration offers much improved operational, maintenance, and training features.

The contract included provision of a temporary replacement ADS system to ensure that the Turkish Navy did not experience any interruption of their rescue and salvage capabilities during this upgrade and refurbishment period. The upgrades and major survey represent a strong commitment by the Turkish Navy to the HARDSUIT™ ADS system as the cornerstone of their submarine rescue capability.

"We are pleased with the results of the Major Survey and believe that the upgrades made to the ADS will further increase the flexibility and efficiency of the Turkish Navy system," states Rod Stanley, chief executive officer at OceanWorks International.

Successful sea trials in Turkey once again proved OceanWorks International's ability to provide cutting-edge systems to the military market and demonstrated OceanWorks International's ongoing commitment to meet and exceed customer requirements.

OceanWorks International is an internationally recognized subsea technology company specializing in the design and manufacture of manned/unmanned subsea systems and specialized equipment for military, oil and gas, scientific, and other marine markets. Offering a full range of subsea system engineering, design and analysis, fabrication, testing, and project management services, OceanWorks International has been at the cutting edge of deep submergence and diving technology, operations, and support for over 20 years.

For more information visit www.oceanworks.com.

Swedish Navy receives REMUS 100 AUVs

The Swedish Navy received the last two of four state-of-the-art autonomous underwater vehicles (AUVs) from the Danish company EIVA a/s. The AUVs are equipped with advanced sensors, sonars, and underwater cameras and are designed to operate autonomously underwater following a mission route planned in advance. The AUVs will be used for mine detection, visual inspection of the seabed, and location of mission objects.

After a series of rigorous sea trials in the Swedish archipelago to test the AUVs' ability to operate different types of missions, including depth-trials, duration-trials, and complex search patterns with the successful identification of objects, the AUVs were handed over to the Swedish Navy. The AUVs are REMUS 100s from the U.S. producer Hydroid, a Kongsberg company.

The delivery includes a communication buoy, sub-surface transponders for accurate positioning, post-processing software, and training of the Swedish Navy personnel.

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

NATO Mediterranean exercise features new NURC technologies

Exercise Proud Manta 12 (POMA 12), which includes participating ships and aircraft from nine NATO nations, were held in February 2012 off the coast of Sicily and included major scientific acoustic tests. Scientists from the NATO Undersea Research Centre (NURC) tested technologies and software developed at the Centre to study detection and tracking of objects in the marine environment using sonar.

Participation in this large-scale exercise enabled NURC to test cutting-edge systems in a realistic environment. It was also an opportunity to see how new advances in research and technology, such as AUVs, can be applied to NATO missions in the future.

POMA 12 was also be the first time the NATO Research Vessel (NRV) Alliance participated in a MANTA-series exercise. The 93m NRV Alliance, which is the quietest, purpose-built research vessel in its class, is one of two ships jointly owned by NATO nations. During the exercise, NURC scientists onboard the NRV Alliance set up an underwater surveillance network using two AUVs towing sonar arrays. Data from the two AUVs was fused using complex software algorithms to develop a comprehensive picture of the undersea environment.

Last year, NURC participated in Proud Manta 11 with three autonomous undersea gliders that gathered data prior to the exercise, helping NATO plan their operations. Following that success, NURC's role was expanded this year to include three experiments: (1) detection and tracking using AUVs; (2) testing NURC-developed software for real-time sonar performance prediction; and (3) monitoring the test area with gliders prior to and during operations to better understand the presence of marine mammals and their behavior during the exercise.

For more information, visit www.nurc.nato.int.

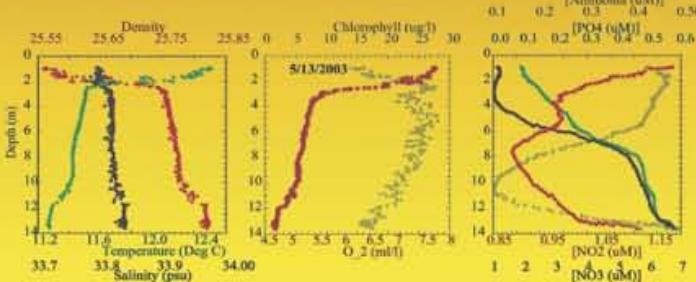
Navy achieves fastest surface craft speed on algal fuel blend

The U.S. Navy successfully concluded its alternative fuel demonstration with the operational tests of the 50/50 algae-derived, hydro-processed algal oil and petroleum F-76 blend in a Landing Craft, Air Cushion (LCAC) amphibious transport vehicle at Naval Surface Warfare Center Panama City.

The tests also marked the fastest speed achieved to date by



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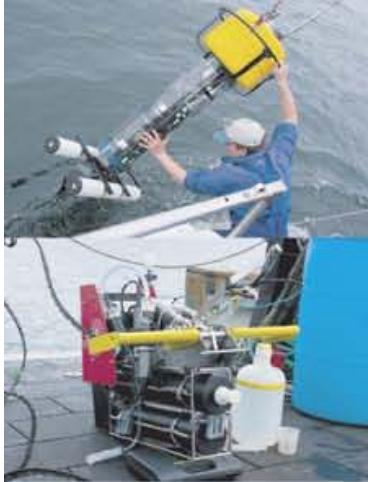
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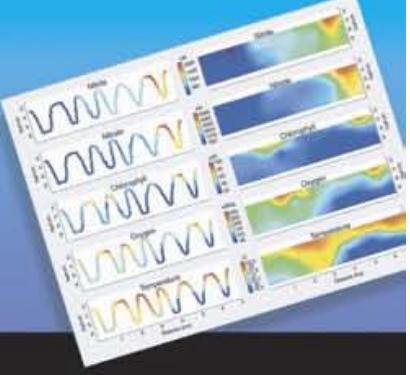
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a U.S. Navy surface craft using alternative fuel blends, as LCAC 91 reached the craft's maximum speed of 50kts. The fastest speed demonstrated on the 50/50 algal blend in previous tests was 44.5kts by the Riverine Command Boat (experimental) (RCB-X) in October 2010 at Naval Base Norfolk, Virginia.

"Our Navy is working to be resilient to any potential energy future. Pursuing sustainable resources, such as alternative fuels that are drop-in replacements, assures our performance and mobility while protecting us from the volatility of the fossil fuel market. This demonstration is another Wright Brothers moment for the Navy. We have shown that we can achieve more than 50kts on the water and Mach 1.7 in the air—all on biofuel blends," said Rear Adm. Philip Cullom, director, chief of Naval operations energy and environmental readiness division.

New submersible platform for security operations

The Marion Hyper-Sub™ provides an entirely new submersible platform for port security, coast guard, and police operations. With its 31ft length, less than 14ft beam, and 6ft 10in. height, the Hyper-Sub™ is small enough to deploy from a small craft launch or wet slip, and can glide beneath the hulls of ships for visual inspections through its 180° acrylic canopy. Despite its small size, the Hyper-Sub™ is all-weather capable and built to operate deep at sea. Its sealed passenger compartment and ballast tanks make it immune to swamping by wave action on the surface. Even if it is inverted by a rogue wave, it can right itself by submerging.

With standard twin 440hp diesel engines and jet drives, the Hyper-Sub™ can cruise at speeds of 45mph on the

surface. With optional twin 1200hp jet turbines, 65mph can be obtained. The Hyper-Sub™ recharges its own air and batteries, so dives can be made repeatedly over the course of a mission, limited only by fuel. With an optional fuel load of 1,050gal U.S. (standard fuel load is 525gal U.S.), the Hyper-Sub has a surface range of up to 1,000mi without refueling.

The Hyper-Sub™ will offer an entirely new tool for covert surveillance and interdiction missions. The Hyper-Sub™ can dive at submarine depth, with a standard pressure hull rated to 600ft with a safety factor of 7. An optional 1,200ft pressure hull is available. The pressure hull and the craft's vital systems are inherently NIJ Threat Level 3 Resistant and can be armored for greater protection. Subsurface performance varies by model and optional components and can be configured to enhance submerged speed and endurance with maximum battery power or for snorkeling operation just below the waves using the surface engines to attain 10kts.

The Hyper-Sub™ is completely customizable and upgradeable. Hard points can be configured to mount and supply power to any weapon system, armor, electronic component, camera, sensor pod, storage rack, or manipulator arm to the client's specifications or to increase fuel or battery load. Each component can be disconnected and upgraded with ease.

For more information, visit www.hyper-sub.com.

Belgian Navy purchases two REMUS 100 AUVs

The Belgian Navy has added to its fleet of Autonomous Underwater Vehicles (AUVs) from Hydroid, Inc., a subsidiary of Kongsberg Maritime and the leading manufacturer of AUVs. Two new REMUS 100 AUVs will enable the Belgian Navy to detect underwater mines, improvised explosive devices and other undetonated ordnances at Very Shallow Water (VSW) areas.

"Belgium's Navy is one of 13 navies around the world using Hydroid AUVs to keep people safe," said Christopher von Alt, President and co-founder of Hydroid. "Employing a REMUS 100 allows the Navy to survey areas where boats cannot travel, contributing to the protection of the entire Belgian coast from explosives, regardless of topography."

In 2005 the US-based Belgian Military Supply Office purchased a sin-

gle REMUS 100 system as an evaluation unit. A series of successful trials with the REMUS led to this most recent purchase of two additional AUVs, bringing Belgium's REMUS 100 fleet to three. Evaluations proved out the versatility of the REMUS 100 in a variety of oceanographic conditions, making it clear that the AUV was ideally suited for the Navy's VSW needs.

Hydroid's REMUS AUVs are modular: They can be fitted with a variety of sensors and used to aid in hydrographic surveys, harbor security operations, debris field mapping, scientific sampling and mapping, as well as many basic and applied research programs funded by ONR, DARPA and the United Kingdom Ministry of Defense.

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

Navy announces next LCS named the USS Gabrielle Giffords.

The selection of Gabrielle Giffords, designated LCS 10, honors the former Congresswoman from Tucson, Arizona, and who is known for supporting the military and veterans.

It was also announced that the ship's sponsor will be Roxanna Green. Green is the mother of Christina-Taylor Green, the nine-year-old girl who was killed while attending the meeting of constituents where Giffords was shot. A ship's sponsor plays an important role in the life of the ship, naval tradition holds that her spirit and presence guide the ship throughout its service life.

The ship is part of a dual-block buy of LCS class ships announced by Mabus in December 2010. By procuring both versions of the LCS – Lockheed Martin's semiplaning monohull and General Dynamic's aluminum trimaran – the Navy is stabilizing the LCS program and the industrial base with an award of 20 ships each; increasing ship procurement rates to support operational requirements; sustaining competition through the program; and enhancing foreign military sales opportunities. Both designs meet the Navy's LCS requirement, while the diversity provided by two designs provides operational flexibility.

The USS Gabrielle Giffords will be 419 feet in length, have a waterline beam of 103 feet, displace approximately 3,000 tons, and make speed in excess of 40 knots. The construction will be led by Austal Shipbuilding in Mobile, Alabama.



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New Capabilities for Offshore Long-term Power

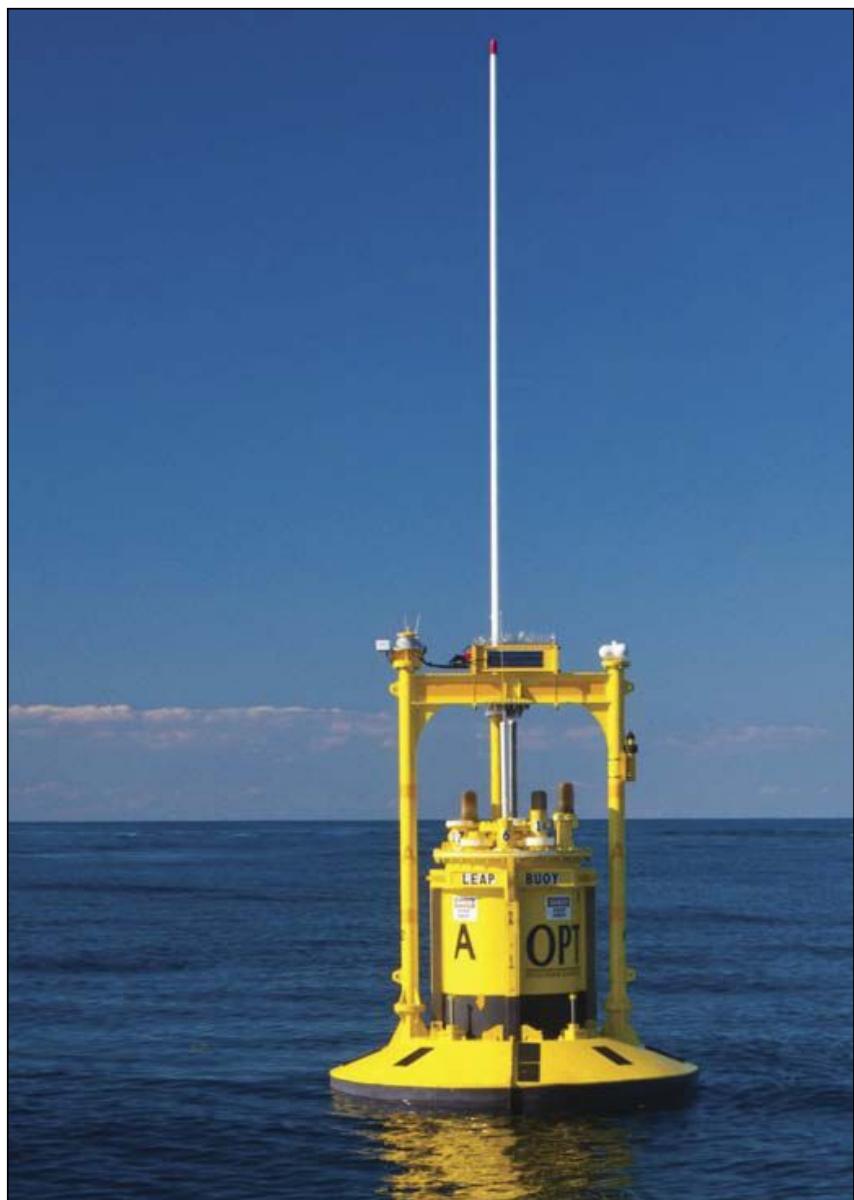
By Phil Hart, Ph.D, Ocean Power Technologies Inc.

Ocean Power Technologies Inc. (OPT, Pennington, New Jersey) last year deployed its latest generation of Autonomous PowerBuoy into waters off New Jersey in the U.S. This paper discusses results from that deployment and points to a new capability in supplying relatively high levels of power to isolated offshore locations in support of almost any local need.

PowerBuoy technology

OPT's autonomous PowerBuoy technology has been under development since 2006 in its current form. Working with a dual-absorber concept, the device operates by harnessing the differential motion between two hull forms: one designed to remain as still as possible and one to move dynamically in response to a wave. Figure 1 shows the main elements of the technology, which is scalable from a few tens of watts up to megawatt sizes.

For maritime defense and security purposes, PowerBuoys are configured in "autonomous" mode, where the power produced is stored locally on the buoy for use by sensors or any other equipment payload at the ocean site of the PowerBuoy. By way of capability demonstration, this paper discusses the



500W PowerBuoy developed under a contract with the U.S. Navy as part of the Littoral Expeditionary Autonomous PowerBuoy (LEAP) project over the period 2010-11.

Autonomous LEAP PowerBuoy

Autonomous PowerBuoys are configured very differently to the standard type of wave energy converter. For utility power generation, which is the target for almost all activity in the wave energy converter industry, the mission is to produce and export to shore as much energy as possible as consistently as possible and for the lowest cost. Conversely, for autonomous wave energy converter systems, the mission is to create power at site, which will be used at that site, without significant supporting infrastructure and for the lowest cost. Notice that maximum power did not come into the description; the requirement for the power becomes all about consistency rather than maximum magnitude. Customer demands are for a specified amount of power, 100% of the time, over the whole mission duration. One can quickly see why this is the case, when consideration is given to the applications that the Autonomous PowerBuoy is deployed for, viz. detections systems, area monitoring, intrusion detection, and critical communications relays, among others. Critically important is that whatever the payload, it is operational and available with extreme up-time statistics. Subsequently, the WEC designer's task becomes very targeted towards persistence of power, reliability, and efficiency.

The LEAP PowerBuoy was originally designed to deliver power to a payload at a rate of 200W, with availability statistics

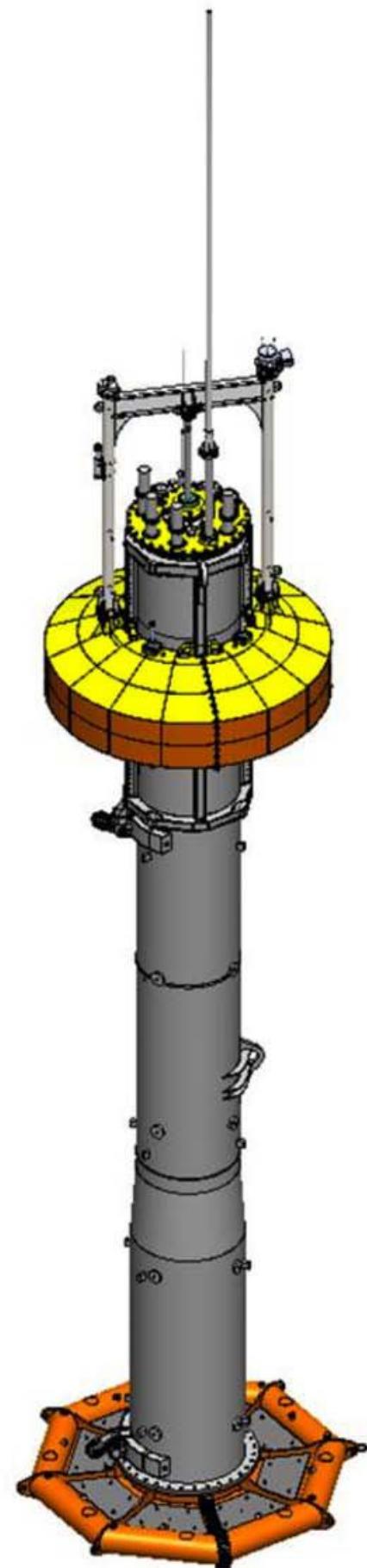


Figure 1 Representation of the LEAP Autonomous PowerBuoy



Figure 2 Inspection of the LEAP PowerBuoy after Hurricane Irene – no damage or degradation was found

approaching 100%. To understand the implications of such rigorous availability requirements, models were developed to investigate the periodicity of calm water conditions at numerous sites around the coastal U.S. These set the basic design criteria for maximum no-wave conditions, a key aspect in defining the power storage requirements. The design also concentrated on extreme reliability and low internal power consumption (so-called hotel loads) in order that the size of the PowerBuoy could be minimized and, thus, costs reduced, keeping in mind that the power requirements were specified over a full 3 year deployment. The balance between reliability engineering, efficiency, cost, and fundamental system capability was and remains extremely challenging.

The resulting system outperformed all of the initial and stretch goals for the project. Being deployed off New Jersey in summer 2011, the buoy was expected to be challenged by very small wave conditions that would stretch the efficiency of the system to its maximum. In reality, the buoy saw the full range of annualized wave conditions expected at the site within 3 months and saw close to its design wave within 3 weeks of installation thanks to a direct hit from Hurricane Irene. Wave heights exceeding 50ft tested the survivability design of the device, with the PowerBuoy emerging unscathed from the storm. Subsequent less vigorous storms were also rode out without incident.

The complex control system embedded within the buoy was able to vary the hotel load with sea state, lowering the loads to a few watts in low sea states by actively managing the power electronics, switching in and out unnecessary equipment elements depending on power levels being generated. The system proved to exceed OPT's efficiency targets, with hotel loads being less than 40W at all times. The system produced power at a level that was significantly greater than the basic aims of the system, exceeding the stretch goal of 350W to 400W by averaging at 500W for the period of the trial. Interestingly, this over-achievement in power generation was

directly attributable to maximizing efficiency and minimizing hotel load and not by increasing the physical or hydrodynamic attributes of the system, a result which has implications across our product platforms and is actively being embedded within all PowerBuoy designs including utility-scale.

The performance during the trials has allowed us to confirm with our models the expected power performance of the LEAP PowerBuoy at various representative sites around the world, as shown in Table 1. This gives great confidence in the ability of the PowerBuoy to operate successfully throughout the world's oceans and provide significant power for customer payloads.

Conclusions

The trials of the LEAP PowerBuoy demonstrate a new capability for homeland security, the military, and the offshore industry. A fully autonomous, 3 year life, zero-maintenance device is now available to defense and government agencies (as well as to offshore oil and gas and other sectors) that can power practically any 500W load—be that mounted on the buoy or subsea/seabed-mounted. It also has the ability to communicate the resulting payload gathered information back to shore reliably and consistently, making it suitable for real time monitoring and surveillance. The applications are numerous and potentially revolutionary within the sphere of maritime and coastal defense, where relatively high power on a sustainable basis has until now been elusive.

Site	Power (W)
Cornwall, UK	650
Mokapu, HI	658
Eureka, CA	572
Rhode Island	523
Reedsport, OR	499
New Jersey	492
Bayonne, France	477
Florida	443
Santona, Spain	420
Gulf of Mexico	427
Guam	375

Table 1 Typical power available from the LEAP PowerBuoy at various sites around the world

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OFFSHORE INDUSTRY

Global oil and gas industry capex to increase by 13% in 2012: report

Global oil and gas capital expenditure (capex) registered a sharp increase in 2011, up 14% over 2010, GlobalData reported, adding that capex by global oil and gas companies is expected to climb another 13% in 2012. The increase will primarily be driven by high, sustained crude oil prices.

As the availability of crude oil and natural gas from onshore fields declines, more complex and expensive technology will be required to produce oil and gas from deep and ultra-deep offshore areas and unconventional sources such as oil and gas shales, oil sands, and coal bed methane, Global Data said, estimating that in 2012, the global oil and gas industry will register a total capex of \$1.026 trillion.

National oil companies (NOCs) and integrated oil companies are expected to register the highest expenditure, accounting for 84.6% of global oil and gas capex in 2012.

In terms of capex growth in 2012 over the last year, capex from independent oil and gas companies will increase from \$131 billion in 2011 to \$158 billion in 2012, representing a 20.6% growth. Capex from NOCs will increase from \$448 billion in 2011 to \$513 billion, up by 14.5%. Integrated oil companies will increase capex from \$329 billion in 2011 to \$355 billion in 2012, representing a 7.9% growth.

Shell losing \$1B a year on U.S. Gulf of Mexico drilling delays

Royal Dutch Shell is losing about \$1 billion a year from drilling delays in the Gulf of Mexico since the 2010 Macondo disaster, according to a Bloomberg news report. Shell's production in the region will be curbed by about 50,000boe this year, similar to 2011, chief financial officer Simon Henry said. The company expects to return to planned operations in the U.S. Gulf by 2014.

"The cash flow implications are a billion dollars or more per year relative to where we want to be," Henry recently said in London. "We are catching up."

The company, which last March said it planned to raise output to 3.5Mboe/d in 2012, is now warning that production could be lower due to Gulf drilling delays,

asset sales, and oil and gas prices in the U.S. The U.S. Interior Department issued new safety regulations after lifting the drilling moratorium in October 2010, put in place after BP's Macondo well exploded in April the same year. The blowout, which killed 11 and sank the drilling rig, led to hundreds of lawsuits against BP and its partners and contractors.

U.S. crude output to jump by more than 20% to 6.7 million b/d in 2020

Gulf of Mexico development, as well as growing shale production, will boost U.S. crude oil production by more than 20% to 6.7Mbbl/d in 2020 from 5.5Mbbl/d in 2010, the U.S. Energy Information Administration said in its annual domestic energy outlook.

That would mark the highest level of U.S. oil output since 1994, thanks in part to advances in drilling techniques that have opened the door to tapping the nation's vast shale reserves.

The EIA's forecast for U.S. oil production is 11% higher than its previous estimate. Shale oil production made up 21% of output in the Lower 48 states in 2010. By 2035, such production will account for 31% of that output. While oil production is expected to slow after 2020, output will remain above 6.1Mbbl/d through 2035, the EIA said.

U.S. oil imports are expected to drop to 36% of total consumption by 2035, from 49% in 2010 as production rises while demand is limited by modest economic growth plus higher vehicle efficiency standards, according to the EIA report.

Jack Gerard, president and chief executive officer at the American Petroleum Institute, said the EIA predictions were welcome news but fell short of what's possible.

"The increases in domestic oil and gas production forecast by EIA will mean added jobs, revenue, and energy security," he said in a statement. "This is progress, but it falls far short of what we could do with greater access to domestic supplies and sounder regulatory policies."

Gerard has said the U.S. economy could be "hemorrhaging" for "decades to come" unless the administration reversed course by favoring domestic oil and natural gas development.

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Australia's oil and gas industry said to be facing major skill shortages

Industry authorities warn that skill shortages in Australia's oil and gas sector could have dire consequences. In fact, it is such a concern that last month's Australasian Oil and Gas Exhibition and Conference (AOG) in Perth made the dramatic skills shortage one of its central focus areas.

One of the major obstacles in attracting skilled workers is said to be a lack of clear communication from the industry regarding training locations for job seekers, the skills they should focus on in their training, and the ways to maximize their chances of entering the industry.

"It's anticipated that around 3,200 new operational jobs will be generated from the liquefied natural gas (LNG) trains due to be constructed by 2015," Jody Elliott, director of The Resources Channel, recently told members of the press. Elliott chaired a conference session at the AOG conference entitled, Resourcing the Pipeline: Skills for Tomorrow.

"With another 61,500 new jobs required in the mining industry and 45,000 in resource construction, Australia's resources sector is facing a skills shortage which far exceeds that experienced in the 'boom' period of 2003 to 2008."

This means the threat of this skills shortage could leave Australia's resources sector as much as 36,000 tradespeople short by 2015.

AOG plans to analyze themes, including the sourcing of skills and labor necessary for future Australian oil and gas projects, current skills development programs and their effectiveness or lack thereof, and the current opportunities for entry-level position applicants. To counteract the skills shortage, AOG also will see the conference partner with universities and energy employers.



Brazil's subsalt basins recorded highest number of discoveries

Brazil recorded the largest number of oil and gas discoveries in 2011, according to GlobalData. The country recorded 19 discoveries last year out of the 109 discoveries recorded globally. Of the 19 oil and gas discoveries in Brazil, 17 were made in offshore basins in Brazil's subsalt region. Brazil's Campos basin was the site of eight discoveries, followed by five discoveries in both the Santos and Espírito Santo basins.

GlobalData noted that Brazil's national oil company Petróleo Brasileiro S.A. (Petrobras) maintains clear dominance over the entire exploration and production activities in the country's offshore and subsalt plays. The company contributes the most in terms of production volumes, investments, and exploration. It holds the highest number of active new exploration and extension licenses in all three subsalt basins.

