

Ocean News & Technology

News for the Ocean Industry

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October 2011

Platform Removal Boosts Environmental Assessment & Monitoring Activity



New Generation Offshore Communications
Technology Links Wireless to Fiber

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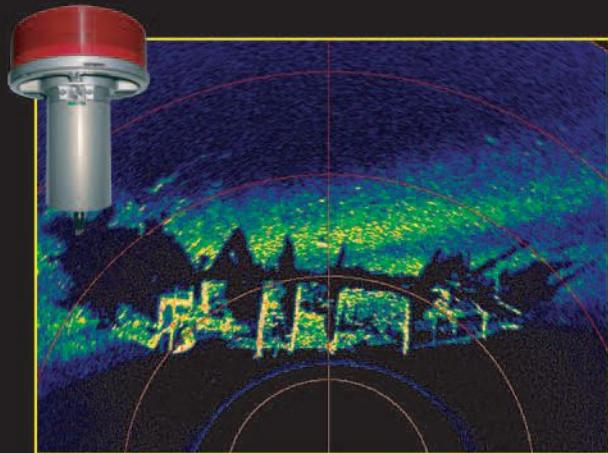