The operations of Petrobras are backed by Brazil's government. Under a regulatory decision by the Brazilian petroleum agency, Petrobras is set to be an operator across several blocks in the subsalt prospects, and the company will maintain a minimum 30% equity stake in any future block licenses. This is in addition to participation in the licensing rounds conducted by Brazil's National Petroleum Agency (ANP) (Agência Nacional do Petróleo).

Shell gets conditional BOEM approval for Chukchi exploration

The Bureau of Ocean and Energy Management (BOEM) has conditionally approved Shell's revised Chukchi Sea exploration plan set to begin this year.

Shell still must get approval from the Bureau of Safety and Environmental Enforcement (BSEE) regarding its oil spill response plan and well-specific applications for permits to drill. Shell must also obtain permits from the Environmental Protection Agency, the U.S. Fish & Wildlife Service, and the National Marine Fisheries Service.

If the exploration and approvals process allow, Shell proposes to drill up to six exploration wells in Alaska's Chukchi Sea beginning in the 2012 drilling season.

Shell currently is evaluating the conditions stated in the approval, particularly one that could limit the Chukchi drilling season. BOEM says Shell must cease drilling into zones capable of flowing liquid hydrocarbons 38 days before the first date of ice encroachment over the drill site. Based on a 5-year analysis of historic weather patterns, BOEM anticipates



November 1 as the earliest anticipated date of ice encroachment. The 38-day period would also provide a window for the drilling of a relief well, should one be required. Other conditions are concerned with Shell's measures taken to mitigate oil spill risk and the availability of spill response equipment in the Chukchi Sea.

Riser system strengthened for Bacchus North Sea installation

Aquaterra Energy has installed what it believes is a "world first" installation of a 10,000psi, 20in. (51cm) I.D. full bore drilling riser for Apache North Sea. The high pressure riser system was designed for Apache to drill three subsea wells on the Bacchus field in the UK central North Sea from the jack-up Rowan Gorilla VII.

Aquaterra Energy, which had previously developed a 5,000psi riser system,

used Merlin Connectors provided by Oil States Industries (UK) Ltd. to produce the higher capacity, 10,000psi system. The company claims that Merlin connectors have never before been used at that size or

pressure for this type of application. To withstand the increased pressure and anticipated loads, the joints were fully forged with a wall thickness of 2 ½-in., and the overall dimensions of the Merlin connector were increased. According to Aquaterra, the connector significantly increases running speed and improves efficiency of operations compared to standard flanged alternatives.

U.S., Canada complete step in Arctic Ocean continental shelf identification

A fourth joint project to map the Arctic Ocean continental shelf by the U.S. and Canada is now complete. The 2011 mission covered 5,600mi total and went 1,230mi north of the Alaskan coast. The purpose of the survey was to determine the extent of the continental shelf beyond 200nmi (230mi).

The project lasted 6 weeks and used

an icebreaker vessel from each country. Each vessel had different tools for the job. The USCG Cutter Healy has a multibeam echo-sounder while the Canadian Louis S. St-Laurent collected seismic data.

Trade group strongly opposes EU regulation for offshore industry

Offshore industry representative Oil & Gas UK strongly opposes the European Commission's proposed safety regulation for the UK's offshore oil and gas industry, saying the law would more likely damage the safety of UK operations than improve it.

"While we will always support proper moves to improve safety standards, this proposal to dismantle the UK's world-class safety regime, which is built on decades of experience, and replace it with new centralized EU regulation is likely to have exactly the opposite effect," said Malcolm Webb, Oil & Gas UK's chief executive.

He added: "The commission has put forward an unjustified, poorly-worded, and ambiguous draft regulation, which risks causing serious confusion within the industry and a very significant amount of unnecessary and unproductive work for regulators in the UK and elsewhere."

The trade body said that the new law would stretch the resources of those regulators and divert attention from their work with the industry on front line safety issues. Three countries, including the UK, Netherlands, and Denmark, of the 27 EU member states have offshore oil and gas industries of real scale. Norway, which is within the European economic area, is also subject to this regulation.

Poll: 85.7% of respondents believe A&D activities will increase in 2012

More than 85% of respondents to a poll believe global acquisition and divestiture activities will increase in 2012.

In December 2011, Oil & Gas IQ launched a global study polling A&D professionals on their thoughts on the current landscape and where opportunities for new business lie. Among the findings are that 85.7% of respondents believe acquisition and divestiture activities will increase this year.

With the last few years' economic instability, it's more important than ever for exploration and production companies to stay on top of their portfolios, Oil & Gas IQ pointed out.

Some of the reasons for this influx in activity mentioned in the survey include smaller companies lacking finance and large companies finally getting around to shedding smaller, non-core packages.

T.D. Williamson, Inc. performs first subsea STOPPLE® Train Isolation

T.D. Williamson, Inc. (TDW), a global provider of pipeline equipment and services, said it completed the first-ever subsea STOPPLE® Train isolation. The patented STOPPLE® Train plugging system links two plugging heads into a "train" capable of providing the added assurance of double block at each isolation point. The double isolation was performed in about 60ft of water in the Gulf of Mexico to facilitate abandonment and decommissioning of an old platform.

In the past, pipeline operators used a number of different methods to achieve double block functionality. These methods typically required more than one hot tap and fitting to achieve a double block, but the STOPPLE® Train plugging system requires only one tap and fitting. Its linked plugging heads can be inserted into a line through just one opening. A single hot tap and fitting yields the double block benefit of two separate in-line plugs.

Double block was critical in this case. A platform was being abandoned, requiring the removal and replacement of a section of pipeline. The pipeline section came up as a riser, crossed the platform, and returned down as a riser before continuing. Both of the risers and the platform section of the line

needed to be removed. The line was bled down to 0psi, then two 12in. STOPPLE® Train systems were inserted – one on each side of the section to be removed – to prevent seawater, sand, and organic debris from entering the 100mi line when the section of the pipeline was cut out.

"The STOPPLE® Train system was ideal because the line in question was a non-piggable sales gas line," said Calvin Schmidt, senior sales representative for TDW. "It was very important not to flood the line. The dual seals of



each STOPPLE® Train plugging system ensured that the line was isolated and would not flood."

Once the new piping was successfully installed, the seawater between the two plugging systems was evacuated and replaced with warm nitrogen to absorb and remove moisture. Following removal of the plugging heads, the pipeline was re-energized and placed back into service.

Nearly 80% of Florida voters favor more oil, natural gas development

Approximately 78% of Florida voters favor more development of U.S. oil and natural gas resources, and similar numbers believe more oil and natural gas development would provide major benefits to the nation, including more U.S. jobs, according to a recent poll.

"Voters in Florida know developing more of America's homegrown energy makes sense for jobs, government revenues, and our energy security," said Jack Gerard, president and chief executive officer of the American Petroleum Institute. "Our economy will demand large amounts of oil and natural gas for at least several more decades, even as the role of alternative energy increases. Common sense says we should have Americans producing that oil and gas here at home as much as possible."

The telephone poll of 600 likely Florida voters found that large majorities believe that more U.S. oil and natural gas development could lead to more American jobs (91%), increase the nation's energy security (85%), help reduce consumer energy costs (80%), and deliver more revenue to the government (73%).

adding "I hope I'm wrong on this. I'd love to be wrong on this."

The Obama administration has allowed for more drilling to boost supply, although red tape often prevents those projects from getting off the ground. Furthermore, by halting expansion of the Keystone pipeline project from Canada into the U.S., Obama further missed an opportunity to increase energy supply.

"We have not had the kind of public policy support for domestic natural resource production increases that would carry through into market prices in the U.S. given the global demand and geopolitical uncertainty that comes out of the (Persian) Gulf daily," Hofmeister said.

Central Gulf of Mexico lease sale scheduled for June in New Orleans

The BOEM will hold consolidated Central Gulf of Mexico lease sale 216–222 in New Orleans, Louisiana on 20 June 2012. The sale will include all available unleased areas in the Central Planning Area offshore Louisiana, Mississippi, and Alabama.

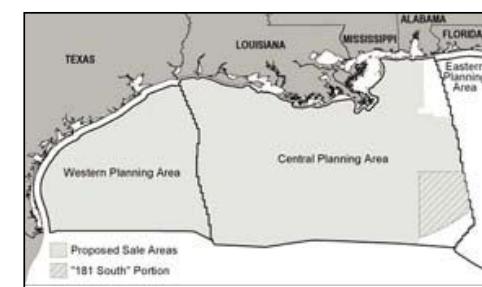
This is the last remaining sale scheduled in the 2007–2012 Outer Continental Shelf (OCS) oil and gas leasing program. The proposed 2012–2017 OCS leasing program, if approved, schedules 12 lease sales in the Gulf of Mexico.

The consolidated Central Gulf lease

sale includes about 7,250 unleased blocks covering nearly 38 million acres. The blocks are located from 3mi to about 230mi offshore, in water depths ranging from 9ft to more than 11,115ft.

BOEM estimates the region contains close to 31Bbbl of oil and 134Tcf of natural gas that are currently undiscovered and technically recoverable. BOEM estimates that the Central Gulf sale could result in the production of 1Bbbl of oil and 4Tcf of natural gas.

Administrative reforms include escalating rental rates "to encourage prompt exploration and development of leases, as well as time under the lease if the operator demonstrates a commitment to exploration by drilling a well during the base period." The durational terms of leases are graduated by water depth to account for differences in operating at various water depths.



Shell firms up subsea hardware for Linnorm

Shell Projects and Technology awarded FMC Technologies a 5-year framework agreement for A/S Norske Shell's deepwater subsea production systems. The first contract will likely be for the Linnorm subsea gas development in 984ft of water depth in license PL 255 Norwegian Sea, where a final investment decision is likely in early 2013. Linnorm was proven in 2005 and delineated 2 years later. It comprises six stacked reservoirs with varying output characteristics. Development would call for processing capacity of 530mmcf/d to be installed on the Draugen platform, with four or five wells drilled from two, four-slot subsea templates. Processed gas would be exported from Draugen via a new pipeline, Norwegian Sea Gas Infrastructure (NSGI), to Nyhamna. Norske Shell is operator, in partnership with Petoro, Total, and Statoil.

Deep Down lands multiple subsea contracts

Deep Down, Inc. was awarded multiple contracts for subsea hardware and deployment equipment orders worth in excess of \$2.6 million. Two orders were placed by a major controls OEM and the third order placed by an international installation contractor. Deep Down will be manufacturing umbilical termination assemblies, flying leads, umbilical termination heads, rapid deployment cartridges, Moray® and flying lead deployment frames. The majority of the work was scheduled to be completed in Q1 2012, with the remainder to be completed in the beginning of Q2 2012. The products and equipment will be used on three international projects in the Far East and Mediterranean and one project in the Gulf of Mexico.

McDermott signs deal for spool base in GoM

McDermott International signed a 10-year frame agreement for spool base services in the Gulf of Mexico with Helix Subsea Construction, Inc. The agreement allows McDermott, when contracting with Helix, to offer full-service, shore-based pipeline stalking and spooling services from Helix's 120 acre spool base at Ingleside, Texas to pursue deepwater and ultra-deepwater installation projects. McDermott will ensure stringent welding criteria required for deepwater subsea pipelines, such as fatigue sensitive Steel Catenary Risers, meet or exceed clients' rigorous specifications. McDermott's subsea construction vessels North Ocean 102 (NO102) and newbuild Lay Vessel North Ocean 105 (LV105), due to be completed later this summer, both have reel-lay capabilities. LV105 is designed to lay both flexible and rigid pipe up to 16in. with tension and hang-off clamp capacities of 440tons and 550tons, respectively. NO102 offers flexible and umbilical installation and is equipped with a 330ton low squeeze pressure single tensioner and high capacity carousel.

**BP approves Mad Dog Phase 2 in Gulf of Mexico**

The existing Mad Dog spar in Green Canyon is capable of producing 80,000bbl of oil and 60,000Mcf of gas per day

Mad Dog operator BP and partners BHP Billiton and Chevron have decided to move ahead with the second development phase of their deepwater Gulf of Mexico field from an additional spar platform capable of producing 120,000 to 140,000boe/d.

"We have just sanctioned with our partners ... one of the largest new free-standing developments in the Gulf of Mexico," BP chief executive officer Bob Dudley told reporters at a recent press conference.

The new spar will be located on the Mad Dog field's southern extension, successfully appraised in 2009.

The Mad Dog field started production in 2005 and also utilizes a truss spar platform, equipped with facilities for simultaneous production and drilling operations. The facility is designed to process 80,000bbl of oil and 60,000cf of gas per day.

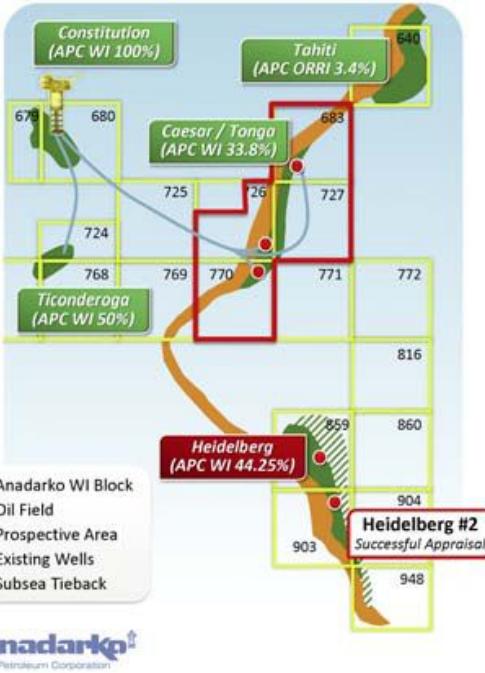
BP has a 60.5% working interest in Mad Dog. BHP Billiton has a 23.9% stake, and Chevron has 15.6%.

The Mad Dog field is located in Western Atwater Foldbelt, about 190mi south of New Orleans, Louisiana. The nominal water depth is 4,500ft, and the field runs along the Sigsbee Escarpment. The discovery well, in water depths of approximately 6,600ft, was spudded in May 1998 in Green Canyon Block 826 and was drilled to a measured depth of 22,410ft. The initial project was sanctioned for development in 2001.

Last year, BP, after drilling a successful appraisal well in a previously untested northern segment of Mad Dog, roughly doubled the size of the field's potential resource, up to 4Bbbloge/d.

Successful Heidelberg Appraisal Well

Gulf of Mexico – Green Canyon Block 903



Heidelberg appraisal well confirms 200Mbbi reserve estimate

Anadarko Petroleum Corp. said it drilled a successful appraisal well near its Heidelberg discovery in the Gulf of Mexico, supporting its model for a reservoir it believes contains 200Mbbi of oil.

"We've been looking forward to drilling an appraisal to our Heidelberg discovery for some time, and we could not be more pleased with the results," Bob Daniels, Anadarko's senior vice president for worldwide exploration, said in a statement.

The well, drilled on Green Canyon Block 903, is 31,030ft deep in about 5,000ft of water and follows the initial discovery well drilled in 2009. The new well encountered 250 net ft of oil pay. The discovery well hit 200 net ft.

Anadarko operates the block with a 44.25% interest, Apache Corp. and Eni each have 12.5%, Statoil 12%, and ExxonMobil Corp. and Cobalt International Energy each have 9.375%.

Deepwater Gulf of Mexico natural gas pipeline expansion planned

Williams Partners and DCP Midstream Partners plan to expand the Discovery natural gas gathering pipeline in the deepwater Gulf of Mexico.

Discovery intends to construct a Keathley Canyon connector, a 20in. diameter, 215mi subsea natural gas gathering pipeline for production from the Keathley Canyon, Walker Ridge, and Green Canyon areas in the central Gulf.

The connector will originate in the southeast portion of the Keathley Canyon area and terminate into Discovery's 30in. diameter mainline near South Timbalier Block 283. The pipeline will be capable of gathering more than 400Mcf/d of natural gas. Construction on the project is

Gulf of Mexico

Upstream Oil & Gas

expected to begin in 2013, with a mid-2014 expected in-service date. Total capital expenditures for the Keathley Canyon Connector are estimated to be approximately \$600 million.

ATP works to complete Mississippi Canyon 942 No. 2 well in the GoM

ATP Oil & Gas Corp. has completed drilling the Mississippi Canyon Block 942 No. 2 well in the U.S. Gulf of Mexico at the Telemark Hub. The well

reached total depth of 21,400ft and logged three producing sands with a total of 239ft of pay. Following a regularly scheduled blowout preventer test, ATP plans to complete the C sand with perforations at 17,560 to 17,730ft. After that, the B sand will be perforated at 17,410 to 17,480ft. The S sand at 21,010 to 21,090ft has been perforated and completed.

ATP plans to comingle the three sands once the pressure equalizes.

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Craig Group to invest \$79M in new vessels with Talisman contract

North Star Shipping, a division of the family-owned global shipping and energy services firm The Craig Group, was awarded a major contract with Talisman Energy (UK) Ltd. Under the contract, the company, which provides offshore support vessels to the industry, will build two new platform supply vessels to support Talisman Energy's North Sea operations.

The contract, which is for 5 years with multiple options, will create 50 new jobs and represents an additional \$79 million investment by The Craig Group in its fleet. The two IMT-982

The vessel's revolving crane capacity of 3,307tons and over-the-stern capacity of more than 4,850tons allow it to undertake large heavy lifts. It can also perform beach pulls (on anchors) and in-field pipeline and subsea installations. The DP capability assists work in congested fields, without the risk of damage to the existing facilities.

ENSCO 8506 ultra-deepwater semi rig contracted to Anadarko

Enso plc said that one of its subsidiaries entered into a contract for ENSCO 8506 with Anadarko Petroleum Corp. The initial contract term is for 2.5 years in the U.S. Gulf of Mexico at a day rate of \$530,000, plus cost adjustments. The contract adds more than \$480 million to revenue backlog.

Delivery of ENSCO 8506 from Keppel FELS Limited shipyard in Singapore is scheduled for Q3 2012, followed by contract commencement in Q4 2012 once mobilization, sea trials, and acceptance testing have been completed.

ENSCO 8506 is the final of seven rigs in the ENSCO 8500 series. For the first three quarters of 2011, these rigs that have operated in Asia, North America, and South America achieved 97% utilization.

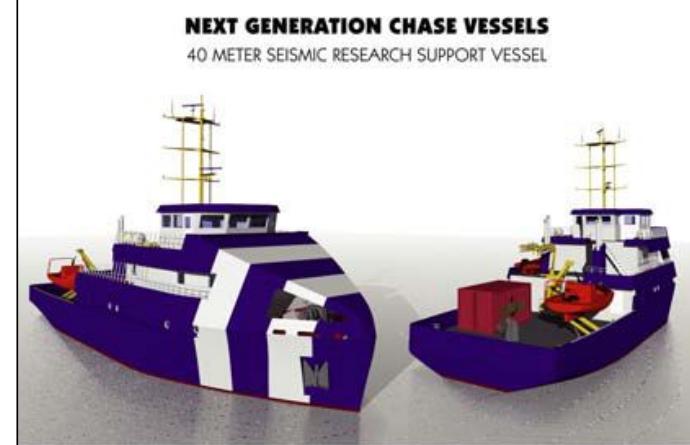
The proprietary design of the ENSCO 8500 series rigs was developed with extensive input from customers to address the drilling requirements for virtually every deepwater field around the world. The design includes a 35,000ft nominal rated drilling depth, two million pounds of hoisting capacity, 8,000tons of variable deck load, and an open layout well suited for subsea completion activities.

The uniform design of the ENSCO 8500 series streamlines construction, operations, inventory management, training, regulatory compliance, repairs and maintenance. It also provides flexibility for customer specific enhancements: in particular, the 8500 series may be modified to drill and complete wells in water depths up to 10,000ft.

Dutch company Groen orders two seismic research support vessels

Dutch shipping company Groen ordered two seismic research and support vessels with Maaskant Shipyards Stellendam (Netherlands), part of the Damen Shipyards Group. Maaskant has broad experience in maintenance and repair of offshore support vessels. However, an order for the newbuilds is a first, the company said.

The vessels have been designed in cooperation with Saltwater Engineering (Netherlands) to meet the needs and



experiences of Groen. The vessels' all-weather chase and support tasks will focus on seismic activity research. Both vessels will be 40m long with a 9.30m beam. Two Caterpillar propulsion units with a total of 1,940kw will give the vessels a design speed of 14kts. They can be deployed worldwide and have accommodation for 14 people.

Sonardyne takes first drillship order for DP Inertial Navigation System

Sonardyne International has taken its first order for a Dynamic Positioning Inertial Navigation System (DP-INS). Vantage Drilling's new 12,000ft-rated drillship, Dragonquest, is set to become the first deepwater drilling unit in the world to be equipped with the new system when it begins operations in the Gulf of Mexico for Petrobras later this year.

Sonardyne DP-INS aids vessel positioning through the integration of acoustic and inertial technologies and has been developed to meet regulatory requirements that state that deep water drilling units must be equipped with three independent position reference inputs to their DP system.



Traditionally, an acoustic positioning system and two separate DGPS systems are used. However, a vulnerability remains should the acoustics be affected by aeration and noise and both GPS systems be simultaneously affected by signal disruption. The latter is particularly common around equatorial regions and during periods of high solar radiation. Solar activity is currently increasing and is forecasted by NASA to peak in 2013.

In addition to the system's deepwater positioning performance and safety benefits, Sonardyne DP-INS delivers valuable cost savings. It can be used with fewer acoustic transponders deployed on the seabed, significantly reducing set-up time following a vessel's arrival on location. The system also needs only occasional aiding from the acoustic system.

CNOOC forecasts more fields to produce offshore China

China's CNOOC is targeting net production in 2012 of 330 to 340Mmboe, slightly up on last year's level. Moreover, the company expects four new projects to come onstream offshore China this year, among them the incremental peak production of Panyu 4-2/5-1 adjustment project, which should build to 57,000bbl/d in 2014.

Further adjustment projects are likely to start up offshore China in the next few years, helping to drive the company's future production growth. CNOOC also plans to enhance its independent deepwater exploration capability, while expanding exploration in new areas and frontiers.

It is lining up 114 exploration wells, including three independent deepwater wells in the South China Sea, and acquisition of 11,371mi of 2D seismic data and 7,413sq.mi of 3D data to be acquired. Its target is a reserve replacement ratio of more than 100% in 2012.

CNOOC expects to spend \$9.3 to \$11 billion this year, with exploration, development, and production accounting respectively for around 17%, 68%, and 14% of the total outlay.

Iran's NIOOC outlines oil and gas plans for Persian Gulf fields

National Iranian Offshore Oil Co. (NIOOC) expects oil output from the Forouzan field in the Persian Gulf to rise by 20% over the next 14 months. The field is shared between Iran and Saudi Arabia. Exploration and production activities started more than 40 years ago, under international law regulations.

NIOOC Managing Director Mahmoud Zirakchianzadeh told Iranian news service Shana that a development plan for the Esfandiar oil field is nearing completion, with a contract set to be signed. In the South Pars field in the Persian Gulf, gas extraction from Phases 17 and 18 should start this June, according to Pars Oil and Gas Co. managing director Mousa Souri. Full output should be reached in October.

OGX starts oil production at Waimea field in Brazil

Brazilian oil and gas company OGX Petroleo e Gas Participacoes has started the first production at the Waimea field in the Campos basin, off the coast of Brazil. It marks the company's movement from a pre-operational exploration company to a full-fledged producer.

The firm said that the flow rate levels of oil will gradually be increased as per industry best practices for an optimal

management of the reservoir. It also said that the field is expected to produce about 20,000bbl/d initially.

OGX originally expected to produce its first oil at the Waimea prospect in Q3 last year, but the project suffered weather-related problems and other delays that pushed the date back. Crude oil output is expected to ramp up to 50,000bbl/d later in 2012 when two additional wells at Waimea are connected to OSX-1. OSX, a unit of OGX, is leasing the OSX-1 float-

ing production, storage, and offloading vessel, to OGX for 20 years to produce at Waimea. It holds a 100% stake in the BM-C-41 block in the Campos basin, where the Waimea field is located.

The Waimea accumulation was discovered through wildcat well OGX-3 on 18 December 2009. OGX Petróleo e Gás SA is an oil and natural gas exploration and production company and is conducting the largest private-sector exploratory campaign in Brazil.

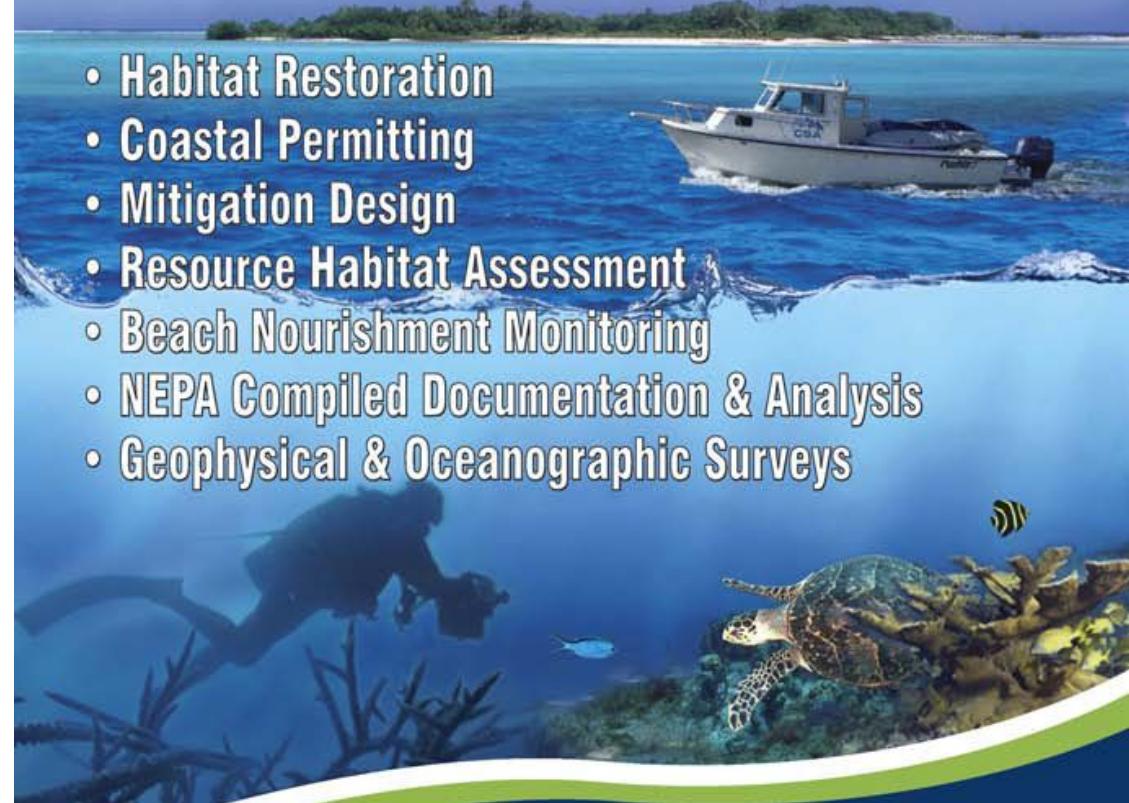


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Shell gets deepwater exploration tracts offshore Nova Scotia

The Canada-Nova Scotia Offshore Petroleum Board has awarded to Shell Canada Ltd. exploration rights for four deepwater parcels offshore southwestern Nova Scotia. Shell submitted a work program totaling \$970 million in expenditures during the first 6 years of the 9-year exploration license.

No bids were received on the other four parcels included in Call for Bids NS11-1. The next call for bids will be issued in May 2012, with nominations now being accepted until 16 March 2012. The Play Fairway Analysis (PFA) project conducted by the government identified total hydrocarbon potential offshore Nova Scotia as an unrisked 120tcf of gas and 8Bbbl of oil in place.

Borders & Southern starts Falkland drilling campaign south of islands

The semi-submersible Leiv Eiriksson has spudded the first-ever exploration well south of the Falkland Islands for UK independent Borders & Southern (B&S) Petroleum. Well 61/17-1 is being drilled 87mi south of the islands in license PL0178, where B&S holds a 100% interest.

It will test the Darwin East prospect, a fault/dip closed structure with a Lower Cretaceous sandstone reservoir target. It will also investigate geophysical attributes that include a flat spot, amplitude conformance to structure, and an AVO anomaly. B&S said it expected drilling to take around 45 days.

Norwegian stalwarts rewarded under latest licensing round

Norway's Ministry of Petroleum and Energy has offered 60 new production licenses to 42 companies under the country's Awards in Pre-defined Areas (APA) 2011 scheme.

Thirty-four of the licenses are in the North Sea, 22 in the Norwegian Sea, and 4 in the Barents Sea. Fifteen of the concessions are classified as additional acreage for existing licenses, while two more are divided stratigraphically and only apply to levels below/above a defined stratigraphic boundary.

Of the successful applicants, 27 will be offered operatorships, including one company – UK independent Valiant Petroleum – that has not previously held this status on the Norwegian shelf.

There are stipulations for instance, requirements include acquiring new seismic data in 11 areas and drilling seven wells. Five of these are in the North Sea (to be drilled by GDF Suez, Lundin,



Rialto Energy plans to raise \$60M for E&P work in its Gazelle field off Africa

Australian independent oil and gas company Rialto Energy has unveiled plans to raise \$60 million in share capital to support its Gazelle field exploration and development program located off the Ivory Coast.

The company said it will raise the funds through a two-tranche placement of around 200 million ordinary shares in February and March for the field, which is in the license CI-202 area. Previously, the International Finance Corp. (IFC) invested \$20 million in Rialto Energy shares. Work on the drilling program was to begin during the current quarter.

"Together with the proposed IFC investment, Rialto will be well placed to pursue its two-well development and Chouette prospect exploration well campaign at Gazelle followed by pre-FEED for the first phase development of the Gazelle oil and gas field," Rialto managing director Jeff Schrull said.

The facility will produce initial daily oil rates of 8,000bbl and at gas rates of up to 100Mcf of gas a day. The explorer will drill two appraisal and development wells at the Gazelle field to target 2C resources of 14Mbbl of liquids and 266bcf/d of gas. These two wells will also intersect the deeper Condor exploration prospect.

The Chouette project is estimated to hold gross mean potential resources of 84Mbbl of liquid and 42bcf of gas. The development is subject to a final investment decision expected in the middle of 2012.

Statoil, and Total); one in the Norwegian Sea (by Faroe Petroleum); and one in the Barents Sea (by Det norske oljeselskap). For the other licenses, "drill or drop" conditions apply. Around 125 previously awarded APA licenses have also been relinquished, making acreage available for new players.

OGX finds gas in shallow water Santos basin offshore Brazil

OGX Petróleo e Gás Participações S.A. has found hydrocarbons in well 1-OGX-63-SPS in block BM-S-57 in shallow water offshore Brazil's Santos basin. A 3,281ft hydrocarbon column was encountered in Albian reservoirs with about 361ft of net pay. Drilling was still in progress and had reached the Aptian section. A gas kick, which was controlled, indicated the find.

The OGX-63 well, known as Fortaleza, is 63mi off the coast of the state of Rio de Janeiro at a water depth of approximately 509ft. The Ocean Quest initiated drilling last October.

Deepwater Cypriot well delivers natural gas for Noble Energy

Noble Energy discovered potentially large volumes of natural gas with a well in the greater Levant basin offshore Cyprus. The Cyprus A-1 well in Block 12 encountered around 310ft of gas pay in multiple Miocene sand intervals. It was drilled to a depth of 19,225ft in a water depth of around 5,540ft.

Analysis of drilling, formation logs, and initial evaluation suggest reserves in the range 5 to 8tcf, with a gross mean of 7tcf. The Cyprus Block 12 field covers 40sq.mi. Noble said further appraisal drilling will be needed prior to development. Noble has a 70% operating interest, with Israeli companies Delek Drilling and Avner Oil Exploration owning 15% each, subject to approval from the Cypriot authorities.

Buccaneer cleared for oil, gas exploration in Alaska's Cook Inlet

Australian-based Buccaneer Energy was granted two key permits for oil and gas exploration in the Southern Cross and Northwest Cook Inlet Units in Alaska's Cook Inlet, said the company.

"Securing these required authorizations represents a significant milestone in planning for the company's 2012 and 2013 offshore Cook Inlet exploration operations, which includes drilling two wells at each of its Southern Cross Unit and North West Cook Inlet Unit," Buccaneer said.

The wells are to be drilled by the jack-up rig Endeavour-Spirit of Independence, which Buccaneer owns in a 50:50 joint venture with Singapore-based Ezion and the Alaskan Industrial Development and Export Authority. The rig is expected to be mobilized into the Cook Inlet in Q2 of 2012. Additionally, Buccaneer is developing its 100%-owned Kenai Loop onshore gas project.



Noble Energy taps Delmar to install five subsea trees in Tamar gas field

Delmar Systems, Inc. was awarded a contract by Noble Energy to install five subsea trees using the Heave Compensated Landing System (HCLS) in the Tamar gas field off the coast of Israel in the Mediterranean Sea. The subsea trees will be installed in the Matan block in a water depth of approximately 5,500ft. Delmar will be working with the Transocean Sedco Express semi-submersible rig for tree installation operations.

The Tamar gas field is one of the largest finds ever discovered in the Mediterranean Sea and is one of the largest discoveries in the history of Noble Energy. According to estimates, the field has reserves of approximately 8.4tcf of

Field Development

gas. Project commissioning is expected in late 2012.

The HCLS provides for a safe, efficient, and cost-effective method for subsea component installation. Delmar Systems has used this patented HCLS technology for installing a variety of components, ranging from construction to field maintenance activities.

This installation method has been widely used for subsea component installations and recoveries. It has also been used in the Gulf of Mexico, Angola, and Brazil. Delmar is a licensed user of this patented technology owned by Shell Oil Co.

"The use of the HCLS minimizes rig critical path installation activities, increases utilization of existing long-term chartered installation vessels, and accelerates development timelines," said James Soliah, Delmar's subsea manager.

Total begins second phase of Ofon field development offshore Nigeria

French oil and gas company Total has started work on the second phase of the Ofon field development off the coast of Nigeria. The site is located in oil mining lease (OML) 102, some 65km offshore at depths of 40m.

Total senior vice president Jacques Marraud des Grottes said the company is increasing the pace of development of its resources in a sustainable manner with the launch of Ofon Phase 2.

"It is a further growth driver supporting our strategy, which is primarily focused on developing deep offshore fields such as Akpo and, in the near future, Usan, by minimizing its greenhouse gas emissions," Grottes said.

Ofon Phase 2 will open the field's undeveloped reserves to increase production to 90,000boe/d, up from its current production total of 30,000. Increase in production will be carried out by installing four new platforms, including two production platforms, as well as a processing and an accommodation platform.

Most of the development is dedicated to recovering natural gas, which will be compressed and taken to shore. Construction and installation contracts have been awarded for Ofon Phase 2, which is scheduled to come on stream in 2014. Total operates OML 102 with a 40% stake and as operator in a joint venture with state-owned Nigerian National Petroleum Corp.

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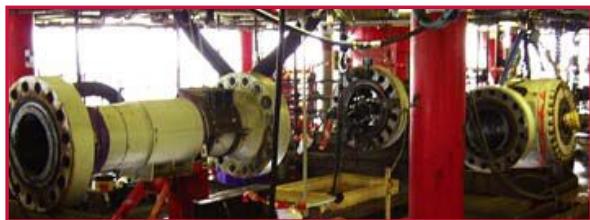
STATS Group hits new peak on North Everest project

Pipeline engineering experts, STATS Group, has completed an isolation project on behalf of AMEC to allow maintenance and replacement works on the North Everest platform in the central North Sea.

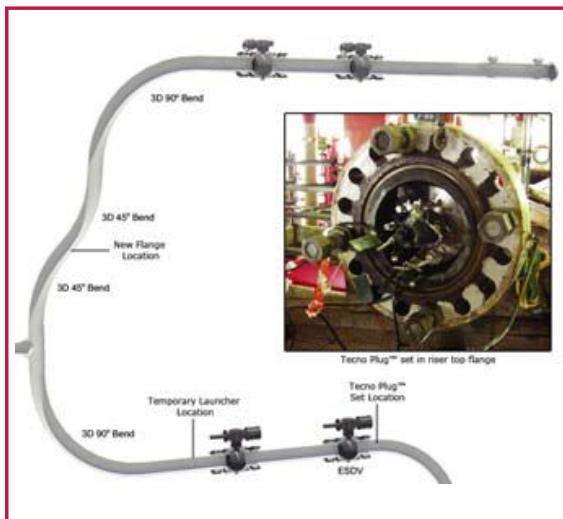
The workscope covered three maintenance valves and one ESD valve on a 20in. gas import line onboard the BG-operated platform.

After a detailed site survey and piggability study, STATS decided the best solution was to use a tethered Tecno Plug™ pushed by stem bar to location from a temporary launcher. As the pipeline had no pigging history, this method was considered as the least risk-laden option rather than pigging a remotely operated plug from the pig trap.

This alternative method was proposed based on detailed analysis during the Front End Engineering Design (FEED) process, including the piggability study that revealed potential issues for the route of the pigging run, which could have prevented the Tecno Plug™ from reaching the desired set location. The FEED process included generation of a project design premise, pipe stress analysis, piggability study, FMECA, operational procedure, and risk assessment.



This package identifies and mitigates operational risk and reassures clients by providing detailed analysis of the inter-



nal conditions and geometry of the pipeline prior to carrying out the isolation. Prior to carrying out the isolation, the pipeline pressure was reduced to six bar, with the ESD closed and sealant injected, the maintenance valve was then closed to provide temporary pipeline isolation. This allowed the temporary launcher to be installed inboard of the ESD valve and a team of STATS technicians to break out the piping. A weld repair scope was also required, and the STATS team removed the first 90° bend with clam shell cutting tools.

STATS also provided gas bags to act as a vapor barrier while a new 1500lb flange was welded into the line. The new flange was then pressure tested using a STATS flanged weld test tool before reinstating the new bend and launcher valves.

With the temporary launcher now in place and fully pressure tested, the valves were opened and the Tecno Plug™ was deployed into position outboard of the valves and hydraulically set to provide pipeline isolation.

Once set and monitored, the stem bar was disconnected and the valves were replaced. As the pipeline pressure was only six barg, the Tecno Plug™ was installed in the reverse direction, providing full isolation while also providing a test boundary to pressure test the integrity of the reinstalled valves.

A full pressure test at 208 barg was then conducted between the temporary launcher and the Tecno Plug™ before the plug was unset and recovered back into the launcher. The valves were then closed and the temporary launcher removed, allowing the pipeline to be reinstalled and returned to operation.

Spar to develop Luva field in deepwater Norwegian North Sea

Statoil plans to develop the deepwater North Sea Luva field using a spar platform. In 4,265ft of water depth, Luva will have a large-diameter, single vertical cylinder supporting a conventional deck with processing facility, accommodation quarters, etc. The installation is fixed to the seabed.

The platform will house accommodations, a storage unit for condensate, and a gas processing facility with a capacity of 812Mcf/d. The concept includes two sub-sea templates with four wells on each and one satellite template with one well.

Meanwhile, the Norwegian Sea Gas Infrastructure project has chosen a gas transport concept that includes a 480km pipeline from the Luva field to the onshore processing facility at Nyhamna.

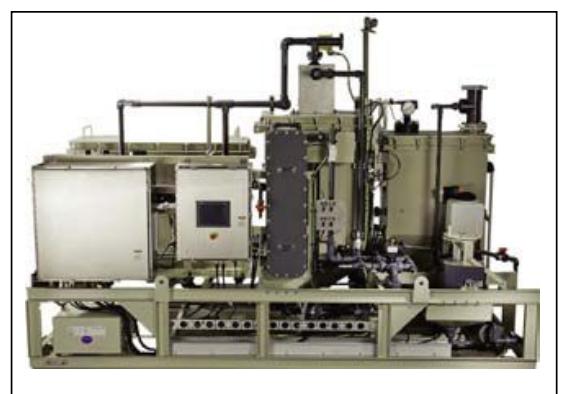
The pipeline will also connect to the Linnorm field and tie-in to the Zidane field. In addition, connection to Asgard Transport via the Kristin platform will be possible, and there are plans for tying in other fields and discoveries.

The concept includes the expansion of the Ormen Lange field's Nyhamna gas plant with the intention of converting it into a gas terminal. Partners are Statoil (75%), ExxonMobil (15%), and ConocoPhillips (10%).

Severn Trent provides solution for China's first deep sea gas field

Severn Trent De Nora has received a contract to provide its electrolytic disinfection treatment solutions for biofouling control and wastewater treatment to the China Offshore Oil Engineering Corp. for its Liwan 3-1 deep sea gas field project in the South China Sea. The Liwan 3-1 gas field is the first deep sea gas field in China and will begin production in 2013.

Severn Trent De Nora will be supplying the SEACLOR® 23kg/hr seawater electrochlorination system and the OMNIPURE™ Series 55 sewage treatment system (above right), which is capable of treating up to 38,153L/d. Process water used on the rig requires disinfection treatment to alleviate biofouling concerns. In addition, a sewage treatment



system is required to safely and effectively treat the black and gray water produced onboard.

The SEACLOR system utilizes a proven electrolytic treatment process to generate a sodium hypochlorite disinfectant solution on site using only electricity and seawater. When injected into the cooling water circuits of deep sea gas production facilities, the on-site-generated solution prevents biofouling and marine growth in order to protect the equipment. The OMNIPURE Series 55 systems offer effective electrolytic treatment of both black and gray water.

SUBSURFACE PRESSURE WASHERS



CAVI-TEK.COM SUBSURFACE PRESSURE WASHING SYSTEM

Gulf Engine designs, fabricates and assembles the Gulf-Tek Equipment line. Gulf-Tek has recently added CAVI-TEK subsurface pressure washers to the already proven line of offshore rental equipment. Units are diesel engine driven, marine rated and offshore ready. CAVI-TEK units are Class I Div II rated. Applications include subsurface barnacle removal, antifouling and rust scale removal. CAVI-TEK units are available from 10 gpm @ 2000 psi thru to 20 gpm @ 4000 psi. Electric explosion proof units are also available.



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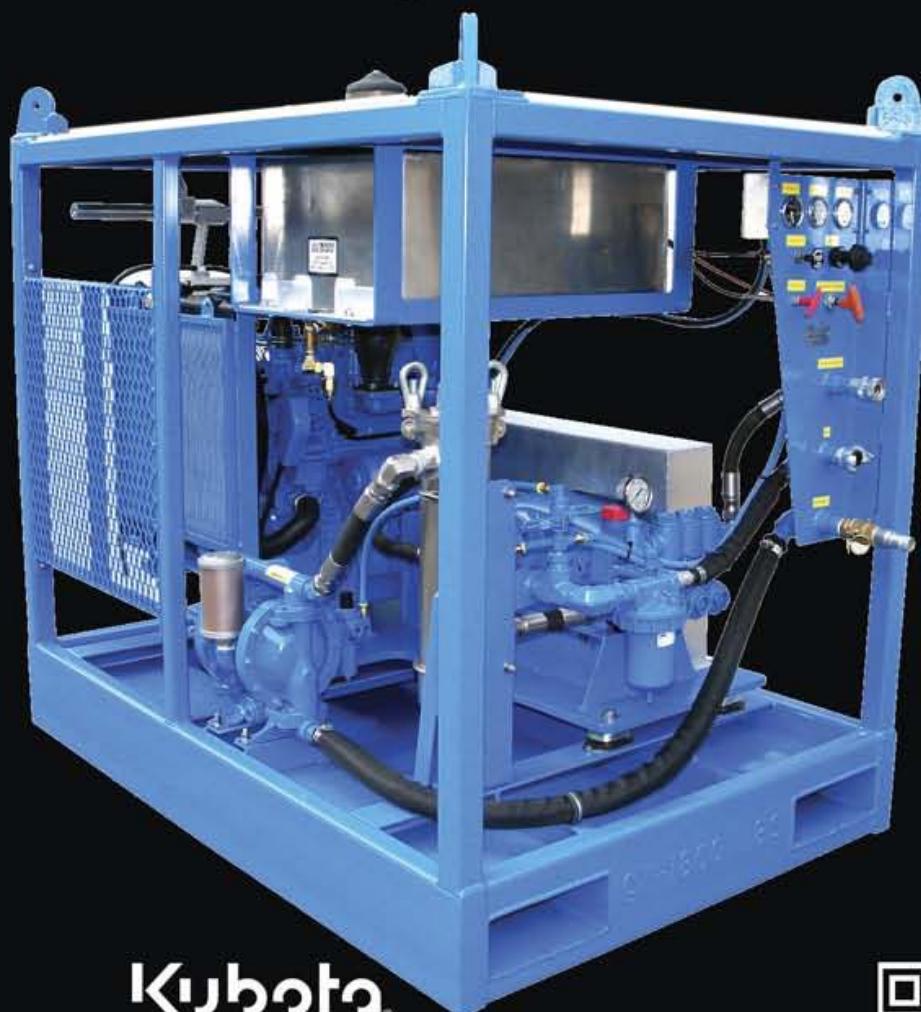
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Zenith Oilfield unveils new artificial lift well technology solutions

Aberdeenshire-based Zenith Oilfield Technology has launched a new electrical submersible pump (ESP) gauge following a successful trial in the Middle East. The downhole gauge operates even when damage occurs on the motor cable, which results in a ground fault, spelling the end for operators having to run blind with no well data as a result of this common problem.

The company also has revealed case studies of its innovative Z-Sight automated well surveillance technology, which efficiently manages large volumes of well and pump data, performing automatic data analysis in real-time to deliver simple well status messages to the operator.

"Artificial lift is crucial to increasing production, and we have developed a range of technologies to monitor and analyze downhole data, making these operations as efficient as possible," said Greg Davie, managing director of Zenith Oilfield Technology.

He added: "The Z-Sight automated well surveillance system uses real-time optimization and diagnosis, giving recommendations to further enhance well performance."



Following the system's intelligent optimization recommendations, it has been proven to typically boost production between 6% to more than 50%. In one installation of Z-Sight, production was increased by 287%, generating \$55,000 additional revenue per day from a single well, the firm said.

Z-Sight is expected to increase Zenith's gross revenue by over 15%, and installations are forecast to rise from 27 in 2011 to over 300 in 2012, with sales transpiring in the Middle East, Asia, South America, and Africa.

The Z-Sight technology has been expanded to enable automated optimiza-

tion and surveillance of progressive cavity pumped wells. The company has invested more than \$1.58 million to develop the system. Contact gayle.nicol@bigpartnership.co.uk for more information.

Lux Assure introduces chemical detection kit for oil, gas sector

UK-based Lux Assure has launched a new chemical detection kit for the oil and gas sector that determines the concentration of methanol or monoethylene glycol (MEG) in oil and water.

Lux Assure said the OMMICA kit is the first of the company's products to be launched since it focused on the oil and gas industry in 2010.

OMMICA is said to be a simple approach to detect the presence of methanol and MEG, which can cause serious issues while processing hydrocarbons and lead to discounted pricing.

Lux Assure conducted a number of successful field trials for the product with big North Sea oil firms; the kit has also been adopted by operators in Africa, Australia, and Europe, with further sales expected to go to North America and Brazil in the early part of this year.

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Uson unveils Optima vT leak and flow tester for optimum flexibility

Oil, gas, and petroleum companies and their suppliers seeking leak detection equipment that can be custom configured to their unique test application requirements without added costs can now obtain a competitively priced and first-of-a-kind leak and flow tester from Uson – the Uson Optima vT leak and flow tester.

Uson's Optima vT includes one or two test channels with four sensors each, totally customizable pneumatics, multiple built-in automated calculators, a myriad of data handling and storage options, and other features that combine to make the Optima best-match test technology for the greatest number of leak and flow test applications.

Research and development for the multi-function single or dual-channel configured Optima vT leak and flow tester began in 2009 and incorporates Uson's vast base of the wide ranging requirements for leak detection and flow testing in medical, automotive, and other industrial parts testing using the adaptable two-channel, eight-sensor technology in its core to deliver best-in-class test technology without a premium price tag.

Key features of the Optima vT leak and flow tester include the following:

- Capabilities for vacuum decay tests, pressure decay leak testing, differential pressure decay leak tests, mass flow leak detection (including back pressure and differential), upstream and downstream cracking pressure, pressure rise tests, burst tests, laminar flow tests, force decay testing, and occlusion testing;
- State-of-the-art microcontrollers comparable to those used in the most sophisticated and demanding consumer electronics applications;
- Two channels with up to four sensors per channel, totaling up to eight sensor inputs;
- Simultaneous testing on all sensor inputs; built-in automated calculators to speed testing and data handling;
- Fully customizable pneumatic controls; and
- Large easy-to-read full-color touch

Oilfield Equipment

screen display with intuitive user interface.

Direct Optima vT and other product inquiries to Joe Pustka, Uson technical specialist, at 281-671-2212 or joe.pustka@uson.com.

New technology means big savings for pump, electric motor industries

HPEV, Inc. received a notice of allowance for its latest patent application: technology that enables submersible motors and pumps to be significantly reduced in size and cost without a reduction in horsepower or torque. The notice means the company will be awarded the patent rights when it pays the necessary fees.

"This is a significant game changer in a multi-billion dollar industry," said Tim Hassett, co-founder of HPEV, Inc. "Currently, all dry pit submersible motors use water jackets, the effluent medium, elaborate heat exchangers, or over-sizing of motors by doubling or even tripling their diameter to achieve the necessary horsepower and torque outputs. These are 25-year-old solutions, at best."

He added: "Our technology cools the motors without all of these costly bolt-ons, allowing for a dramatic reduction in physical size and cost of manufacturing."

HPEV's thermal technology is incorporated in the motor itself, eliminating the need for antiquated cooling schemes and providing 25% to 50% more rating for motors of the same frame size with the same active material. The results will demonstrate a motor that is smaller, much less costly to make, and produced with little to no new investment in tooling and patterns.

For more information, visit the company website at www.hpevinc.com.

Rod guides reduce rod, tubing wear in high temperature wells

R&M Energy Systems offers a line of rod guides for progressing cavity down-hole pumping applications. The New Era® Blazer™ High Performance Rod Guides can effectively increase production and decrease workover costs by extending rod and tubing service life in standard and high temperature applications. These rod guides deliver maximum performance, even in well conditions that reach up to 500°F.

The New Era Blazer rod guide is manufactured from engineered plastics enhanced with performance additives specifically tailored to withstand high temperature well conditions. This high performance rod guide delivers effective rod and tubing protection and displays long performance life, even at high temperatures.

The spin-thru design of the New Era Blazer rod guide reduces the torque that is



New Era® Blazer™ Rod Guide

generated by the mechanical and hydraulic friction of the rotating rod string. Additional features and benefits include reduced wear resulting from the centralization of the rods inside the tubing; compatibility with steam-assisted gravity drainage (SAGD) and steam-flooded applications; handles temperatures to 500°F; extensive range of sizes available; long service life optimizes return on investment; and easily installed in the rod string. For more information, visit the company website at www.rmenenergy.com.

Dräger unveils next generation of compressed air breathing apparatus

The PSS 3000, Dräger's newest PSS series SCBA, uses the proven technology of the company's global firefighting SCBA units. It is ideal for use in plant maintenance, plant and operational safety, and emergency response in the petrochemical and oil and gas industries as well as other industrial applications.

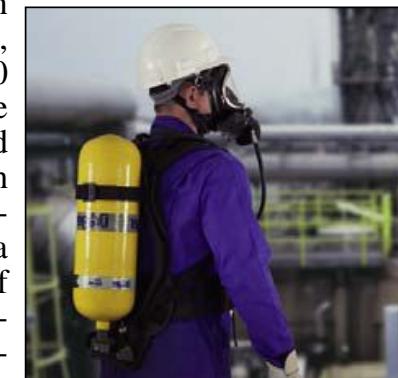
The Dräger PAS Lite, which offers both SCBA and airline options, is designed for use in industrial applications where a simple, robust, and easy-to-use breathing apparatus is required.

Offering proven Dräger reliability, both the PSS 3000 and the PAS Lite have been approved by NIOSH, which ensures worker safety. Developed as a result of years of research and extensive user consultations, these units include the same advanced pneumatics as used in the whole Dräger line of professional firefighting products.

The harnesses used in both systems are five times more durable than those made of traditional materials. The PSS 3000 uses fire-retardant ethylene-vinyl acetate, while the PAS Lite uses SBR rubber-coated webbing.

The Dräger PSS 3000 and Dräger PAS Lite are manufactured by Dräger Safety AG & Co. KGaA.

For more information on these products, visit the company website at www.draeger.com.



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Forum Subsea to supply six Perry™ XLX ROV systems

Forum Energy Technologies, Inc. (FET) is pleased to announce the signing of a contract with DOF Subsea AS (DOF). Under the contract, FET will supply six complete Perry™ XLX Generation 2 (G2) 150hp ROV systems, including tooling and survey packages.

All six systems are scheduled for delivery in 2012. Two Perry XLX systems will be delivered to DOF for mobilization in Singapore onboard the Skandi Hawk for work within the Australasia region. Four Perry XLX systems are to be delivered to DOF for mobilization into Brazil and will support DOF's expanding Brazilian operations. With this new order, the DOF Subsea ROV fleet now stands at 34 Perry ROV systems, including the Perry XL, Perry XLS, and the Perry XLX.

Forum's Subsea Technologies' product offering ranges from electric observation class ROVs to large



hydraulic work-class vehicles used for inspection, survey, and deepwater construction, as well as other remote intervention technologies and services.

For more information, visit www.f-e-t.com.

Fugro invests in Applied Acoustics' S-Boom technology

Fugro Survey (Middle East) Ltd has purchased the Applied Acoustics' S-Boom subbottom profiling system for their geophysical survey operations based out of Abu Dhabi.

Developed for shallow water, ultra-high resolution surveys, the S-Boom system had been undergoing extensive trials with Fugro during the late summer of 2011 before being accepted and selected at the end of the year.

S-Boom subbottom profiling systems combine the power of three modified boomer plates to provide a single pulse, driven by a single source power supply. The fusion of these three transducers delivers a source level high enough to significantly increase subbottom penetration without loss of data quality.

Capable of operating at a maximum energy setting of 1000Joules per pulse and firing at three pulses per second, the S-Boom has achieved penetration results of over 200ms through sand and limestone while delivering the high-quality resolution records expected from boomer systems.

For more information, visit www.appliedacoustics.com.



KAUST purchases Hydroid AUV



Hydroid, USA has delivered a REMUS 100 AUV to Saudi Arabia's King Abdullah University of Science & Technology (KAUST). The REMUS AUV was procured by Naizak Global Engineering Services, KAUST's purchasing agent, and Unique Group, Hydroid's representative in Saudi Arabia. KAUST will use the REMUS 100 AUV for marine ecology and geology research and education in the Red Sea.

KAUST, which is wholly owned and run by the Kingdom of Saudi Arabia, needed a versatile AUV that could study the Red Sea from multiple angles and provide multiple functions, from climate-related seafloor sampling to oceanographic mapping. The University chose Hydroid's REMUS 100 because it is modular and can be fitted with a variety of sensors that makes it flexible enough to handle the University's education and research needs.

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

OceanServer AUVs delivered to Romania

OceanServer Technology, Inc. has recently delivered two AUVs to SC Marine Research SRL located in Bucharest, Romania. Marine Research is a new and dynamic company devoted to the research of aquatic environments in and around Romania. The two IVER2 systems will initially be used to map the sea bottom around the Danube Delta located on the Black Sea.



The purpose of this research is to identify and localize benthic habitats and document their characteristics. The Danube Delta is the second largest Delta in Europe and considered one of the best preserved on the continent. Going forward, other survey applications are expected to include mapping inland Romanian waters such as lakes, reservoirs, and sections of the Danube River.

The AUVs are both equipped with side-scan sonar and one system has the Imagenex Delta-T multiple beam sonar system designed to provide high-speed imaging for use in hydrographic surveys of the Black Sea. In addition to the sonar systems, the vehicles have the capability to collect acoustic Doppler current profiles (ADCP) data along with conductivity, temperature, and depth (CTD) for continuous in-situ measurements used to characterize sound velocity in support of hydrographic surveying.

For more information, visit www.ocean-server.com.

Bluefin Robotics receives ISO 9001:2008 certification

Bluefin Robotics has received ISO 9001:2008 certification for the design, development, manufacturing, operation, and servicing of their AUVs and related products. The certification was granted by the International Organization for Standardization, TÜV SÜD America Inc., a non-governmental organization that is the world's largest developer and publisher of International Standards.

To receive the certification, Bluefin underwent a major transformation that

included the development of a Quality Management System (QMS). Implementation of the QMS has translated into successful program execution, market expansion, and business growth fueled by new design wins, improved infrastructure, and robust processes.

For more information, visit www.bluefinrobotics.com.

Hydratight signs strategic partnership with diving academy

Global joint integrity and engineering services company Hydratight has formed a strategic partnership with one of the world's leading commercial diver training schools.

Hydratight and the UK-based Professional Diving Academy (PDA) will collaborate on specialist courses aimed at improving both subsea joint integrity and skills as well as diver safety.

The partnership aims to fill a gap in the current training provision for industrial divers, initially offering a course on the subsea use of bolting tools with extensive underwater practical tuition – the only course of its kind in the world.

Currently, the biggest problem for divers is that much of their formal training in the use of subsea bolting and jointing equipment has to take place on dry land or, more commonly, during a sometimes disjointed training regime conducted by experienced divers, often while a contract is running.

The PDA offers Health and Safety Executive (HSE) and Scottish Qualifications Authority (SQA) accredited commercial diver construction and inspection training for delegates around the world.

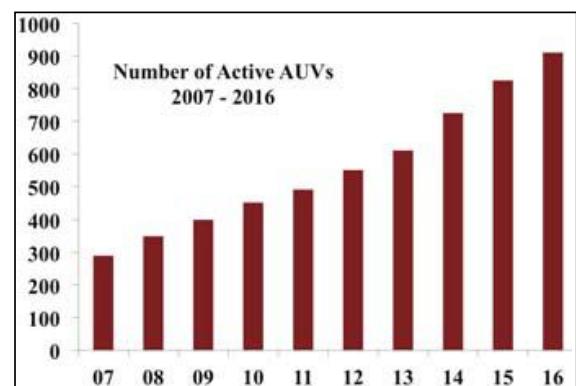
Both organizations anticipate that courses will be available in early 2012 run by Hydratight and PDA experts at the academy's extensive wet and dry training facilities in Dunoon, Scotland and through a strategic network of training facilities worldwide.

For more information, visit www.hydratight.com.



The world AUV market forecast 2012-2016

The 4th edition of Douglas-Westwood's World AUV Market Forecast 2012-2016 expects major market growth over the next five years. The size of the existing fleet of reportedly active vehicles, stands at 560 in 2012 (up from 390 in 2009) and Douglas-Westwood forecast this to rise to 930 by 2016.



Sectors of the AUV market are already rapidly maturing and the value of the technology is receiving widespread acceptance in applications such as deepwater seabed mapping for the oil & gas industry, in ocean research and mine counter-measures surveys. The sector is also evolving, with pre-commercial activity evident in oil & gas life-of-field and pipeline inspections, together with increasing use of low-logistics vehicles and those designed for shallower waters and flexible deployments. In addition there are potentially significant developments in many areas such as civil hydrography programmes and for ultra-long endurance missions in both the ocean research and military sectors.

Awareness is growing with AUVs receiving increased media coverage since their involvement in the post-incident monitoring of the Macondo blowout in the US Gulf of Mexico and in the search for the flight data recorders from Air France flight 447 off Brazil.

The rate of AUV build has been in the order of 50 units per year, but this is expected to double to around 100, with around 930 active in five years' time."

"North America will continue to dominate the business, driven by expenditure on both military and research AUVs. Latin America will, however, be the fastest growing user region, although from a small base, as a function of significant investment in deep-water oil & gas exploration and production offshore Brazil."

For more information, visit www.douglas-westwood.com.

Underwater Intervention

Subsea 7 adds more Schilling Robotics HD Systems to ROV fleet

Schilling Robotics, LLC, experts in subsea systems, announced the delivery of two 150hp, 3,000m-rated HD™ ROV systems to Subsea 7.

The HD™ ROV offers comprehensive work-class ROV performance in a compact configuration, while providing extensive onboard space for tooling systems. The HD is fully compliant with the most demanding offshore energy industry requirements.

For more information, visit www.schilling.com.

Cal Dive awarded decommissioning contract

Cal Dive International, Inc. has been awarded a Field Abandonment and Decommissioning Contract from an operator in the Gulf of Mexico that includes the abandonment of 16 wells, 7 pipelines, and the removal of 8 structures. The contract is expected to generate total revenue of approximately \$25 million and will utilize two of the company's key assets.

Work on this project will commence in Q1 of 2012 and is expected to be completed by the end of June 2012.

For more information, visit www.caldive.com.

Bluefin, Battelle, and The Columbia Group investing to propel Proteus vehicle into the seas

Bluefin Robotics, a subsidiary of Battelle, is joining with The Columbia Group to invest in the next generation large submersible vehicle.

The Columbia Group is currently developing the hull mechanical and electrical systems for the large Dual Mode Undersea Vehicle, capable of operation in either manned or autonomous modes. Called Proteus, it will be advanced by incorporating Bluefin's autonomy technology for use in unmanned missions. Bluefin is also supplying mission planning capabilities and the power solution. Battelle is providing battery charging and systems integration support. Developers plan to hold an at-sea demonstration in the spring.

The Navy has persistently outlined the need for industry to develop next-generation UUVs with increased mission time, range, and payload capacity.

Dubbed a "beastly drone" by Wired Magazine last year, the vehicle is 25ft long, weighs 6,200lbs and has up to

400lbs of lift capability. It is capable of operating unmanned or manned.

For more information, visit www.bluefinrobotics.com.

Hydroid launches new AUV: the REMUS 100-S

Hydroid, Inc., a subsidiary of Kongsberg Maritime, announced its new AUV, the REMUS 100-S, at the Shallow Survey Conference. The 100-S is an evolution of the highly successful, man-portable REMUS 100 system configured specifically for hydrographic and offshore surveys.

The REMUS 100-S features the Kongsberg Inertial Navigation System, which includes a Honeywell Inertial Measurement Unit (IMU), the NavP navigation processing suite, and a payload processor, which is used to initialize and control all sensors. The 100-S also features a new Vx Works Operating System, updated version 7.0 of VIP software, a field-replaceable antenna, a precision GPS sensor, and 1Gbit Ethernet, allowing users to download data at high speeds.

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

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Inmarsat crosses the seas with Metaswitch

Inmarsat has selected Metaswitch to expand and enrich its FleetBroadband maritime communications service, the first maritime communications service to provide cost-effective broadband data and voice, simultaneously, through a compact antenna on a global basis. Inmarsat's new 'FB Multi-voice' capability will greatly increase the flexibility of FleetBroadband by adding the ability to deliver simultaneous calls. The company will deploy Metaswitch Universal Media Gateways and the MetaSphere Multimedia Telephony Application Server (MTAS) at network hubs in Western Europe and the Pacific Rim, with control from Inmarsat's global headquarters in London.

Astrium and Vizada become a world leader in satellite communications services

Astrium has completed the acquisition of Vizada after receiving the necessary regulatory approvals. Vizada is a leading independent provider of global satellite communications services and will be integrated into Astrium Services. This acquisition represents a total consideration of €673 million and contributes to EADS' strategic Vision 2020. Vizada comprises Vizada Americas, Vizada Networks, Vizada EMEA & AsiaPacific, and Marlink. The company has more than 700 employees serving 200,000 end-customers across sectors such as maritime, aero, land, media, non-governmental organizations, and government/defense. Vizada offers mobile and fixed connectivity services from multiple satellite network operators both directly and through a network of 400 service provider partners.

Boatracs announces contract renewal with Moran Towing

Boatracs Inc. announced that Moran Holdings, Inc., a leading maritime services company, has signed a multi-year extension to its satellite communications services contract. As part of the renewal, Moran added Boatracs BTConnect, the new web-based messaging and mapping software platform launched by Boatracs in December 2011. Moran began working with Boatracs in 1997, installing the Qualcomm OmniTRACS mobile communication terminal on tugs to provide satellite communications and positioning for vessels that were working beyond cellular range. As part of the solution, Boatracs provided integrated software with a shore-side interface that provided mapping and two-way messaging in standardized forms as well as free-form text messaging. Over the years, Boatracs has continued to provide a reliable, easy-to-use, and cost-effective solution to Moran's captains and operations team.

Crude oil shipping fleet deploys Inmarsat XpressLink

Frontline, the world leader in crude oil shipping, has selected Inmarsat XpressLink for more than 100 vessels from its existing fleet and its planned new builds. For a fixed low cost, XpressLink provides vessels around the globe with access to both Ku-band VSAT and L-band FleetBroadband services in a bundled package. XpressLink meets the increasing need for high-speed global communications, while building a bridge to better and faster communications in the future. It comes with a guaranteed free upgrade to the 50Mbps capability of Inmarsat's Ka-band Global Xpress – when the service becomes operational in 2013. According to Frontline, XpressLink's cost benefits and unmatched failover capability – which offers unlimited FleetBroadband usage – along with Inmarsat's service availability were central to its decision. The installation of XpressLink on Frontline's vessels will start immediately and continue through 2012.

KVH introduces dual-band maritime VSAT solution

Maritime VSAT market leader KVH Industries, Inc. announced a major upgrade to its mini-VSAT BroadbandSM network with the addition of global C-band satellite coverage overlaying its industry-leading Ku-band footprint. This first-of-a-kind, unified dual-band maritime satellite communications network will provide multi-megabit service covering 95% of the Earth's surface, including all of the world's major shipping routes, offshore oil fields, and commercial fishing grounds. It will be the first next-generation global VSAT network using a single, relatively small antenna to provide offshore connectivity to vessels almost anywhere they travel.



Along with the enhanced satellite coverage, KVH also introduced the TracPhone® V11 satellite communications system, a revolutionary new onboard terminal that uses a single, stabilized antenna with a unique dual-band transmit and receive capability to seamlessly switch between the mini-VSAT Broadband network's global C-band and Ku-band satellite coverage. The TracPhone V11 system provides the same high-quality connectivity, including both voice and broadband data, regardless of the type of satellite connection.

With approximately 2,000 systems sold, the mini-VSAT Broadband network is already the largest maritime VSAT service and it features the broadest Ku-band coverage area. Both C-band and Ku-band services are delivered using ArcLight® proprietary spread spectrum technology, which is provided by KVH's technology partner, ViaSat (Nasdaq: VSAT). Just as spread spectrum 3G technology replaced older TDMA 2G technology to revolutionize the mobile phone industry, the spread spectrum technology used in the mini-VSAT Broadband network provides faster, higher quality service to smaller, more powerful onboard terminals than older VSAT technology.

The TracPhone V11 and the enhanced mini-VSAT Broadband service provide vessels traveling between 75°N and 70°S latitude with broadband data connections for accessing the Internet or shore-side business networks or for making low-cost, high-quality voice calls. In most areas, the mini-VSAT Broadband service will use powerful Ku-band transponders to provide the TracPhone V11 with high-speed downloads at rates up to 4Mbps. KVH's Ku-band mini-VSAT Broadband service not only provides the widest coverage of any maritime VSAT service, it also has wide regulatory approval for coastal and in-port use. In areas outside of its Ku-band coverage and for redundant backup service, the TracPhone V11 automatically switches over to powerful C-band global beams. The C-band service has a much longer wavelength than Ka-band services, providing improved resilience to rain and other adverse weather conditions.

For more information, visit www.kvh.com.

Iridium Pilot™ raises the bar for affordable broadband

Iridium Communications Inc. announces the launch of its second-generation maritime broadband platform, Iridium Pilot™. Iridium Pilot™ will utilize the Iridium OpenPort® service – the world's first when it comes to fully global maritime broadband.

Iridium Pilot™ is engineered for enhanced durability to withstand the harshest maritime conditions, all the while packaged in a small, lightweight antenna. It has a fixed, electronically-steerable, phased-array antenna that is designed to maintain connectivity in rough seas. Iridium Pilot™ offers broadband connectivity in addition to three independent phone lines, all of which work simultaneously, with data speeds up to 134kbps. The platform offers a suite of new capabilities for vessel telecommunications optimization. These capabilities include a built-in firewall for traffic management and a bulk configuration capability to assist in efficiently managing large volumes of units. Its small form factor, enhanced capabilities, and flexible service pack-



ages make Iridium Pilot™ an optimal solution for vessels, large and small. In addition, Iridium Pilot™ maintains the best service program in the industry, the Iridium Global Service Program, and the industry's only standard 5-year limited warranty.

Iridium Pilot™ is the latest example of Iridium's long-term commitment to investment and innovation focused on satisfying communications needs around the globe. The company's goal is to continually improve the customer experience in new and existing markets in the farthest reaches of the world now and into the future.

For more information, visit www.iridium.com.

Globecomm extends Ericsson mobile connectivity to worldwide fleet

Globecomm Systems Inc. has been selected by Ericsson as a subcontractor of the maritime GSM/VSAT-managed operation for an Ericsson mobile communication network. The network will be implemented on up to 400 container vessels worldwide over the next 2 years, providing end-to-end 24/7 automated monitoring and real-time information control.

Globecomm will provide below-deck equipment and provide operation services under a 7 year subcontract to Ericsson Denmark.

Globecomm will provide its se@FLEX VSAT service, including integration of shipboard terminals accessing Ku-band satellites as a part of Ericsson's rollout, and will utilize Globecomm's Hosted Wireless Services. The global se@FLEX VSAT platform will provide automatic roaming between Ku-band satellite beams on a global basis at a flat rate. The global system will access over 20 satellite beams operating through 13 teleports

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and including fiber backhaul to the Globecom Data Center in New York. The Hosted Wireless Service will provide hosted BSC services, BTS/BSC monitoring, and performance management by using Ericsson equipment.

The Globecom Maritime solution offers Ku-band maritime service coverage that reaches the global shipping lanes and a worldwide managed network of fiber-linked teleports for transmission and management of customer traffic.

For more information, visit www.globecomsystems.com.

Siem Offshore signs contract with Harris CapRock

Harris CapRock Communications has been chosen by Siem Offshore Inc. to deliver turnkey Very Small Aperture Terminal (VSAT) communications to five of its supply vessels located offshore in Brazil. The SeaAccess solution will enable Siem to extend its corporate IT network and applications to its vessels. Siem Offshore is an owner and operator of modern support vessels for the global oil and gas service industry.

Harris CapRock will deploy end-to-end VSAT communications to enable corporate networking, Internet access, Voice over IP, real-time monitoring and reporting, and crew morale services. All equipment will be tested in Aberdeen, UK, then shipped and installed locally in Brazil. The turnkey solution includes network design, equipment, and installation as well as service and 24/7 support from Harris CapRock's Customer Support Center.

The contract has the potential to be extended to an additional four vessels. Harris CapRock was selected as Siem Offshore's communications partner as a result of its experience in providing local service and support in Brazil, combined with its reputation for delivering highly reliable solutions.

Harris CapRock Communications is a premier global provider of managed satellite and terrestrial communications solutions specifically for remote and harsh environments, including the energy, government, and maritime markets. Harris CapRock owns and operates a robust global infrastructure that includes teleports on six continents, five

24/7 network operations centers, local presence in 23 countries, and more than 275 global field service personnel supporting customer locations across North America, Central and South America, Europe, West Africa, and Asia Pacific.

For more information, visit www.harriscaprock.com.

Consilium and Orange launch paperless maritime solution

Consilium and Orange Business Services are modernizing maritime communications with the launch of a paperless navigation solution that extends an Electronic Chart Display and Information System (ECDIS) over the world's largest MPLS-based network. This bundled, flat-rate solution, Current At Sea, enables shipping companies to move to a fully electronic platform for navigation and communications.

Current At Sea is a future-proof, modular ECDIS and communication system that can include voyage optimization programs, fleet and ship management systems, and real-time monitoring applications. Orange is bridging

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AUV mission data processing: Aerial view of a coastal area with bathymetric contours and grid overlays. Labels include W71 2875' and N41 7245'.

Bottom classification: Two side-by-side panels showing seabed classification. The top panel shows a textured brown surface, and the bottom panel shows a blue and yellow segmented surface.

Sub-bottom profiler and magnetometer: A composite image showing a vertical seismic profile and a horizontal map with depth contours.

Port security and bottom change detection: Aerial view of a port facility with a prominent orange-colored dredge channel.

Chesapeake Technology: A column of text describing the company's mission and history.

Chesapeake Technology Inc. Logo with wavy lines.

www.ChesapeakeTech.com

the ship and shore by integrating ECDIS with Orange's fully managed network (both terrestrial and satellite, including Inmarsat FleetBroadband connectivity). The Orange network ensures accurate, precise data and provides value added enterprise communications such as Business Talk Global, IP Telephony, WAN optimization, M2M, and video conferencing to ships at sea.

Key customer benefits include immediate compliance with regulatory deadlines, operational cost-savings, improved safety at sea, corporate-to-vessel integration, and improved working conditions.

In June 2011, Consilium Marine Group and Orange Business Services signed a high-level global cooperation agreement through which Consilium globally markets Orange marine VSAT communication solutions through its 34 offices in 19 countries.

For more information, visit www.orange.com or www.consilium.se.

Marlink provides global VSAT solution to Odfjell

As part of a new agreement with global transportation provider Odfjell Management AS, Marlink is to supply WaveCall™ VSAT systems for installation aboard 40 vessels. Having worked with Odfjell for several years supplying MSS on-demand services, Marlink's renewed contract represents a further move to VSAT for the transportation company to support higher usage at a fixed, predictable monthly cost.

Odfjell Management AS is one of the world's leading logistics service providers and owns and operates a global fleet of chemical tankers for the transportation of special products. Access to high quality and reliable broadband is critical to support a variety of applications for the company, including improved operational efficiency, crew welfare and business administration.

The new contract follows a successful workshop with Odfjell Management AS at Marlink's Eik Teleport, where the provider was able to develop a customized service package to meet Odfjell's specific requirements for higher usage and increased cost efficiency.

WaveCall™ installations will commence on nine vessels later this year, with the remaining installations to be carried out in 2012. Each vessel sailing with WaveCall™ will have access to

four simultaneous voice lines and three LANs for crew retention and administration purposes, including Internet web access and crew calling functionality. The vessels will also be equipped with FleetBroadband 500 terminals supplied by Marlink to provide seamless connectivity for business critical operations.

Marlink's extensive product range for the transportation industry includes its own regional, multi-regional, and global

Ku-band and C-band Maritime VSAT systems WaveCall™ and Sealink™ as well as on-demand services such as Inmarsat FleetBroadband, Iridium, and Thuraya. The maritime satellite communications provider has also established regional customer service facilities in major regions of the world, supporting its global customer base.

For more information, visit www.marlink.com.

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ABB wins order for three-core AC subsea cable

ABB has won an order worth around \$30 million from Energinet.dk, the Danish transmission system operator, to supply a high-voltage submarine and underground power cable system for the Little Belt strait in Denmark. This is a shipping lane that connects the North Sea to the Baltic Sea and separates the island of Funen from the Jutland Peninsula and continental Europe. The cable system is one of several government-initiated projects to replace high-voltage overhead lines and transmission pylons in environmentally sensitive areas. ABB will supply single-core 420kV underground cables with a total length of 30km and two, three-core 420kV submarine cables with a total length of 15km. This is part of a turnkey solution in which ABB will design, supply, and commission the cable system, including cable terminations and the laying of the submarine cable. When completed in 2013, this cable system will be the most powerful three-core alternating current (AC) submarine power cable in the world.

Global Marine awarded cable maintenance contract

Global Marine Systems has been awarded the maintenance contract for the North America Zone (NAZ). The contract begins in 2012, extends through 2017, and covers a telecommunications cable maintenance footprint that stretches from the Eastern North Pacific down to the Equator. The cable maintenance vessel Wave Venture will be dedicated to maintaining the telecommunications cables within this region and be berthed at the Global Marine cable depot located in Victoria, British Columbia. Wave Venture is scheduled to drydock in Asia, transit to Portland, Oregon to load cable and arrive in April 2012 at its base in Victoria, British Columbia.

NSW to supply Borkum Island link

Norddeutsche Seekabelwerke GmbH (NSW) has been awarded a contract by EWE NETZ GmbH to supply a new submarine power connection from the North Sea island of Borkum to the mainland German power grid. NSW will supply a medium-voltage submarine power cable 25km in length. The 33kV submarine cable consists of three 120mm² power cores plus two optical fiber elements for data transmission. The cable will supplement already existing systems and, thus, further secure the energy supply of the island. It is planned to be installed along a new cable route. NSW has supplied other systems in the region in recent years. In 2009, NSW connected the island of Helgoland with a 53km power cable and has successfully produced and installed cables for various offshore wind farms.

Interoute, Bezeq create Internet superhighway between Europe and Israel

Bezeq International, Israel's leading Internet and international telecoms provider, has selected Interoute Communications Ltd, owner and operator of Europe's largest cloud services platform, to expand its physical network right into the heart of Europe. JONAH – the 2,300km submarine cable – will connect Israel to Europe using Interoute's pan-European fiber optic network from the Interoute landing station in Bari, Italy. This strategic project gives Israel true telecommunication independence, thanks to this new Bezeq International-owned cable, JONAH. Interoute's landing station in Bari, Italy was chosen because it gave the ability to directly interconnect with Interoute's network, and opens up possible business opportunities with the major operators already connected to Interoute's network looking to reach Israel and the rest of the Middle East directly. JONAH, Bezeq International's advanced cable is equipped with two optical fiber pairs, which gives it a potential capacity of over 7Tbps.

Cyprus, Lebanon agree on EUROPA cable

Officials of the Lebanese Ministry of Telecommunications (LMoT) and the Cyprus Telecommunications Authority (Cyta) have agreed on the principles of cooperation for the EUROPA system construction project, a new high-capacity submarine cable between Cyprus and Lebanon, and on the principles for the provision by Cyta to LMoT of a share of transmission capacity on Cyta's ALEXANDROS cable subsystem, with landings in Cyprus, Egypt and France.

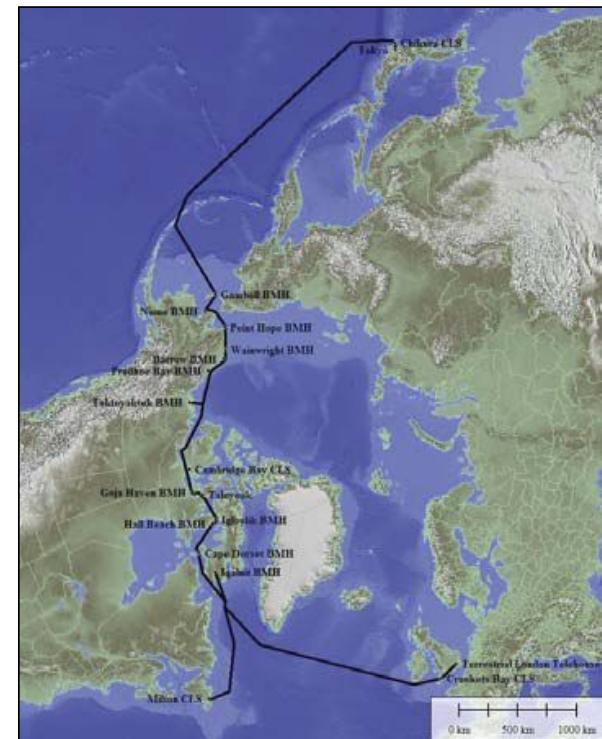
The EUROPA system will be in a position to enhance and gradually replace the existing CADMOS cable system, also connecting Lebanon and Cyprus, thus providing a high-quality alternative route. At the same time, the EUROPA system will form a bridge between the IMEWE cable system landing in Lebanon and the ALEXANDROS cable subsystem landing in Cyprus. The new resilient cable route will provide connectivity to European destinations and beyond, enhancing connectivity between the Middle East and Europe.

The agreement between LMoT and Cyta, which will strengthen the traditional relations between Cyta and LMoT, establishes a new basis for their strategic co-operation in jointly offering a protected, high-capacity route in the Mediterranean, thus assuring their role as major regional telecommunications hubs. At the same time, the EUROPA system will provide reciprocal business opportunities to access new markets, particularly as the economic importance of Asia gains momentum in the coming years. The Minister of Telecommunications of Lebanon also had meetings with the Minister of Foreign Affairs and the Minister of Communications and Works for issues concerning telecommunications and technology.

For more information, visit www.cyta.com.cy.

NEC demonstrates first Tbps superchannel transmission over 10,000km

NEC Corporation has announced the successful experimental demonstration of 1.15Tbps ultra-long haul optical transmission over 10,000km using optical superchannel technology. This is the first instance that a terabit/s channel generated from a single laser source has been transmitted over such a distance. Four superchannels were transmitted together by wavelength division multiplexing (WDM) to achieve a total capacity of 4Tbps and a spectral efficiency of 3.6b/s/Hz. The results clearly demonstrate that practical high-capacity transmission for transoceanic communication can be achieved using cost-effective superchannel technology.



Optical superchannels allow phase-locked carriers with independent modulation to overlap in frequency following the principles of orthogonal frequency division multiplexing (OFDM). This enables efficient bandwidth utilization, allowing higher spectral efficiency and higher data rate per laser through parallelization. NEC's system uses state-of-the-art hardware and advanced techniques, including optical multi-tone generation, large-core/ultra low-loss fiber, intradyne digital coherent detection, and digital equalization at higher oversampling, along with well-established technologies such as EDFA and DP-QPSK modulation. The experiment yielded a 2dB system margin above the hard decision FEC threshold without using processing-intensive MAP or MLSE algorithms.

This work was conducted by NEC Laboratories America, NEC's research group in Princeton, New Jersey, U.S. and the result was published as a post-deadline paper in the Asia Communications and Photonics Conference (ACP 2011) in Shanghai, China after rigorous scrutiny by the ACP program committee.

For more information, visit www.nec.com.

Huawei Marine begins manufacturing phase of Project Express

Huawei Marine Networks Co., Ltd. has announced the signing of a construction contract of Hibernia Atlantic's Global Financial Network (GFN) Project Express. Huawei Marine recently completed the first phase of the project's marine survey work and is now commencing the manufacturing of the necessary cables and wet plant for the project.

The Project Express segment of the GFN is scheduled to be ready for service during the summer of 2013. The system will involve a minimum of a four fiber pair repeatered submarine cable, providing connectivity between New York and London, initially using 40G technology with upgrades to 100G planned in the future.

The first phase of the system begins with laying a 4,600km cable from Brean in Somerset, UK to Halifax, Canada. This cable will then connect to Hibernia Atlantic's current low-latency cable, which runs from Halifax to the

U.S., passing from Lynn, near Boston, and onwards to New York. The new system will also include five branching units for future connectivity enhancements to the U.S., Continental Europe, and Ireland.

Project Express will become an essential route on Hibernia Atlantic's GFN, uniting hundreds of global banks and financial exchanges with a single connection. Built specifically for the financial community, the GFN meets demanding performance and reliability requirements. Project Express will further strengthen the GFN by reinforcing it as the fastest path across the Atlantic, providing additional fast and secure links throughout North America, Europe, and Asia.

As the first Transatlantic subsea cable to be built in 10 years, Project Express will offer the lowest latency route from New York to London, with less than a 60msec round trip, making it the fastest and most direct route connecting both major continents.

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GlobeNet, TE SubCom announce Bermuda-U.S. cable

GlobeNet and TE SubCom have commenced construction for the replacement of Segment 5 of GlobeNet's high performance subsea cable system. This new subsea cable will provide more than 30 times the current capacity between Bermuda and the U.S. and is planned for completion in the first quarter of 2013.

The new segment will be approximately 1,350km in length and is designed to support 150 wavelengths per fiber pair at 100Gbps per wavelength, giving the two fiber pair system a total design capacity of 30Tbps. It has the largest cross-sectional capacity per fiber pair of any system built or contracted to date.

Originally installed by TE SubCom in 1997, GlobeNet's Segment 5 lands in St. David's, Bermuda and Tuckerton, New Jersey. The replacement project includes the supply of new TE SubCom Submarine Line Terminating Equipment (SLTE), which allows trans-

mission of multiple high-quality, high-bandwidth optical signals over ultra-long distances. To prepare for the upgrade, a marine route survey was completed in November 2011.

GlobeNet's submarine cable network spans 22,000km and connects Bermuda, Brazil, the U.S., and Venezuela, with further extensions to Colombia.

For more information, visit www.subcom.com



around the UK, and on to Europe.

CeltixConnect, at 131km, is the shortest subsea network linking Ireland and the UK, providing the lowest latency solutions for businesses. The new fiber network will more than double the existing data capacity between Ireland and the UK, supporting the explosion of online media. Just under 3 million photos can be uploaded per second on each fiber pair. The ability to transport data from Ireland across Europe on a high fiber count network will further support the massive digital services industry in Ireland.

For more information, visit www.celtixconnect.com.

Sea Fibre Networks signs deal with Colt

Sea Fibre Networks, owner and operator of Europe's most advanced subsea telecoms network, CeltixConnect, announced a major fiber contract with Colt, Europe's leading information delivery platform. Colt's customers will be enabled with the lowest latency solution, connecting Ireland to the UK with onward access to Colt's industry leading pan-European network. The deal extends the CeltixConnect footprint opening a gateway to Europe by connecting the fiber network to London,

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TE SubCom sets Transatlantic 100G milestone

TE SubCom has successfully demonstrated 100Gbps coherent transmission over Transatlantic distances at ultra-high 10Tbps total capacity on a single fiber. The test was completed using a prototype of the company's new, first generation smarTER C100 transceiver.

The demonstration, which was conducted on a straight line coherent optimized test bed that simulates undersea systems, including amplifiers and fiber, transmitted 100 by 100Gbps (10Tbps) error-free capacity over 6,400km with significant system performance margin. The hardware tested included proprietary soft decision error correction algorithms.

Combined with recently completed upgrade projects on existing TE SubCom-built cable systems, the company's successful 100G test highlights its commitment to maximizing the availability and utilization of bandwidth and customers' sustained lifetime benefits.

For more information, visit www.subcom.com.

Subsea Telecom

Polarnet Project invites supply tenders

ZAO Polarnet Project of Russia has announced a tender for the supply of the Russian Optical Trans Arctic Submarine Cable System (ROTACS), which will connect Europe and Asia via the shortest possible geographical route across the Arctic, opening a new chapter in the history of global submarine telecommunications. Construction of ROTACS is expected to commence in the second half of 2012.

ROTACS will provide the best-in-class latency route between the UK and Japan/China and will be the first system to be built along the unique Transarctic geographic route. The design of the system will also use the latest developments in optical transmission technology, such as 100Gbps, that will not only ensure the highest capacity based on the present generation of technology, but also that the system is positioned to meet capacity demands well into the future.

The unique ROTACS system design will deliver an increased level of reliability that will significantly impact the global network. Within the present

global info-communications infrastructure, submarine cable systems carry some 98% of all international Internet traffic. The emergence of ROTACS will strengthen the reliability and redundancy of the global network, a feature that is especially appealing for the world's major telecom carriers and content providers – particularly in light of a number of catastrophic events in recent years that have caused extended network outages along the more traditional submarine cable routes between Europe and the Asia-Pacific region.

To date, ZAO Polarnet Project is the first and only company that has completed unique and extensive marine survey operations in the Arctic region, thus proving the feasibility of a submarine cable system in ice conditions. In view of ROTACS' relevance and advanced state of development, the Russian Governmental Commission for Federal Communications and Information Technology granted its approval of the project in October 2011.

For more information, visit www.polarnetproject.ru.

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Prysmian wins highest value cable project ever awarded

Prysmian Group has been awarded a record contract worth approximately €800 million, the highest value ever awarded in the cable business, for the development of Western HVDC Link, a new submarine High Voltage Direct Current (HVDC) interconnector between Scotland and England. The whole turnkey project will be executed by a consortium of Prysmian and Siemens who will be responsible for the HVDC converter stations. Total value of the contract awarded to the consortium by NGET/SPT Upgrades Ltd, a joint venture set up by the system operator National Grid Electricity Transmission and its Scottish counterpart Scottish Power Transmission, is around €1.1 billion. Commissioning is for late 2015.

The interconnection, designed as a low loss HVDC transmission system, will operate at the record voltage level of 600kV, the highest ever reached by an insulated cable (to date, the record is 500kV), with a rating of 2200MW – both currently unmatched for long-haul

systems. The main purpose of the cable link is to connect renewable generation sources in Scotland to the consumption centers in England, although it also allows bi-directional flow of power. The choice of a submarine cable link versus a land interconnection offers remarkable benefits in terms of project approval and execution time.

The project requires full turnkey provision of an HVDC link (design, manufacture, installation, testing, and commissioning) and considers a bi-pole of cables using Paper Polypropylene Laminate (PPL) insulation, with enhanced electrical and thermal performance. Prysmian has been a forerunner in bringing on the market Mass Impregnated PPL cables, an innovative material technology that allows reaching higher voltage classes, reduced cables dimensions for equivalent transmission capacity, and optimized power losses.

With a route length in excess of 400km, the link includes a short land section in Scotland and a significant land portion in England-Wales; the submarine part will be installed in the Irish Sea. Offshore installation will be per-

formed by Prysmian's own cable ship Giulio Verne.

For more information, visit www.prysmian.com.

ABB sets power cable record in New York Harbor

ABB has completed the delivery and energization of a cross-linked, polyethylene-insulated 345kV AC submarine cable system. Extruded in a single continuous length without factory joints, the new cable system brings 512MW of power generation capacity to the critical wholesale power market in New York City.

The ABB extra-high voltage cable system is part of the Bayonne Energy Center power generation and transmission project, a new facility that will provide cleaner, more reliable power for Manhattan and the New York City power transmission network.

The cable system links the power plant to the substation and delivers the power at extra-high voltage (345kV AC) across New York Harbor, close to Liberty Island and the Statue of Liberty.

Completed and energized by ABB in December 2011, the system includes

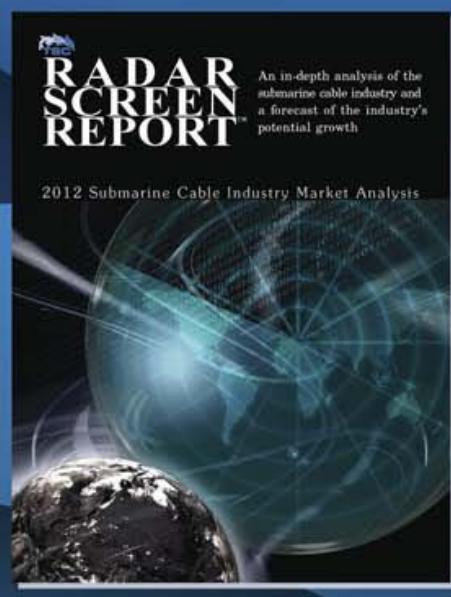
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Power Cables

three single-core XLPE submarine cables, each 6.5mi (10.4km) in length, and two XLPE underground cable segments that connect the submarine cables to the power plant in Bayonne and the substation in Brooklyn, respectively.

The 6.5mi submarine cables are the longest extruded extra-high voltage submarine AC power cables ever manufactured. Most extruded submarine AC cables have, so far, been at the 145kV level or lower, including the world's longest submarine AC cable, which ABB is supplying for the Goliat floating oil and gas platform in the Barents Sea (the Goliat cable is 105km in length and has a voltage rating of 123kV).

The ABB solution for Bayonne Energy Center is entering the record books for two other reasons as well. In accordance with BEC's requirements, ABB manufactured each of the three 6.5mi extruded cables in a single continuous length. Such a long extruded extra-high voltage AC cable without factory joints had never been attempted before.

Secondly, New York is a busy international seaport with freighters, cruise ships, ferries, and tourist boats anchor-

ing or operating in the harbor. To mitigate concerns about possible future dredging in the harbor and the risk of anchor damage, ABB was required to bury the cables at a depth of up to 15ft (4.6m), which is significantly deeper than the 3 to 6ft burial required for most other submarine power cables. The water depth along the cable route in the harbor is, on average, about 20m.

For more information, visit www.abb.com.

OMM developing innovative survey and inspection platform

OMM has announced that it is developing a bespoke, remotely-operated underwater survey and inspection platform. Following identification of a requirement for an integrated vehicle to perform survey and inspection of assorted assets from depths of up to 100m, through the intertidal zone to drying heights, OMM has conceived a unique approach to a problem that would usually require the deployment of multiple conventional ROV and diving spreads.

OMM has approached this problem from the perspective of a customer who

wishes to minimize not only project costs but also risks. This, coupled with the ethos of producing a solution that is tailored to the task rather than employing an existing underutilized asset, has led OMM to develop an integrated vehicle capable of working both dry and submerged.

The vehicle is a four-wheel drive, all-terrain crawler that acts as a platform for conventional survey sensors and also has the facility to carry an onboard ROV. With full independent suspension supporting each drive system, the crawler is designed to provide the optimum platform for the onboard sensors. These will be used to track and survey both route corridors as well as fixed assets, including pipelines and cables. The ROV is also available to be remotely deployed for additional inspection of hazards, areas of particular interest, or offshore installations that can be reached in a single journey from the shore.

For more information, visit www.offshoremm.com.

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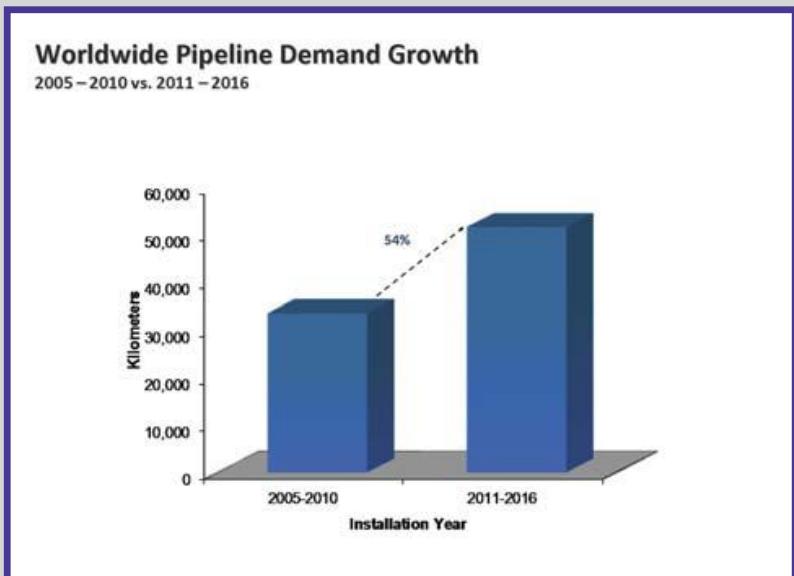
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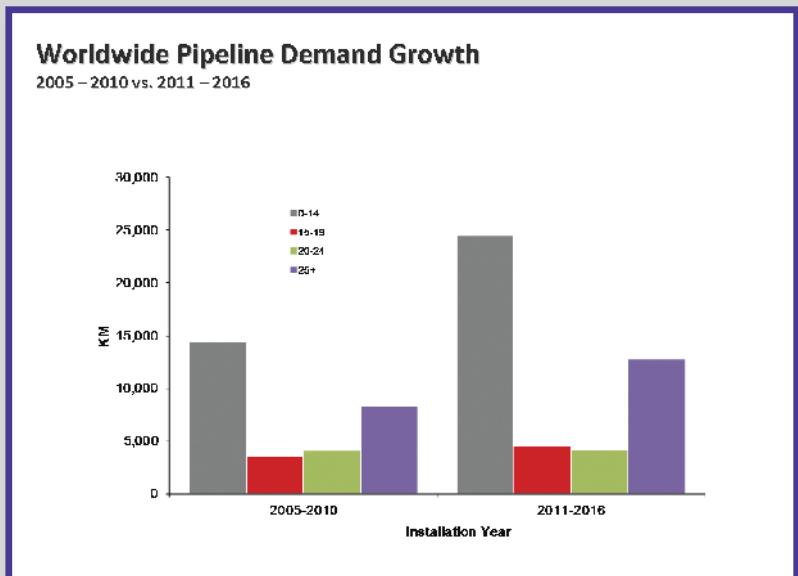
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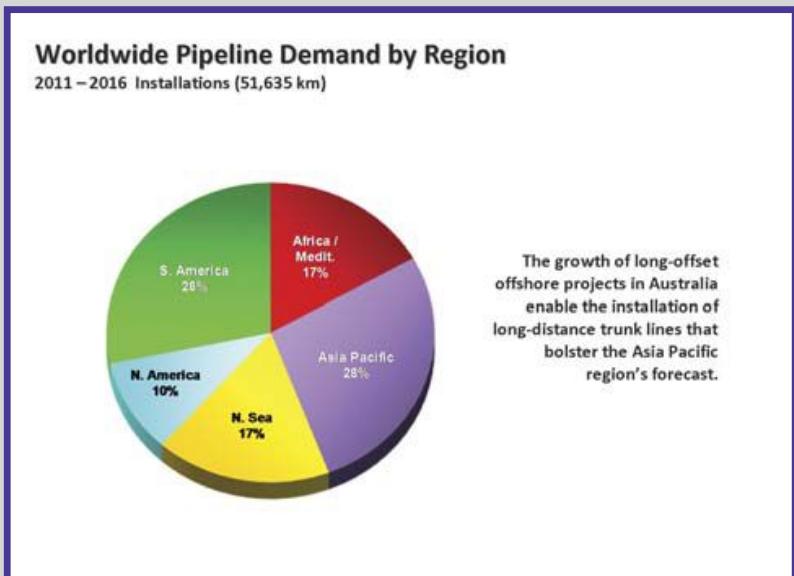
Worldwide Pipeline Demand Growth



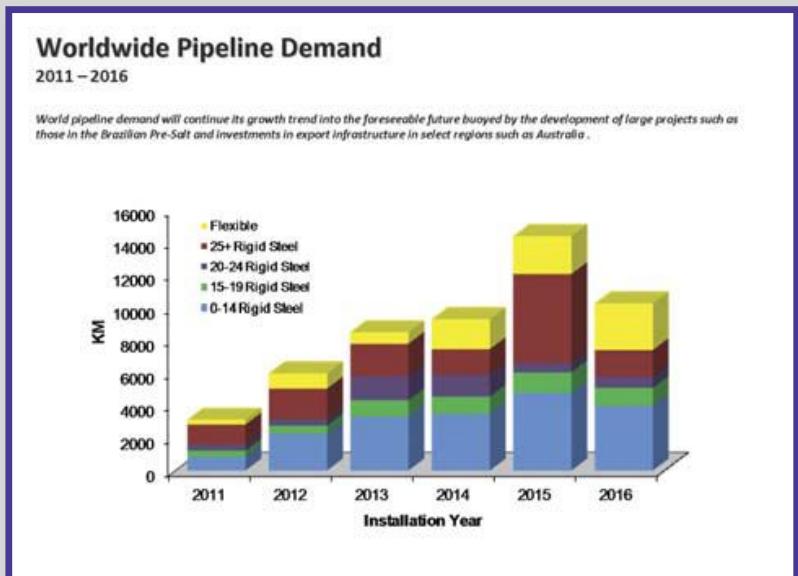
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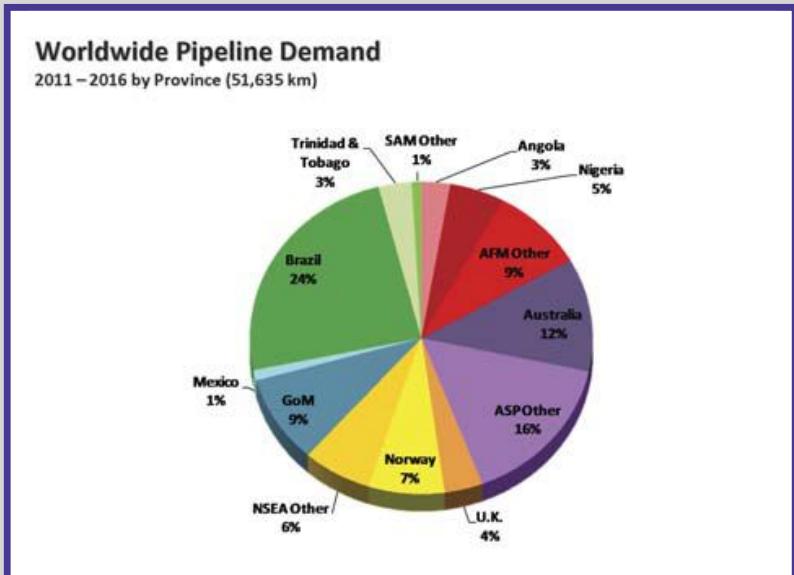
Worldwide Pipeline Demand by Region



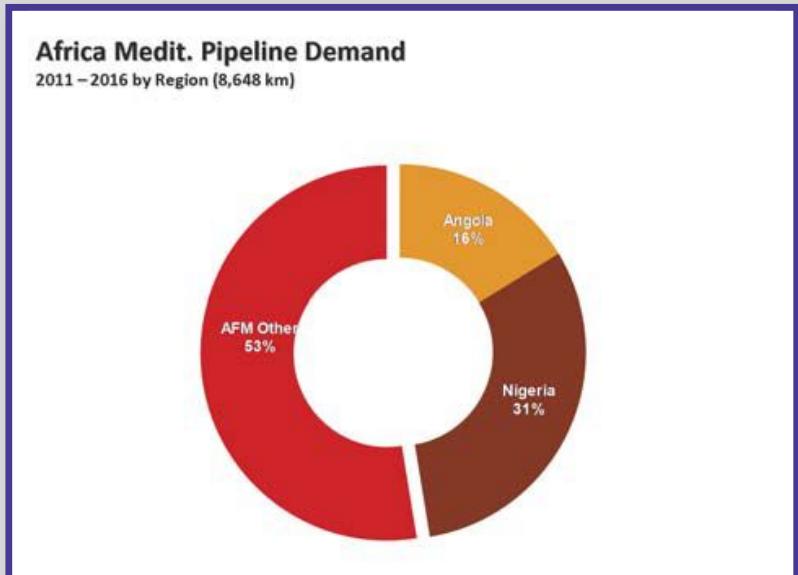
Worldwide Pipeline Demand



Worldwide Pipeline Demand



African Medit. Pipeline Demand

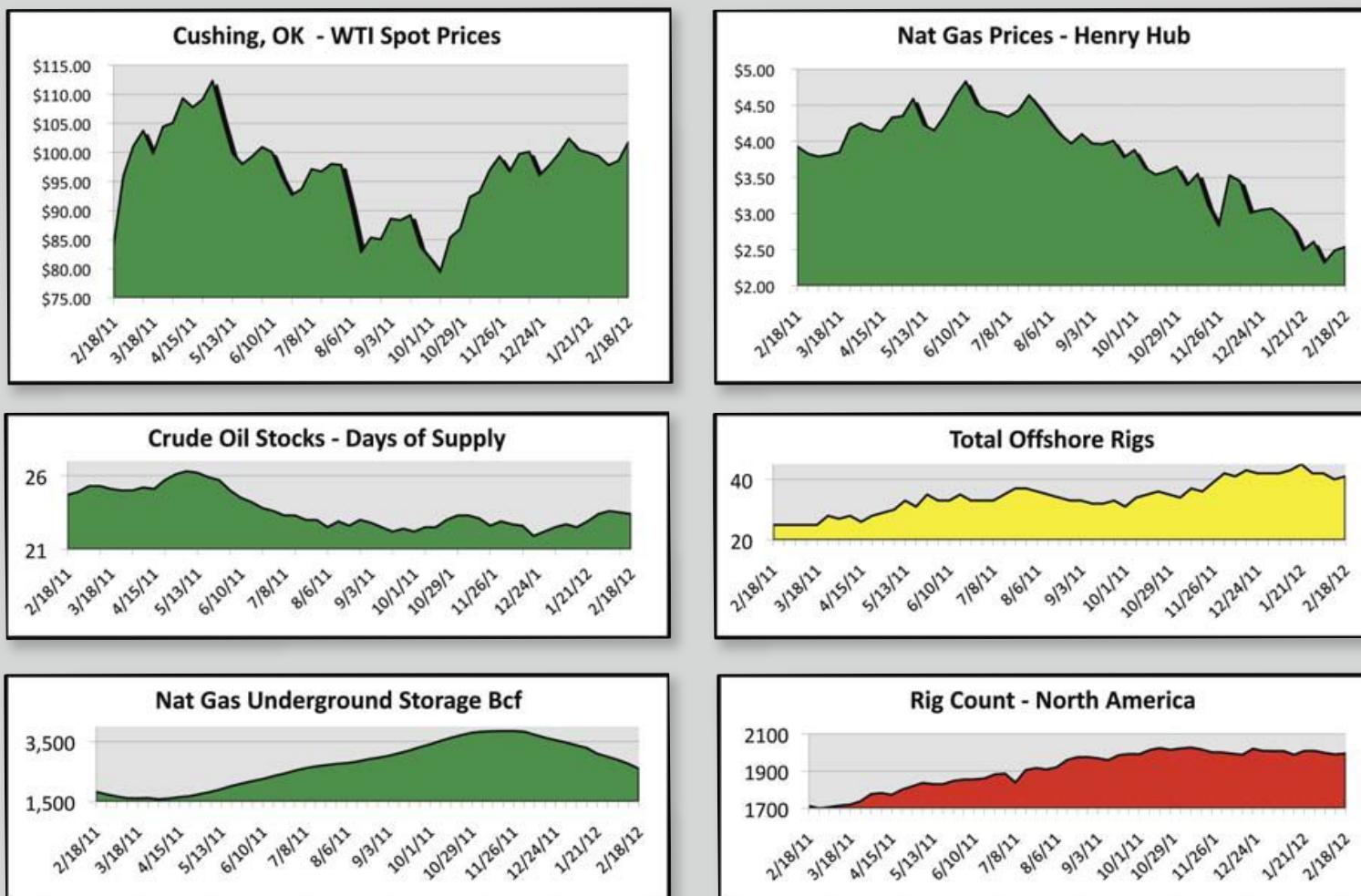


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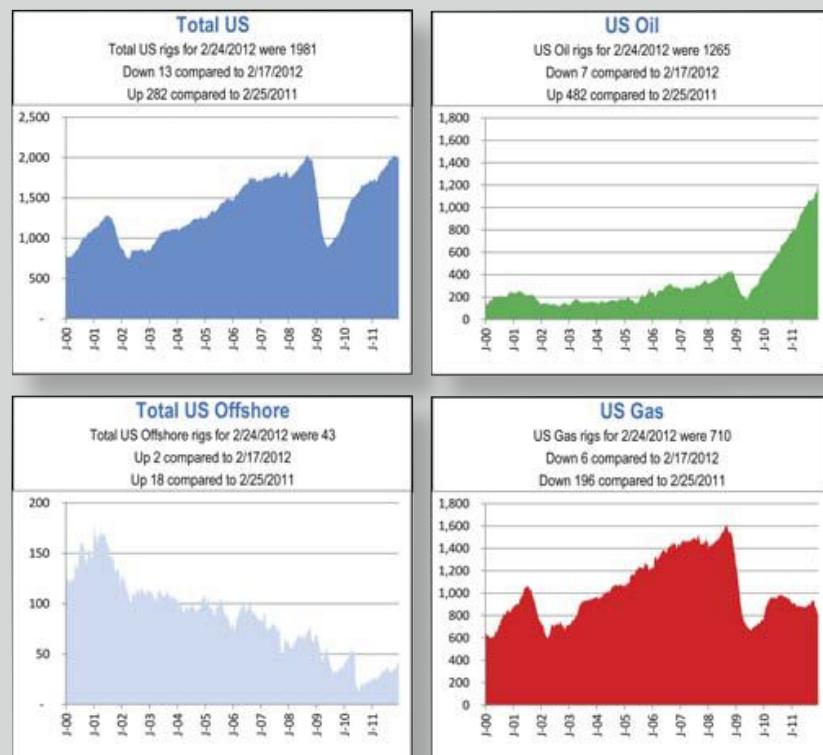


positive trend at least 3 weeks
 changing trend < 3 weeks
 negative trend at least 3 weeks

Baker Hughes Rig Report

North American Rig Report
February 24, 2012

Location	Week	Week		Year	
	of 2/24	+/-	Ago	+/-	Ago
Land	1923	-15	1938	265	1658
Inland Waters	15	0	15	-1	16
Offshore	43	2	41	18	25
U.S. Total	1981	-13	1994	282	1699
Gulf of Mexico	43	2	41	18	25
Canada	701	-4	705	78	623
N. America	2682	-17	2699	360	2322



Gulf of Mexico Data

Current Deepwater Activity

Operator	Area / Block	OCS Lease	Rig Name	Prospect Name	Water Depth(ft)
Petrobras America Inc.	WR 206	G16965	PRIDE DEEP OCEAN MENDOCINO	Cascade	8,143
Shell Offshore Inc.	AC 857	G17561	H&P 205	Great White	7,815
Shell Gulf of Mexico Inc.	MC 348	G19939	T.O. DEEPWATER NAUTILUS	Appomattox #2	7,257
Union Oil Co. of California	WR 677	G18753	T.O. DISCOVERER INSPIRATION	Saint Malo	7,040
Chevron USA Inc.	WR 758	G17015	T.O. DISCOVERER CLEAR LEADER	Jack	6,965
BP Exploration & Production Inc.	GC 743	G15607	T.O. DEVELOPMENT DRILLER II	Atlantis	6,834
LLOG Exploration Offshore, LLC	MC 431	G22877	NOBLE AMOS RUNNER		6,427
Noble Energy, Inc.	MC 948	G28030	ENSCO 8501	Bob	6,060
BP Exploration & Production inc.	MC 778	G14658	THUNDER HORSE PDQ	Thunder Horse South	6,036
BP Exploration & Production inc.	KC 292	G25792	SEADRILL WEST SIRIUS	Kaskida	6,031
Cobalt International Energy, LP	GC 814	G32534	ENSCO 8503	Ligurian	5,837
Eni US Operating Co. Inc.	MC 772	G16647	T.O. DEEPWATER PATHFINDER	Triton	5,639
BP Exploration & Production inc.	GC 743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	5,405
Anadarko Petroleum Corp.	GC 903	G24197	T.O. DISCOVERER AMERICAS	Heidelberg	5,260
Chevron USA Inc.	WR 29	G16942	T.O. DISCOVERER INDIA	Big Foot	5,187
Exxon Mobil Corp.	AC 25	G10380	NABORS MODS 201	Hoover	4,808
BHP Billiton Petroleum (GOM)	GC 654	G20085	GSF C.R. LUIGS	Shenzi	4,337
Chevron USA Inc.	GC 640	G20082	T.O. DISCOVERER DEEP SEAS	Tahiti 2	4,292
Anadarko Petroleum Corp.	GC 608	G18402	BLAKE 1007	Genghis Khan	4,287
BHP Billiton Petroleum (GOM) Inc.	GC 610	G16764	T.O. DEVELOPMENT DRILLER I	Shenzi	4,270
Shell Offshore Inc.	MC 940	G31534	NOBLE DANNY ADKINS	Vito	4,004
ATP Oil & Gas Corp.	MC 941	G16661	NABORS 202	Mirage	4,000
Shell Offshore Inc.	MC 810	G09873	CAL DIVE Q-4000	Ursa	3,948
Shell Offshore Inc.	MC 935	G07976	NOBLE DRILLER	Europa	3,797
Anadarko Petroleum Corp.	EB 602	G14205	ENSCO 8500	Nansen	3,681
Anadarko Petroleum Corp.	EB 602	G14205	COIL TUBING UNIT (L.J. DIST)	Nansen	3,678
Nexen Petroleum USA Inc.	GC 504	G22968	ENSCO 8502	Kakuna	3,600
BP Exploration & Production Inc.	VK 914	G08785	T.O. DISCOVERER ENTERPRISE	Nile	3,535
Shell Offshore Inc.	GB 516	G11528	NOBLE JIM DAY	Serrano	3,392
Murphy E&P Co.	GC 338	G21790	NABORS MODS 200	Front Runner	3,325
Statoil USA E&P Inc.	GC 404	G28076	MAERSK DEVELOPER	Kilchurn	3,146
Shell Offshore Inc.	GC 158	G07998	H&P 202	Brutus	2,985
Shell Offshore Inc.	MC 807	G07963	H&P 201	Mars B	2,945
Shell Offshore Inc.	GB 426	G08241	AUGER	Auger	2,862
Chevron USA Inc.	GC 205	G05911	NABORS 85 (MAYRONNE 162)	Genesis	2,590
Shell Offshore Inc.	GC 116	G05904	NOBLE JIM THOMPSON	Popeye	2,046
Anadarko Petroleum Corp.	VK 826	G06888	NABORS P-10	Neptune	1,935
Hess Corp.	GB 260	G07462	NABORS S.D. XVI	Baldpate	1,648
Walter Oil & Gas Corp.	EW 834	G27982	DIAMOND OCEAN VICTORY	Hummingbird	1,183

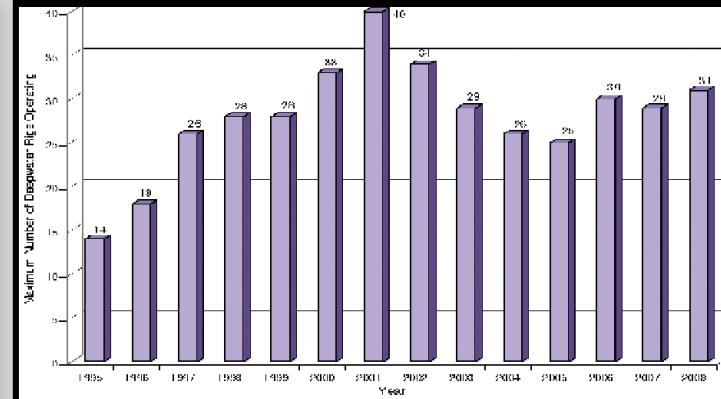
Deepwater prospects with drilling and workover activity: 39

Current Deepwater Activity as of Monday, February 27 , 2012

Activity by Water Depth

Water Depth in Meters	Active Leases	Approved Applications	Active
0 to 200	1,771	34,108	2,972
201 to 400	119	1,111	20
401 to 800	277	838	10
801 to 1,000	391	528	8
1,000 & above	3,275	1,714	25

Rig activity by year



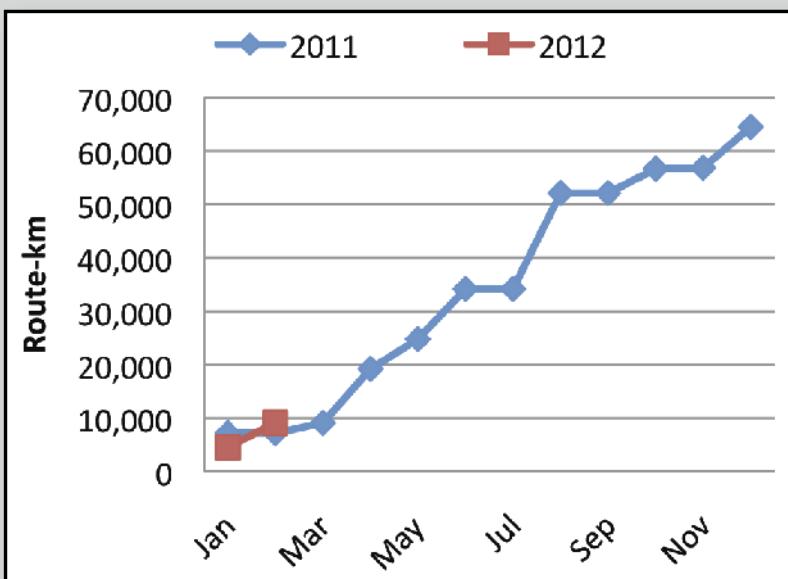
Activity by water depth Information current as of Monday, February 27, 2012

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.

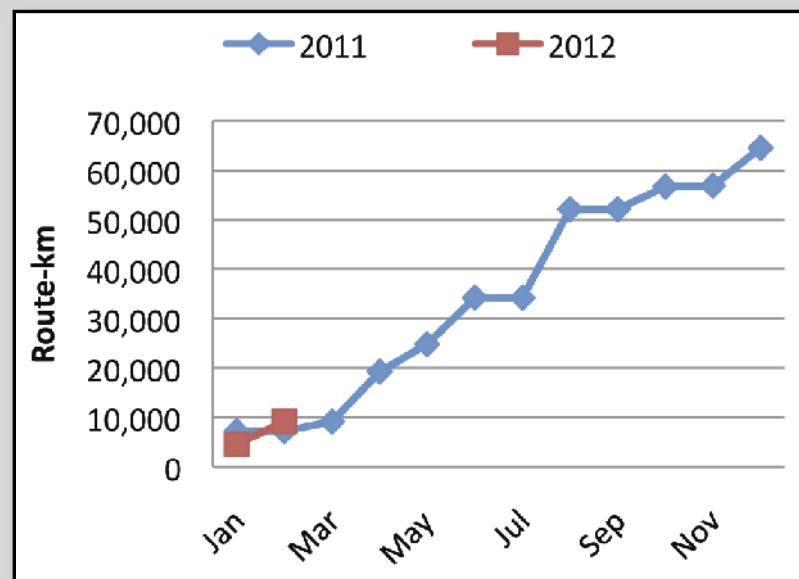
Information provided courtesy of the U.S. Bureau of Ocean Energy Management

Subsea Telcom & Power Cable Data

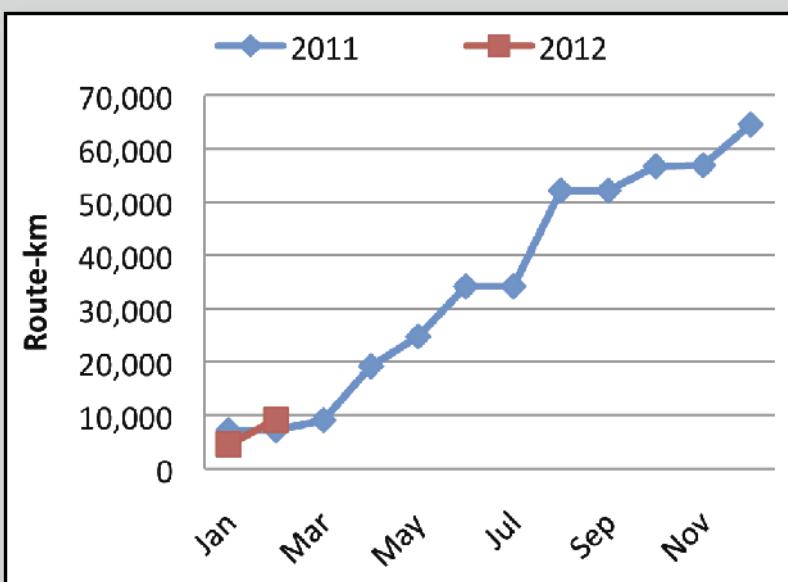
FO Cable Awards by month



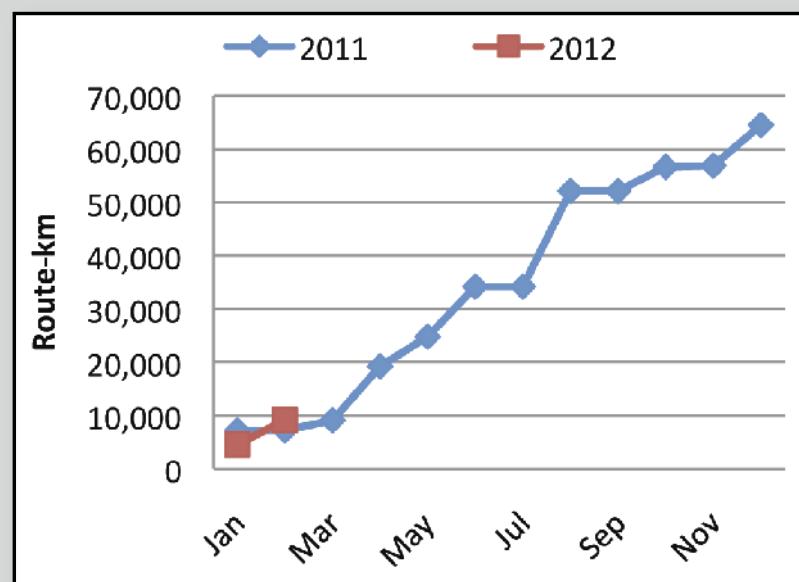
FO Cable Announcements 2011



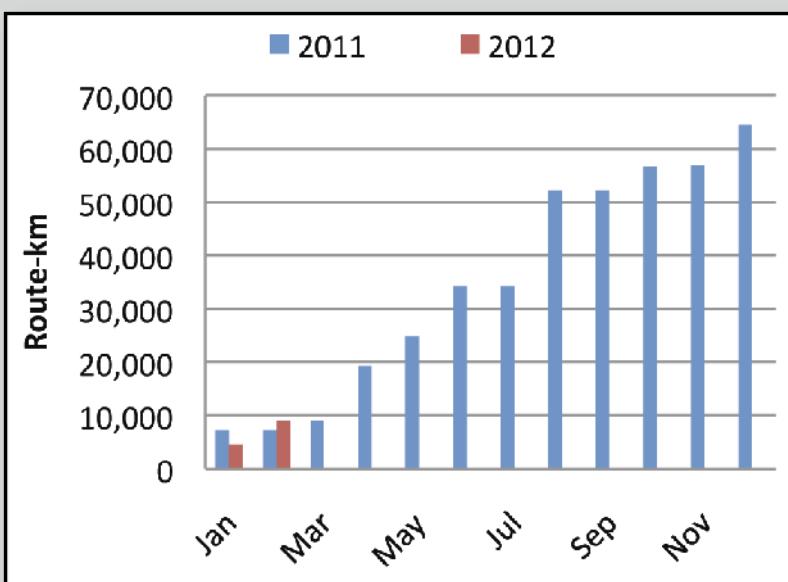
Submarine FO Cables Entering Service 2011 in route-km



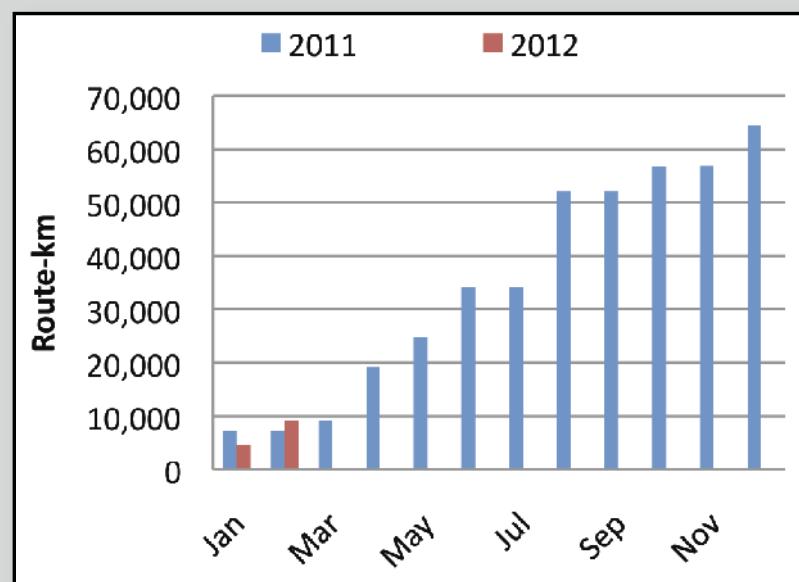
Upgrades of Existing Cable Systems in Gbps



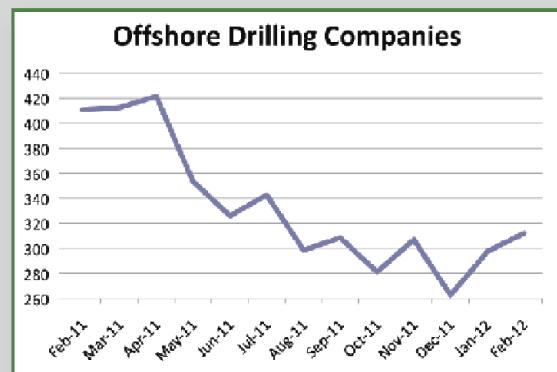
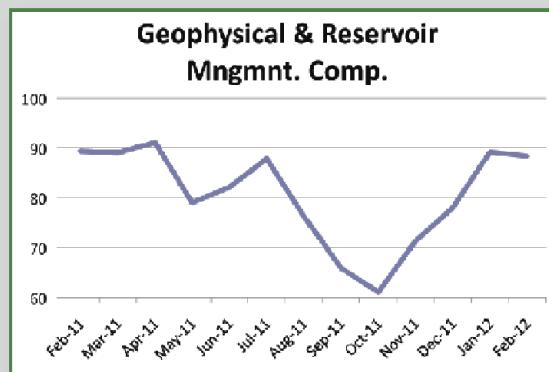
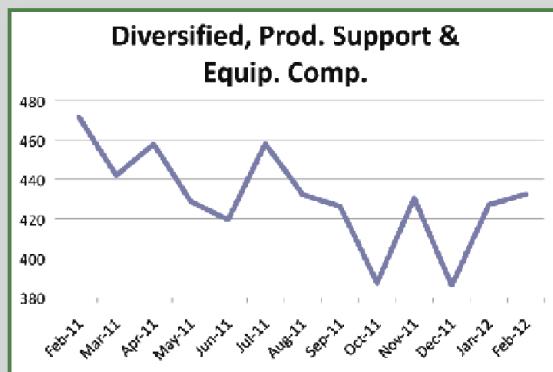
Submarine Power Cable Awards 2011 in route-km



Submarine Power Cable Announcements 2011 in route-km



Monthly Stock Figures & Composite Index



Industry Company Name	Symbol	Close Mid-February	Close Mid-January	Change	Change %	High 52 week	Low
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Diversified, Production Support and Equipment Companies

Baker Hughes, Inc.	BHI	47.50	49.73	-2.23	-4.5%	81.00	41.91
Cameron Intl. Corp.	CAM	55.59	54.42	1.17	2.1%	63.16	38.77
Drill-Quip, Inc.	DRQ	73.84	67.12	6.72	10.0%	82.49	47.40
Halliburton Company	HAL	35.42	34.66	0.76	2.2%	57.77	27.21
Tenaris SA	TS	39.52	40.42	-0.90	-2.2%	51.07	23.29
Newpark Resources, Inc.	NR	7.63	9.54	-1.91	-20.0%	10.62	5.19
Schlumberger Ltd.	SLB	77.02	72.48	4.54	6.3%	95.64	54.79
Superior Energy Services, Inc.	SPN	27.99	28.36	-0.37	-1.3%	42.87	22.19
Weatherford International, Inc.	WFT	17.38	16.70	0.68	4.1%	26.25	10.85
Deep Down, Inc.	DPDW	0.06	0.05	0.01	20.0%	0.29	0.05
FMC Technologies	FTI	50.56	53.63	(3.07)	-5.7%	55.19	34.46
Total Diversified, Production, Support and Equipment.....		432.51	427.11	5.40	1.3%	566.35	306.11

Geophysical / Reservoir Management

Dawson Geophysical Company	DWSN	37.36	39.08	-1.72	-4.4%	50.81	21.57
Mitcham Industries, Inc.	MIND	22.37	23.36	-0.99	-4.2%	24.26	9.52
Compagnie Gnrale de Gophysique-Veritas	CGV	28.64	26.68	1.96	7.3%	38.12	15.08
Total Geophysical / Reservoir Management.....		88.37	89.12	-0.75	-0.8%	113.19	46.17

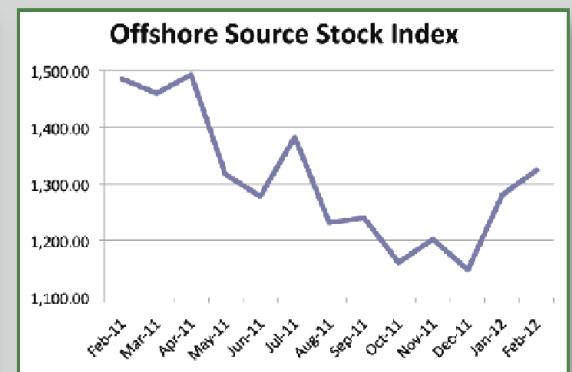
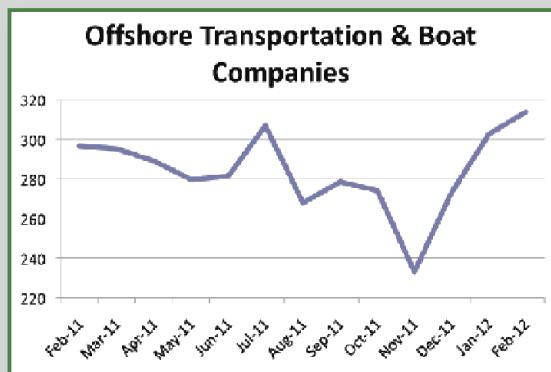
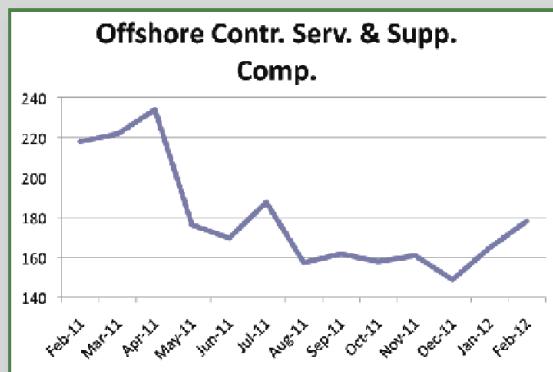
Offshore Drilling Companies

Atwood Oceanics, Inc.	ATW	45.86	44.62	1.24	2.8%	48.86	30.64
Diamond Offshore Drilling, Inc.	DO	61.90	62.12	-0.22	-0.4%	81.19	51.16
ENSCO International, Inc.	ESV	54.44	52.38	2.06	3.9%	60.31	37.39
Nabors Industries, Inc.	NBR	19.54	17.20	2.34	13.6%	32.47	11.05
Noble Drilling Corp.	NE	38.17	34.54	3.63	10.5%	46.72	27.33
Parker Drilling Company	PKD	6.45	6.47	-0.02	-0.3%	7.62	3.60
Rowan Companies, Inc.	RDC	37.20	35.12	2.08	5.9%	44.83	28.13
Transocean Offshore, Inc.	RIG	48.44	45.15	3.29	7.3%	85.98	38.21
Total Offshore Drilling.....		312.00	297.60	14.40	4.8%	407.98	227.51

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.

Monthly Stock Figures & Composite Index



Industry Company Name	Symbol	Close Mid-February	Close Mid-January	Change	Change %	High 52 week	Low
Offshore Contractors, Services and Support Companies							
Cal Dive International, Inc.	DVR	3.33	3.06	0.27	8.8%	8.19	1.50
Helix Energy Solutions Group, Inc.	HLX	18.42	16.18	2.24	13.8%	21.65	11.57
Gulf Island Fabrication	GIFI	32.54	31.34	1.20	3.8%	36.00	19.55
McDermott International, Inc.	MDR	13.19	12.67	0.52	4.1%	26.14	9.34
Oceaneering International	OII	53.32	48.74	4.58	9.4%	54.34	31.77
Subsea 7 SA	SUBCY.PK	22.11	20.49	1.62	7.9%	27.52	16.82
Technip ADS	TKPPY.PK	25.25	22.71	2.54	11.2%	28.35	17.52
Tetra Technologies, Inc.	TTI	9.91	9.54	0.37	3.9%	16.00	6.77
Total Offshore Contractors, Service and Support.....		178.07	164.73	13.34	8.1%	218.19	114.84
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	98.58	93.89	4.69	5.0%	113.20	75.04
Gulfmark Offshore, Inc.	GLF	48.59	46.74	1.85	4.0%	50.34	32.34
Bristow Group	BRS	47.63	47.92	-0.29	-0.6%	52.89	37.98
PHI, Inc.	PHII	22.33	23.50	-1.17	-5.0%	26.36	16.95
Tidewater, Inc.	TDW	59.60	54.50	5.10	9.4%	63.55	38.80
Trico Marine Services, Inc.	TRMAQ.PK	0.04	0.03	0.01	33.3%	0.19	0.01
Hornbeck Offshore	HOS	36.90	35.95	0.95	2.6%	32.64	19.80
Total Offshore Transportation and Boat		313.67	302.53	11.14	3.7%	339.17	220.92

Total Diversified, Production, Support and Equipment	432.51	427.11	5.40	1.3%	566.35	306.11
Total Geophysical / Reservoir Management	88.37	89.12	-0.75	-0.8%	113.19	46.17
Total Offshore Drilling	312.00	297.60	14.40	4.8%	407.98	227.51
Total Offshore Contractors, Service and Support	178.07	164.73	13.34	8.1%	218.19	114.84
Total Offshore Transportation and Boat	313.67	302.53	11.14	3.7%	339.17	220.92
Total Offshore Source Index...	1,324.62	1,281.09	43.53	3.4%	1,644.88	915.55

Unique Maritime Group's marine buoyancy solutions help stricken vessel

During a power outage, the Jean Ricciardi, a 25m, 250Gton vessel ran aground and damaged her hull, resulting in her sinking close to Sete Harbor in France. Due to the water depth and the close proximity to the harbour entrance, a rapid solution was required.

The local diving & salvage contractor, Prodive of Monaco, contacted Seaflex to supply the necessary equipment – 12 to 20ton air lift bags (ALB). The bags were packed and despatched from stock the same day from Seaflex headquarters on the Isle of Wight and arrived on site 2 days later.



The salvage was completed by the contractor within a week of the call to Seaflex, and the Jean Ricciardi has now been safely removed from the water to be broken up for scrap.

Ray Hughes, managing director, Unique System (UK) Ltd., commented on both projects saying, "These are perfect examples in the diverse use of buoyancy systems and the flexibility UMG is able to offer its customers. With the Jean Ricciardi, we were able to offer a

rapid response solution, and with the London Array, we were able to provide bespoke products to provide a solution for a niche requirement."

For more information, visit www.uniquegroup.com.

Marine Electronics offers new diver detection sonar

Marine Electronics Ltd. (MEL), the Guernsey based manufacturer of scientific and technical sonars, will be launching its competitively priced Pin–Point diver detection sonar at Oceanology.

The new MEL Pin–Point diver detection sonar has been developed to provide a precise 3D presentation of intruders active in the water column. This new security sonar differs from others on the market in that it not only locates underwater intruders, but also enables users to establish the depth at which they are swimming. Security personnel equipped with this knowledge can then provide a more carefully structured reaction and interception strategy.

Despite the advanced nature of the 3D sonar technology, the Pin–Point system is expected to prove attractive to organizations with a more restricted security budget, yet a requirement for the best technology.

For more information, visit marine-electronics.co.uk.



RESON delivers six SeaBat 7125ROV2 systems

A sh t e a d Technology in Aberdeen, UK has taken delivery of six RESON SeaBat 7125ROV2 systems with FlexMode, fully calibrated and ready for use, less than a week after placing the order.

The RESON SeaBat 7125ROV2 is the latest evolution of the SeaBat 7125 Series and is specifically aimed at the oil, gas, and renewable market. The 7125 ROV2 systems were supplied with RESON's new FP2.0 software as well as the FlexMode option. The new FP2.0 software offers variable swath width from 45° to 165°, with electronic beam steering (head tilt). The FlexMode beam forms equidistant beams across the full cross profile to a user-defined grid distance. The remaining beams are formed as equiangular beams in a user-defined, high-resolution sector. This high resolution sector provides the user with a very detailed profile of the pipeline with a very clean data set that is fast to process, thus saving time and money.

For more information, visit www.reson.com.





Tritech's Gemini purchased for DPS offshore vehicles

Tritech has sold three Gemini 720id multibeam sonars to DPS Offshore, the subsea rental division of Forum Energy Technologies (FET), as part of a recent package worth in excess of \$400,000.

This sale reaffirms DPS Offshore's commitment to increase its global rental pool of equipment, placing orders locally in Houston to cover the Gulf of Mexico requirements, while also ordering from its UK office to cover territories outside the U.S.

The deep Gemini purchases, along-side earlier purchases of Tritech's high-performance imaging sonars, will allow DPS Offshore to meet the requirements of their clients' work-class ROVs, from its U.S., UK, and Singapore offices. DPS Offshore has now spent well in excess of \$1million with Tritech over the past 12 months, ensuring they are able to meet the increasing global demand for Tritech equipment.

The Gemini 720id is Tritech's deep-water multibeam imaging sonar (rated to 4,000m) that delivers real-time, accurate data and is increasingly being recognized as the sonar of choice for real-time multibeam imaging, complementing the industry-standard, mechanical scanning technologies.

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

JD Neuhaus supplies its largest crane system

The largest crane system constructed to date by JD Neuhaus has been delivered to Westcon Lofteteknikk AS (WCL) of Norway for use on an offshore drilling rig. The semi portal design comprises an A-frame supporting twin overhead horizontal track beams providing a 7.5m span.

The crane has an approximate height of 11.5m with a total weight of 32tons. It is equipped with JDN hydraulic EH 40-H monorail hoists operating on each of the twin beams, each hoist providing

an individual lift capacity of 40tons. These hoists can be operated individually or simultaneously from one control; when used in conjunction, a total lift of 80tons is possible with a 12m lift height being available.

For more information, visit www.jdneuhaus.com.

New optical penetrator line from BIRNS

BIRNS, Inc., an ISO 9001:2008-certified global leader in the design and manufacturing of unique lines of high-performance connectors, custom cable assemblies, penetrators, and lights, has launched a new line of innovative fiber optic penetrators. The versatile design is tailored for the rigors of the subsea environment and can be adapted to a wide range of different cables.

The new BIRNS fiber optic penetrator line comes standard with pressure rating of 70bar (1,000 PSI/2,300 FSW), but can be specified to higher rating, depending on the application, ranging from ROV and AUV use to defense submersibles and sonar arrays. These rugged penetrators are meticulously engineered to enable reliable fiber transmission through a bulkhead and are extremely durable – constructed of AISI 316 stainless steel that is passivated per ASTM A967-05. They are rated for use up to 80°C (176°F) when fabricated with neoprene (polychloroprene) cable jackets or up to 95°C (203°F) with optional CSPE cable jackets.

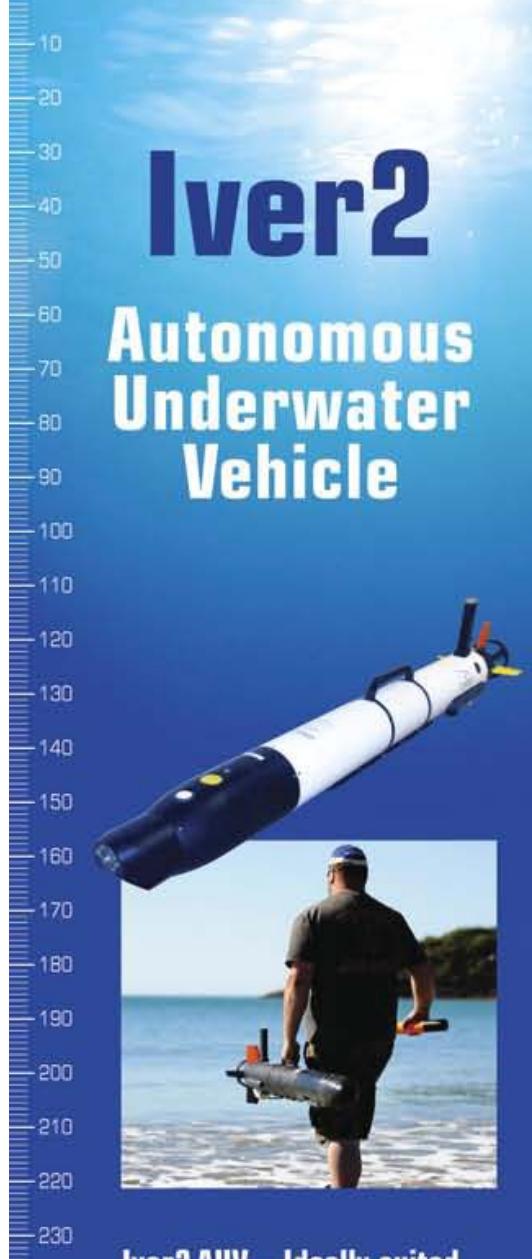


The line has extremely low insertion loss (<0.1dB per channel) and conversely high return loss (>65dB per channel). Like all BIRNS penetrators, they meet or exceed ABS and DNV requirements when fabricated with Low Smoke Zero Halogen (LSZH) cables inboard; and are each individually serialized, certified, and tested in accordance with BIRNS' ABS-approved test procedure ETP-6510-101.

For more information, visit www.birns.com.

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Product News

BlueView delivers enhanced underwater vision to Fugro



BlueView Technologies, the world leader in compact acoustic imaging and measurement technology, are pleased to announce the latest delivery of two (2) P900-130 2D Multibeam Imaging Sonar for Fugro Subsea Services in Aberdeen making a total of six (6) units total delivered to the group over the past year.

The BlueView P900-130 2D Imaging Sonar features an ultra-wide 130° field-of-view in a compact housing to deliver crisp, real-time imagery and accurate data. Installed on the latest batch of Falcon underwater remotely operated vehicles (ROV) from Saab Seaeye, the units will be used to provide real-time situational awareness in the tough underwater environments in which the vehicles must operate.

BlueView is the leader in 2D imaging and 3D scanning sonar technology with more than 500 installed systems worldwide. BlueView Technologies' advanced sonar systems are currently deployed on AUVs, ROVs, subsea trenchers, surface vessels, fixed positions, and portable tripods, and have been adopted by leading manufacturers and service providers to support mission critical operations. BlueView customers enjoy a low cost of ownership with reliable operation, exceptional service, in-person training, extensive online information, and worldwide after-sales support.

For more information, visit www.blueview.com

EdgeTech introduces new sonar for AUVs and ROVs

EdgeTech is excited to introduce a new sonar solution specifically designed for AUVs, ROVs, USVs, and other hosted platforms. The new 2205 Series is the latest generation of electronics, transducers, and software specifically optimized for the demanding size, power, and cost constraints present in hosted platform systems.

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For more information go to www.cnavgnss.com

With hundreds of sonar systems installed on numerous AUV, ROV, and USV platforms around the world, EdgeTech has incorporated years of experience in this latest generation of OEM components.

The new system runs the full range of EdgeTech side-scan sonar frequencies from 100kHz to 1600kHz, subbottom profiler frequencies from 500Hz to 24kHz, and swath bathymetry at 230kHz or 540kHz, making it the most versatile sonar imaging solution on the market focused on the underwater vehicle group. Additionally, the new 2205 is available with EdgeTech's unique Dynamic Focusing and Multi-Pulse technologies. EdgeTech is also excited to introduce new Powered Arrays designed to provide better ranges and noise immunity.

For more information visit www.edgetech.com.

Instrument Concepts is launching icListen HF smart hydrophone

Simplify your broadband acoustic listening with the icListen HF, debuting at Oceanology 2012. The icListen HF is a compact, all-in-one smart



hydrophone with a bandwidth of 10 to 200,000Hz with 24bit resolution. No additional hardware, software, or technical expertise required. Plug it into your computer and get calibrated waveforms, spectral, or event data. This smart hydrophone contains 32GB of storage and can be used as a stand-alone data logger and/or streaming digital hydrophone. Use an external battery for extended projects.

For more information, visit www.instrumentconcepts.com.

Logic Beach launches new mini data logger

The just released, low-cost, AND fully programmable IL-Mini™ data logger destroys the historical data logger cost vs. flexibility purchasing dilemma. Feature rich and graphically programmed

with the HyperWare-II™ icon-based software, the IL-Mini™ offers unlimited flexibility in a rugged, low-cost, stand-alone data logging instrument.

The IntelliLogger IL-Mini™ is a rugged, stand-alone data logger that accepts analog, digital, and Modbus transducer and signal inputs. Based on a user-defined program, the IL-Mini™ processes the input signals and stores the results to internal or removable card memory for later download and analysis. While logging, user-defined alarm conditions can be detected and local alarm outputs activated.

For more information, visit www.logicbeach.com.



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Product News

ROS introduces Lightning™ LED



Remote Ocean Systems (ROS) has introduced the ROS Lightning™ deepwater LED Light. Using the latest technology electronics software, this new LED offers 10,000lumens output and has the capability to have input powers of 18 to 30VDC and 108 to 132VAC to match user needs. In addition, the light offers a complete dimming range and can be configured as a spot or floodlight.

The ROS Lightning™ is depth rated to 6,000m and offers a variety of connectors for fast and easy change out or service.

For more information, visit www.rosys.com.

EvoLogics GmbH optimizes multiple ADCP access

EvoLogics GmbH, a leading provider of innovative solutions for underwater communication, upgrades its S2C/2/ADCP multiple access system to Version 2.0, adding important features that optimize data retrieval from multiple ADCP instruments.

In fall 2010, EvoLogics GmbH came up with a space saving and energy efficient data retrieval system – the S2C/2/ADCP, where a single interface of the top-side EvoLogics S2C (Sweep Spread Carrier) acoustic modem provides access to two ADCPs connected to another EvoLogics S2C acoustic modem on a surface buoy. The system allows addressing each ADCP individually to request status information or initiate a data download.

EvoLogics GmbH is now proud to announce the upgraded version of the “1-modem-multiple-sensors” system – the S2C/2/ADCP Version 2.0.

EvoLogics experts designed a new, custom protocol for retrieving ADCP data. S2C/2/ADCP Version 2.0 now features an optimized data delivery protocol for downloading files over the hydro-acoustic channel that increases both speed and reliability of file transfers.

An important feature of resuming interrupted file downloads was added to the system’s functionality. When operating in harsh underwater conditions, acoustic connection might break – the retrieval procedure now does not have to start from scratch whenever the transfer is interrupted.

Furthermore, the new protocol allows selecting individual ADCP files for download, so high-priority information can be transferred first.

The new version includes custom PC client software for remotely operating the ADCPs over an acoustic link. It enables remote ADCP selection, downloading files from the ADCP data storage, running scripts, or manually operating the ADCP. It has a user-friendly interface and is easily modifiable.

An S2C/2/ADCP Version 2.0 network can contain up to 255 modems, up to 5 ADCPs connected to each.

For more information, visit www.evologics.de.

SurfaceSupplied launches first bell gas management panel with remote display technology

California-based SURFACESUPPLIED, Inc. has launched their latest product offering – a Bell Gas Management Panel with remote LCD display. Built around a mechanical shuttle valve system that meets and exceeds the criteria laid down by IMCA Information Note D 04/11, SURFACESUPPLIED's TRITON Bell Gas Management Panel also provides operators with the ability to remotely monitor the status and operation from the surface.

The shuttle system is “energized” via a pressure bias between the various supply regulators. If loss of the surface supply gas or excessive demand occurs, as would happen with a ruptured diver umbilical, the pressure from the surface supply regulator drops below the 30psi bias, the upper valve of the shuttle assembly closes, and the lower valve opens as the emergency regulators take over.

In addition to the shuttle block providing automatic switching and isolation functions, it provides visual feedback to the Bellman via indicators on the panel. These indicators, mechanically interconnected with the shuttle block, give a visual display as to whether surface gas or emergency gas supplies are being used by the divers. A green display indicates normal surface gas while a red display indicates emergency gas.

Utilizing a combination of solid state surface-mount electronics and piezo-resistive pressure sensors, the diving supervisor is able to see the status of a number of parameters from the panel. This includes the line pressure of both divers in the water, plus the Bellman along with the location of each valve on the panel. The data stream is transmitted to the dive control station via one twisted pair utilizing Heliox Technologies' proprietary communications protocol subseaIP.

Once the data stream has reached the surface station, it is displayed on a 7in. LCD in a graphical format representative of the panel. Where there is an implementation of a hyperbaric monitoring system, such as SURFACESUPPLIED's SAT-SENSE, these data can also be fed into a larger style display along with video and other telemetry from within the bell. In addition, USB connectivity and onboard memory allow data to be downloaded either as part of routines established by the operator or in the event of an accident investigation.

The TRITON Bell Gas Management Panel has been built with global diving operations in mind, and each panel is witnessed by DNV.

For more information visit www.surfacesupplied.com.



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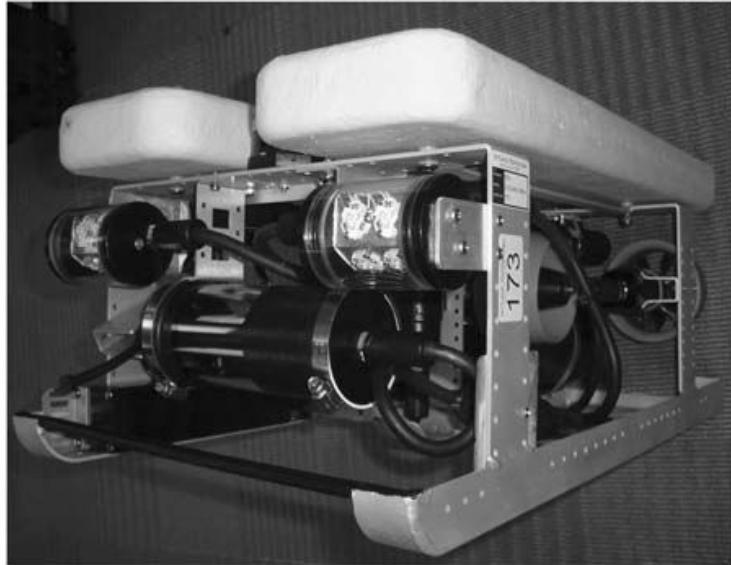
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Product News

Unique Maritime Group adds the Kongsberg cNODE family of transponders to its rental fleet

Unique Maritime Group is pleased to announce the introduction of the Kongsberg cNODE family of transponders to their rental pool inventory. The cNODE transponders are for underwater acoustic positioning and data link that can use both the traditional frequency shift (FSK) modulation technique and the new Cymbal acoustic protocol, which utilizes wideband Direct Sequence Spread Spectrum (DSSS) signals.

Its U.S. Subsidiary, Unique System LLC, will be taking delivery of the first batch of maxi and mini transponders to be deployed immediately on clients' project vessels operating in the Gulf of Mexico.

On this occasion, Harry Gandhi, CEO of Unique Maritime Group, commented, "Introduction of the new cNODE family of transponders will further enhance Unique System LLC's capability to offer Kongsberg product lines and better service the various DP vessels and oil rigs in the Gulf of Mexico and other deepwater developments".

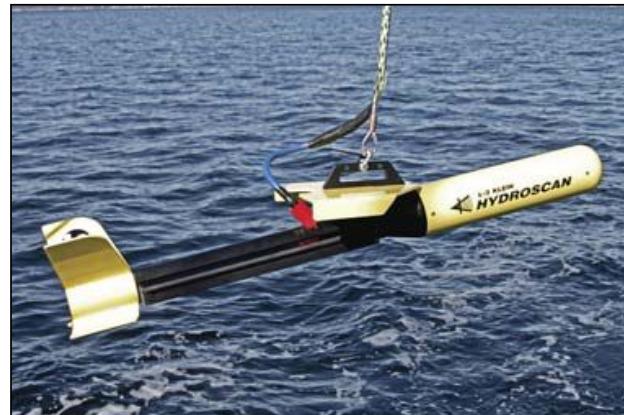
For more information, visit www.uniquegroup.com.



L-3 Klein introduces new rapidly deployable search and recovery side scan sonar

L-3 Klein Associates, Inc. has introduced a new light-weight, rapidly deployable side scan-sonar (SSS) for search and recovery (SAR) applications. The state-of-the-art HydroScan® implements advanced technologies not previously available in side-scan sonars, resulting in a highly compact profile that delivers much higher quality imaging and range performance than other small SAR SSS systems.

From nose to tail, L-3 Klein's HydroScan was specifically designed to anticipate the needs of today's SAR and related applications. The system utilizes proprietary dual-frequency, (455 and 900kHz) wideband FM Chirp sonar to provide high-resolution imaging, outstanding contrast ratios, and, under certain conditions, as much as double the range of competitive light-weight systems in disaster, emergency, and first responder surveys. The HydroScan is rated to a full 100m depth and is designed with rugged components that are built to last. In addition, the new design features an easy-to-access tow cable connection and a well-placed handle for effortless transport.



During L-3 Klein's extensive performance and reliability testing, using typical tow speeds of 4 to 6kts, the HydroScan system consistently captured very high-resolution imagery over 80m per side using 900kHz and also over 175m at 455kHz, providing more than a 50% improvement over anything available in the marketplace today.

For more information, visit www.L-3com.com/Klein.

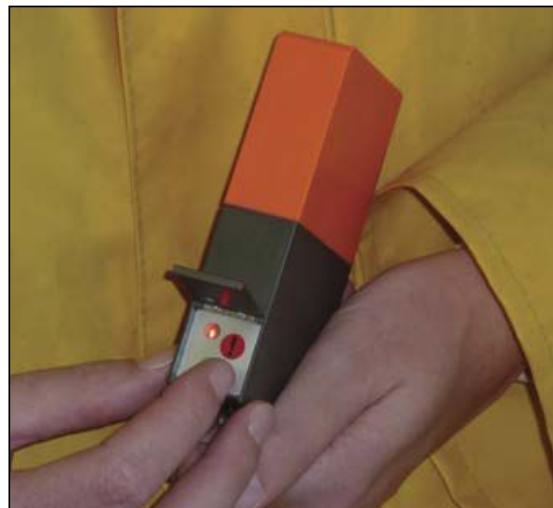
Satellite responder provides emergency tracking of oil and gas personnel

A pocket-sized tracker/responder that uses GPS technology and the Iridium satellite network can provide an emergency lifeline in the extreme environments experienced in the oil and gas industry.

Developed by Trident Sensors, TRIG can continuously track the precise location of isolated workers anywhere in the world, including oceans, deserts, and polar regions. It can also be mounted on vehicles, lifeboats, aircraft, etc. The units can be tracked live using mapping software such as Google Maps or other GIS tracking software.

An alert function allows the user to signal for assistance at the touch of a button in the event of an emergency. The user has the reassurance of knowing that a controller has acknowledged the alert when TRIG's LED display changes to blue.

In routine use, the rugged unit can be used to send and receive data and text messages, enabling two-way communication from any location, no matter how



remote or inhospitable. The data can be sent to e-mail addresses, mobile phones, websites, or other remote stations.

The Bluetooth-enabled TRIG can link wirelessly to a smartphone, laptop, or other Bluetooth device, making it simple to send and receive e-mails and SMS messages. The linked device can also act as a display and carry out data processing functions if required.

TRIG's advanced electronics ensure that the rechargeable unit has a long battery life. No larger than a smartphone, it weighs less than 250g and is dustproof and waterproof to IP68.

The deepsea version of TRIG can be used for surface tracking and control of ROVs and AUVs and can withstand pressures up to 1380bar (20,000psi). The system can also transmit mission data and be used to reprogram the vehicle for the next mission.

Trident Sensor trackers make use of the Iridium constellation of 66 satellites to provide two-way communication from anywhere in the world, including the polar regions. This is possible because the Iridium satellites are in polar orbits, unlike rival systems that do not pass over higher latitudes or are in geostationary orbit.

For more information, visit www.tridentsensors.com.

Birns, Inc. awarded NAVSEA S9320-AM-PRO-020/MLDG certification

BIRNS, Inc.'s world-class molding facility, is now NAVSEA S9320-AM-PRO-020 certified. The U.S. Navy's Submarine Maintenance Engineering, Planning, and Procurement (SUB-MEPP) department recently awarded the certification to BIRNS for Molding



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and Inspection Procedures for Fabricating Connector Plugs for Submarine Outboard Cables. An ISO 9001:2008-certified global leader in the design and manufacturing of unique lines of high-performance connectors, custom cable assemblies, penetrators, and lights, BIRNS is proud to receive the coveted Navy qualification—making it one of only seven such commercial organizations in the country. As a result, BIRNS is now an approved vendor to fabricate, mold, and inspect outboard cable assemblies and components for the Navy.

This certification was granted after an extensive audit by Naval Sea Systems Command (NAVSEA) personnel, during which the BIRNS cable

assembly, termination, and quality assurance teams demonstrated absolute adherence to the exacting procedure of the NAVSEA Technical Manual.

For more information, visit www.birns.com.

BlueView expands real-time detection range to 300m

BlueView Technologies, the world leader in compact acoustic imaging and measurement technology, has extended the maximum detection range of its P450 Series 2D multibeam imaging sonar to 300m (984ft). BlueView's P450 Series now offers the longest real-time detection range available from a compact, multibeam imaging sonar.

Available with 45°, 90°, or 130° field-of-view options, these forward-looking systems deliver unmatched situational awareness and dramatically increased reaction time for operators.

BlueView is the leader in 2D imaging and 3D scanning sonar solutions, with more than 500 installed systems worldwide. BlueView Technologies' advanced sonar systems are currently deployed on AUVs, ROVs, surface ves-

sels, fixed installations, and portable tripods and have been adopted by leading manufacturers and service providers to support mission-critical operations. BlueView customers enjoy a low cost of ownership with reliable operation, exceptional service, in-person training, extensive online information, and worldwide after-sale support.

For more information, visit www.blueview.com.

Sea-Bird introduces Sealogger CTD SBE 25plus

The SBE 25plus Sealogger is the ideal research-quality CTD profiling system for coastal, estuarine, and budget-minded deepwater deployments. The battery-powered 25plus records data in memory, eliminating the need for a large vessel, electro-mechanical sea cable, and onboard computer. The 25plus can also transmit data in real-time.

Compared to the previous SBE 25, the 25plus incorporates an electronics upgrade, mechanical redesign, and additional features, with 16Hz sampling, 8 differentially amplified A/D input channels, 16bit A/D resolution for auxiliary sensor channels, more power for auxiliary sensors such as nitrate and CO₂ sensors, two RS-232 data input channels, and 2GB of memory. Data in memory is uploaded via the external bulkhead connector or the internal USB connector (for fast upload of large data sets). Firmware upgrades can be downloaded through the communications port, without opening the CTD. The unique end cap design provides easy access to bulkhead connectors, simplifying the addition and removal of sensors from the package.

Temperature and conductivity are measured by the modular Sea-Bird SBE 3F and SBE 4C sensors. The SBE 5 Pump and TC Duct provide pump-controlled, TC-ducted flow to ensure coordinated measurement of the same parcel of water. This significantly reduces salinity spiking caused by ship heave and, in calm waters, allows slower descent for improved resolution of water column features. The integrated, temperature-compensated, strain-gauge pressure sensor is available in eight depth ranges to suit the operating depth requirement. The 25plus includes interface electronics for up to eight voltage-output sensors (dissolved oxygen, pH, fluorescence, PAR, light transmission, optical backscatter, etc.) and two RS-232 output sensors.

For more information, visit www.seabird.com.

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2012 EDITORIAL CALENDAR

January/February 2012

Editorial: Inspection & Light Work Class ROVs, Oceanography & Meteorology
Distribution: NACE • Oceanology International
Deadline: January 15th
Product Focus: Diving Equipment & Buoyancy Materials

March

Editorial: Defense & Naval Systems, Maritime Security, Decommissioning, Plug & Abandonment
Distribution: Decommissioning & Abandonment Summit
Deadline: February 15th
Product Focus: Navigation, Mapping & Signal Processing; Diver Detection Systems

April

Editorial: Offshore Technology
Distribution: Global Marine Renewable Energy • OTC
Deadline: March 15th
Product Focus: Connectors, Cables & Umbilicals

May

Editorial: AUVs & Gliders, UW Imaging & Processing, Acquaculture & Marine Resources,
Distribution: UDT Europe • Anti-Submarine Warfare
Deadline: April 15
Product Focus: Cameras, Lights & Imaging Sonars

June

Editorial: Workclass ROVs, Wave & Tidal, Ocean Observing Systems
Distribution: EnergyOcean Int'l
Deadline: May 15th
Product Focus: Subsea Tools & Manipulators

July

Editorial: Offshore Mooring, Subsea Fiber Optic Networks, Company Showcse
Distribution: Offshore Northern Seas • AUVSI
Deadline: June 15th
Product Focus: Tracking & Positioning Systems, Seismic Monitoring

August

Editorial: Ocean Mapping & Survey, Subsea Telecom, Deepwater Pipeline Repair & Maintenance
Distribution: TBA
Deadline: July 15th
Product Focus: Multibeam & Side Scan Sonars

September

Editorial: Coastal Engineering, Environmental Assessment & Monitoring, Offshore Wind
Distribution: Oceans MTS/IEEE • Ocean Innovation
Deadline: August 15th
Product Focus: Buoys & Monitoring Instrumentation

October

Editorial: Offshore Communication, Offshore IRM, OTEC
Distribution: Offshore Communications • Subsea Survey IRM • Clean Gulf
• North Sea Decommissioning
Deadline: September 15th
Product Focus: Acoustic Modems, Releases & Transponders, Marine Communications

November

Editorial: Offshore Vessels, Marine Construction
Distribution: International Workboat
Deadline: October 15th
Product Focus: Workboats, Diving Systems

December

Editorial: Year in Review, Marine Salvage Operations, Commercial Diving
Distribution: Underwater Intervention
Deadline: November 15th
Product Focus: Handling Equipment, Winches & Control Systems, Battery Technology

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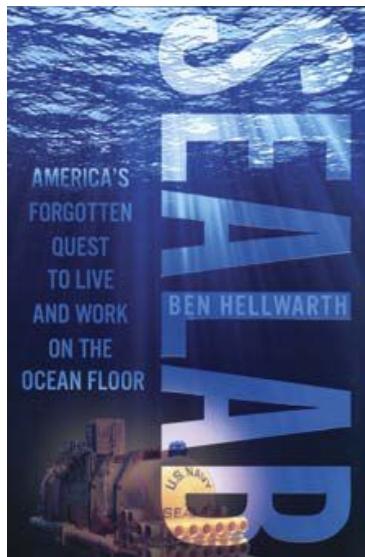
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Media Reviews

Sealab

America's Forgotten Quest to Live and Work on the Ocean Floor



SEALAB is the underwater Right Stuff—the story of how a U.S. Navy program sought to develop the marine equivalent of the space station—and forever changed man's relationship to the sea. While NASA was trying to put a man on the moon, the U.S. Navy launched a series of daring experiments to prove that divers could live and work from a seafloor base. When the first underwater "habitat" called Sealab was tested in the early 1960s, conventional dives had strict depth limits and lasted for only minutes, not the hours and even days that the

visionaries behind Sealab wanted to achieve—for purposes of exploration, scientific research, and recovery of submarines and aircraft that had sunk along the continental shelf. The unlikely father of Sealab, George Bond, was a colorful former country doctor who joined the Navy later in life and became obsessed with these unanswered questions: How long can a diver stay underwater? How deep can a diver go? Sealab never received the

attention it deserved, yet the program inspired explorers like Jacques Cousteau, broke age-old depth barriers, and revolutionized deep-sea diving by demonstrating that living on the seabed was not science fiction. Today, divers on commercial oil rigs and Navy divers engaged in classified missions rely on methods pioneered during Sealab. Sealab is a true story of heroism and discovery—men unafraid to test the limits of physical endurance to conquer a hostile undersea frontier. It is also a story of frustration and a government unwilling to take the same risks underwater that it did in space. Ben Hellwarth, a veteran journalist, interviewed many surviving participants from the three Sealab experiments and conducted extensive documentary research to write the first comprehensive account of one of the most important and least-known experiments in U.S. history. His compelling narrative covers the story from its scrappy origins in Dr. Bond's Navy laboratory, through harrowing close calls, historic triumphs, and the mysterious tragedy that brought about the end of Sealab.

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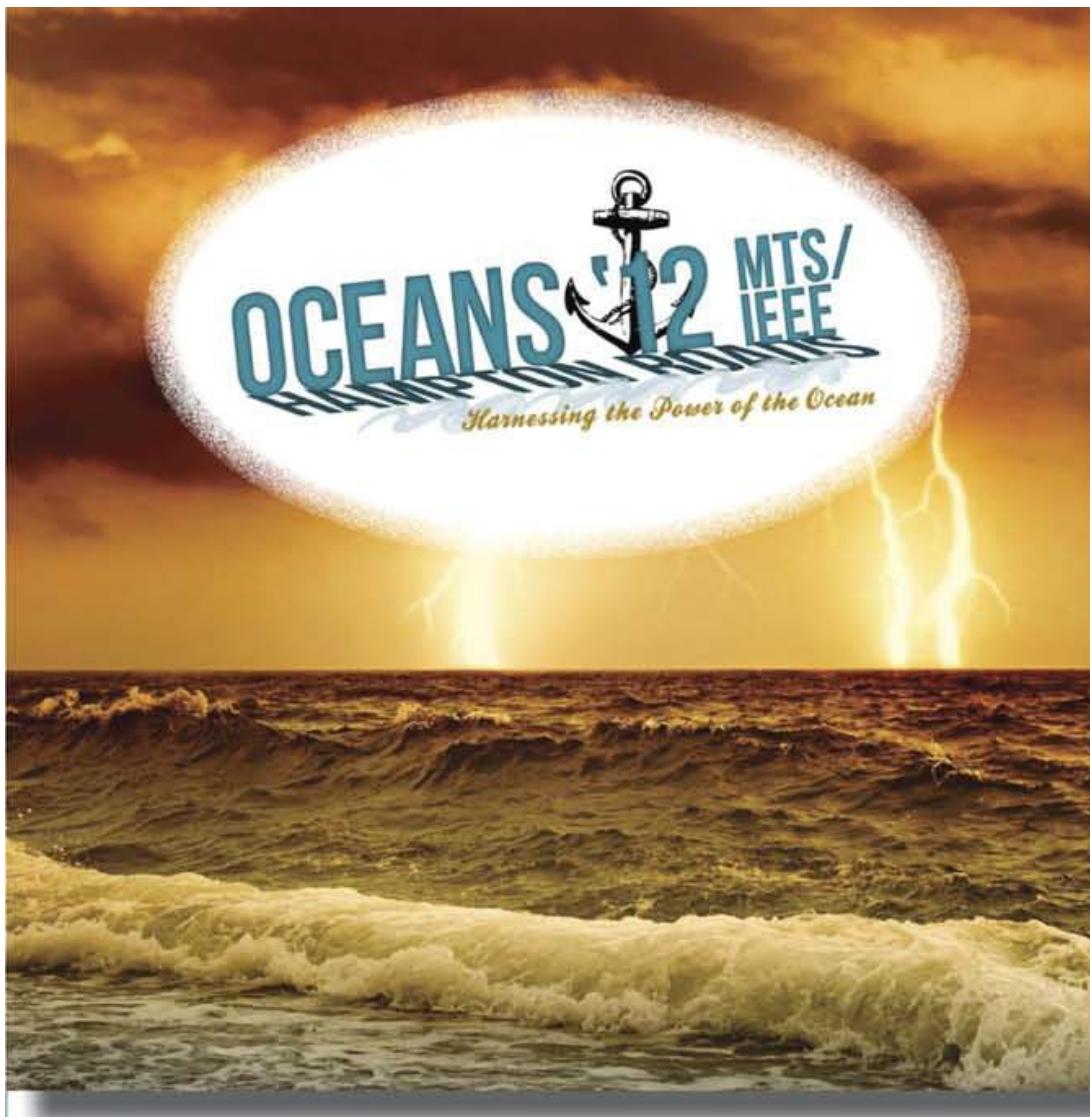
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People & Company News

The Asia Pacific office of Ocean Specialists, Inc. (OSI) is pleased to announce the appointment of **Jerry Brown** to the position of technical manager - subsea . Brown will focus initially on the management of OSI's offshore oil and gas undersea fiber network projects. Brown has a Ph.D. (Mechanical & Industrial Engineering) and is a Chartered Mechanical Engineer, with more than 25 years of experience in the design, manufacture, marine installation, and maintenance/repair operations of subsea cable systems.



Brown

CSA International, Inc. is pleased to announce that it has appointed **Gordon Stevens** to the position of general manager of the Scientific Tools & Equipment Pool (STEP). The STEP Program is equipped and staffed to immediately respond to a wide range of emergencies in the Gulf of Mexico and around the world. Meeting or exceeding the highest in HSSE requirements, STEP personnel are trained in proper Chain-of-Custody

and other Natural Resource Damage Assessment (NRDA) methodologies.

DeepOcean Group Holding AS, an integrated provider of subsea engineering and trenching services, announced the appointment of **Frank Eggink** as the new chief financial officer and **Liz Collins** as the group controller. Eggink has 23 years of global experience in the oil and gas, chemicals, renewable energy, and forestry sectors in the Americas, Europe, and Asia. Before joining the DeepOcean team in February 2012, Frank served as vice president for finance and planning for Shell Energy in Europe, Russia, and Central Asia. Collins has held a number of senior finance roles in several countries, including the U.S., UK, and South Africa. She has experience in building global teams as well as system implementations, global reporting, and shared service centers.

Liquid Robotics, an ocean data services provider and developer of the first wave-powered Wave Glider® marine robot, announced that **Steven R. Springsteel**, former CEO of Chordiant Software Inc. and President/CFO of Verity, has joined the company as chief operating officer and chief financial officer. Mr. Springsteel brings more than 25 years of experience in

operational and financial management to this position.

Seanic is proud to announce the addition of three key personnel to their team. **Godik Gyldenege** joins the company as a manager of special projects and brings more than 40 years of experience and an immensely diverse background in the sub-sea industry. **Derek Chaplin** joins the company as a mechanical design engineer with more than 7 years of subsea project management and mechanical engineering experience, both here in the U.S. and abroad. Also, **Adam Padilla** has joined the company as the tool pool manager. Padilla brings several years of offshore field development experience and, most recently was an ROV pilot.

Glynn Rhinehart has been named president of Fugro Chance Inc., which has 400 employees in Lafayette, Louisiana and Houston, Texas. Rhinehart has been with Fugro for 17 years, most recently as president of John Chance Land Surveys, Inc. which provides land



Rhinehart

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Guest Offshore **ASME PETROLEUM DIVISION**

surveying and aerial LiDAR mapping services to the oil and gas, railroad, and electric transmission industries throughout the U.S. He has 40 of years experience in civil engineering, surveying, and data management related to the oil and gas industry and is a registered Land Surveyor and Civil Engineer in Louisiana.

Schilling Robotics, LLC, experts in subsea systems, announced that it has appointed **George Shirreffs** as vice president of customer service. Shirreffs will drive the development and execution of Schilling's customer support strategy and implementation. Shirreffs has a 12-year history of progressing responsibility with Schilling, most recently as the managing director of Schilling Robotics, Ltd. in Aberdeen, Scotland.

Martin Craighead has assumed the role of Baker Hughes' president and chief executive officer. Craighead will replace Chad Deaton, who will remain chairman of the board of directors. Craighead, whose tenure with the company dates back to 1986, most recently served as Baker Hughes' president and chief operating officer.



Heijermans

DeepOcean Group Holding AS, an integrated provider of subsea engineering and trenching services, appointed **Bart H. Heijermans** as its new chief executive officer. Heijermans is also a member of the board of DeepOcean Group. He has more than 20 years of global experience in subsea construction, oil and gas, and deepwater operations.

Energy services company Senergy appointed **Vivien Broughton** as vice president of resources to further strengthen the company's commitment to building and developing its global talent pool. Broughton started her career as a geologist and subsequently worked as a wells engineer before moving into human resources and becoming industry recognized for developing successful people development initiatives. Broughton spent 15 years with offshore drilling contractor Transocean.

Global joint integrity specialist and engineering services company Hydratight appointed **Syed Taqvi** as global marketing leader. Taqvi joins the company from GE Oil and Gas, where he was marketing director for subsea equipment and marketing integration leader for ESP, acquired by GE in 2011. Prior to working at GE, he worked in the downstream energy sector at UOP, Honeywell's refining technology business.

Noble Corp. said **James A. MacLennan**, 52, was named senior vice president, chief financial officer, and controller of the company. In his new role, MacLennan is responsible for financial reporting, accounting, tax, and treasury activities. He previously served as chief financial officer and corporate secretary of Ennis Traffic Safety Solutions, a producer of pavement marking materials, and as executive vice president and chief financial officer of Lodgian, Inc., a publicly traded independent owner and operator of hotels in the U.S.

The Penspen Group appointed senior subsea specialist **Nick Haines** to its offshore engineering stream in London. With over 23 years of experience in the subsea industry, Haines brings extensive experience of equipment design, manufacture, testing and commissioning, offshore installation, and engineering management. Fresh from his previous role managing engineering project teams and deepwater developments at JP Kenny, Haines has particular experience in designing and manufacturing subsea controls systems and subsea production systems. His extensive previous experience includes a 4-year stint as engineering manager for BP's ultra-deepwater Block 31 field off the coast of Angola.

Murphy Oil Corp. said **Bill Stobaugh** was promoted to executive vice president, corporate planning and business development. Stobaugh joined Murphy in May 1995 as vice president, corporate planning in El Dorado, Arkansas. He was promoted to senior vice president, corporate planning in May 2005. **Tom Mireles** was promoted to vice president, corporate planning and business development. Mireles joined Murphy in August 2005 as senior staff analyst in the frontier exploration and production department in Houston.

FMC Technologies, Inc. announced it has signed a definitive agreement to acquire Control Systems International, Inc. (CSI). CSI is a leading supplier of innovative control and automation system solutions.

JW Automarine celebrate 40 years in the underwater lifting bag and buoyancy business this year. Being part of the multi-million dollar Scholle Corporation brings the financial stability and benefits of a world-wide organization and facilitates investment into new manufacturing technology.

BlueView Technologies and Ageotec, an Italian company operating in the field of underwater and oceanographic technologies, signed a Systems Integrator Agreement that enables Ageotec to re-sell BlueView 2D and 3D products on Ageotec ROVs.

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www.otcnet.org/2012

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www.oceantechexpo.com

May 29-31, 2012:
UDT Europe / Anti-Submarine Warfare, Spain
www.udt-global.com

June 3-6, 2012:
AWEA Offshore Wind, Atlanta, GA
www.windpowerexpo.com

June 19-21, 2012:
EnergyOcean International 2012, Boston, MA
www.energyocean.com

August 6-9, 2012:
AUVSI's Unmanned Systems N.A., Las Vegas, NV
www.auvsi.org

August 28-31, 2012:
Offshore Northern Seas, Stavanger, Norway
www.ons.no

September 11-12, 2012:
MAST Europe, Sweden
www.mastconfex.com

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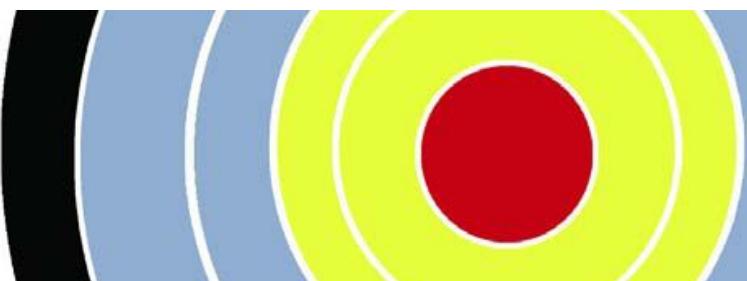
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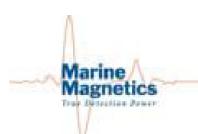
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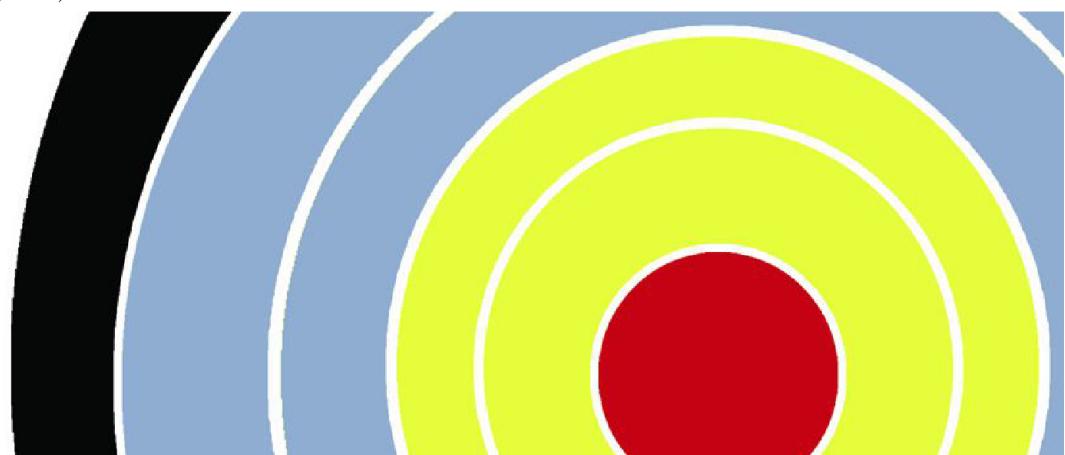
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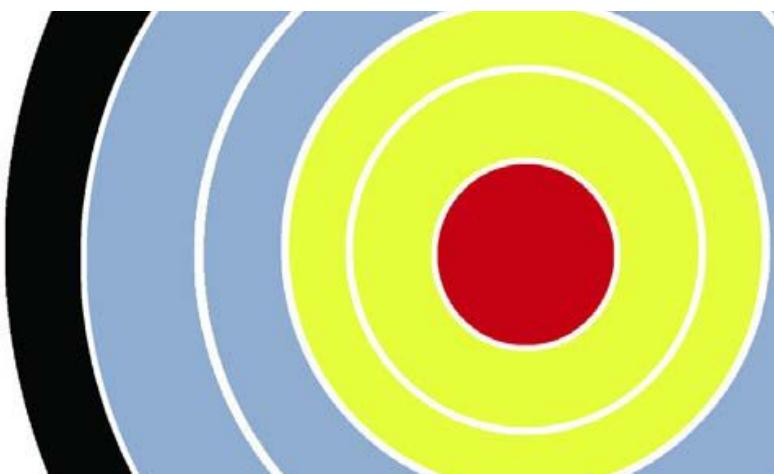
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BlueView delivers state of the art, compact acoustic imaging, measurement, and automation solutions for defense, energy, civil engineering, transportation, and port security applications worldwide. BlueView's advanced acoustic systems support underwater operations from a wide variety of platforms, including ROVs, AUVs, surface vessels, fixed mounts, portable tripods, and diver handheld systems.

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E-mail: imagenex@shaw.ca
Website: www.imagenex.com
Contact: Steve Curnew

Imagenex is an innovative company specializing in advanced acoustic underwater sensors. The company's products include multibeam, mechanical scanning, and sidescan sonars. The Delta T is a compact, cost-effective multibeam sonar, small enough to fit on most underwater vehicles for obstacle avoidance, navigation and profiling applications. The profiling versions feature an output for real-time 3D plotting and are compatible with third party post-processing software. The Model 881A is a small multi-frequency sonar for imaging or profiling applications. There is an Azimuth Drive available for the 837B Delta T and the 881A for profiling applications from stationary platforms. The Model 881L features improved performance via Ethernet communications. Two sidescan sonars, the SportScan and the YellowFin, feature a revolutionary price/performance ratio. For more information please visit www.imagenex.com

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Tel: (805) 683-1431; Fax (805) 683-4862
E-mail: marketing@sonatech.com
Website: www.channeltechgroup.com
Contact: K.Ruelas, pres.; R. Franklin, v.p., nav & range sys; M. Shaw, v.p., sonar & transducer sys; B. Febo, Director of Business Development

Sound Engineering Solutions – Sonatech, A Division of Channel Technologies Group (CTG) develops innovative solutions for underwater acoustic applications. Existing technologies span a wide variety of acoustic systems, including sonar systems, navigation systems, and custom acoustic solutions. Our solutions are based on a 36-year career of developing high-performance, high-reliability undersea systems that are continually improved through research and development.



Sound Metrics Corp.

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Lake Forest Park, WA 98155
Tel: (206) 364-1441, Fax: (206) 374-2929
E-mail: sales@soundmetrics.com
Website: www.soundmetrics.com
Contact: Jeanne Dorsey

Founded in 2002, Sound Metrics Corporation is one of the first manufacturers of high resolution imaging sonars. These units are used in virtually every marine industry by some of the most recognized companies around the world. In addition to being the technological leader in image quality, Sound Metrics has built a reputation for support and for innovative solutions around their customers' applications.

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Website: www.saivas.no
Contact: Gunnar Sagstad

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E-mail: bill.new@newindustries.com
Website: www.newindustries.com
Contact: Bill New

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E-mail: sales@itc-transducers.com
Website: www.channeltechgroup.com
Contact: K.Ruelas, pres.; B.Dolan, Director of Business Development; E.Kunstal, eng. mgr.

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Fax: (410) 268 2013
E-mail: sales@cygnusinstruments.com
Website: www.cygnusinstruments.com
Contact: Rod Sanders

Cygnus manufactures the world's first true multiple echo ultrasonic thickness gauge. Multiple echo means that coatings, such as paint or epoxy, do not have to be removed in order to measure the steel. We offer hand held gauges that divers take into the water. Also have models that can communicate topside to a display repeater or PC. Also offer a range of shallow to deepwater units for ROVs. Manufacturing to ISO 9002 standards. Approved by classification societies.

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UNDERWATER VEHICLES

ROVs



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E-mail: pss@perrymail.com
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E-mail: Info@SeaBotix.com
Website: www.SeaBotix.com

SeaBotix Inc. is the world leading manufacturer of capable MiniROV systems. The Little Benthic Vehicle range of systems have become the benchmark in compact ROVs around the world. All systems perform a multitude of tasks including maritime security, body rescue, sensor deployment, object recovery, hazardous environment intervention, and hull inspection.

ROVs



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10642 West Little York, Suite 100
Houston, Tx, 77041-4014, USA
Tel: +1 713 329 8730, Fax: +1 713 329 8299
E-mail: sales@sub-atlantic.com
Website: www.f-e-t.com

Forum Energy Technologies' sub-Atlantic brand manufactures world class ROVs ranging from portable units to light work class systems. Sub-Atlantic also supplies thrusters, hydraulic power units, valve packs, compensators and pan and tilt systems to other ROV manufacturers. Sub-Atlantic is part of the FET subsea group and has facilities in the US and UK and sales offices and agents around the world.



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Contact: Brian Luzzi

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Contact: Friedrich Rochleder, Sales Account Manager

iRobot designs and builds robots that make a difference. iRobot's family of unmanned underwater vehicles (UUVs), including the iRobot 1KA Seaglider and iRobot 15A Ranger, perform a variety of missions for researchers, oceanographers and military planners including physical, chemical and biological oceanography, persistent surveillance, marine environmental monitoring and other missions.

UNDERWATER VIDEO EQUIPMENT



KONGSBERG

E-mail: km.camsales.uk@kongsberg.com
Website: www.kongsbergmaritime.com
Contact: Bill Stuart

Kongsberg Maritimes's Camera Division in the UK has been designing and manufacturing underwater cameras for over 30 years and is the recognized market leader in supplying underwater imaging technology to the offshore oilfield industry. It also has a 20-year history in supplying the international naval defense sector, with special camera systems.



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E-mail: sales@sharkmarine.com
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Since 1984 Shark Marine Technologies, has been manufacturing Remotely Operated Vehicles and accessories, Winches, Handling & Control Systems, Underwater Cameras and Diver Held Sonar Systems, for operations including surveying, oil and gas, security and defence, search and recovery and archaeological investigations. We also provide on-site operations and consultation, software development and custom manufacturing.

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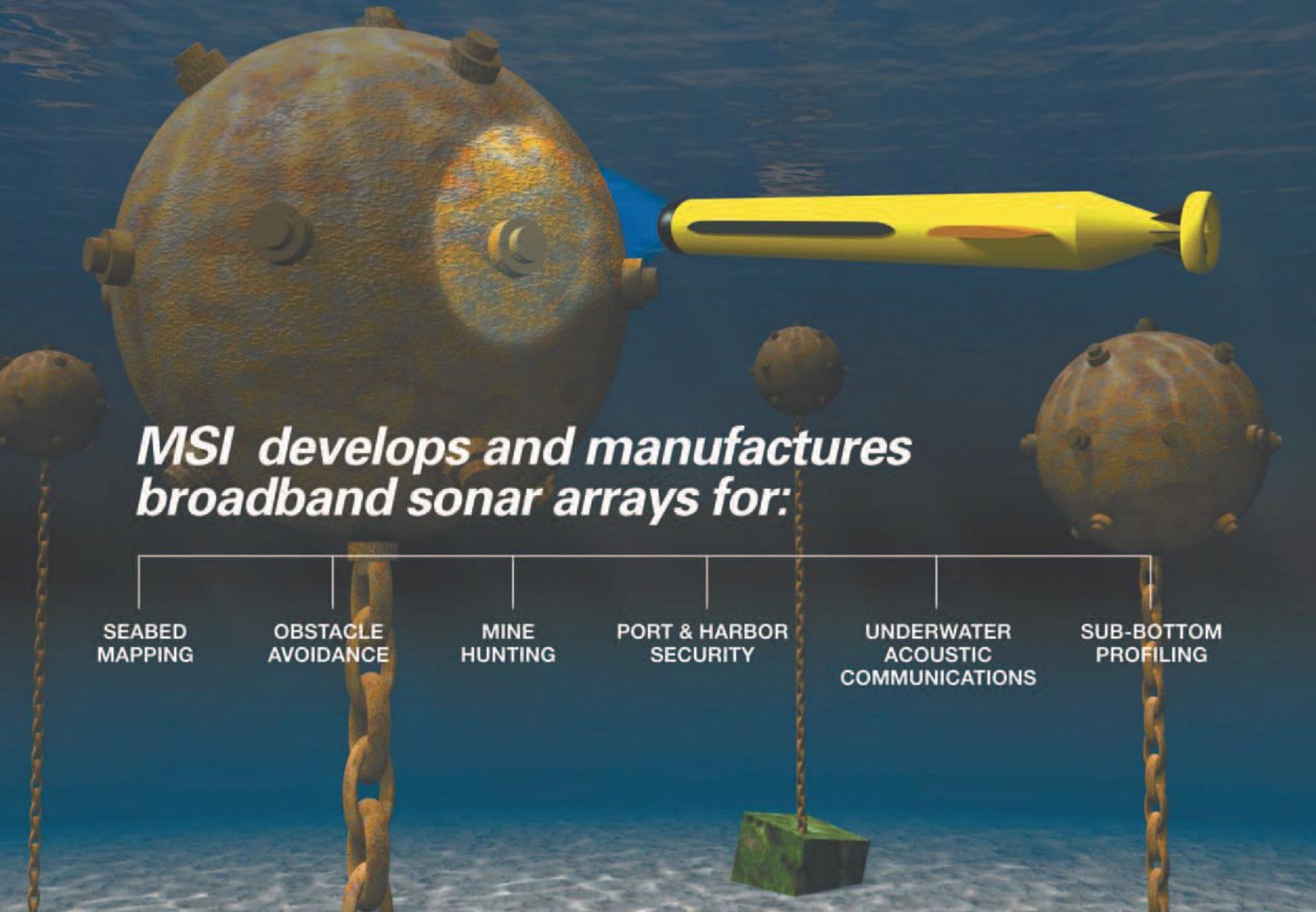
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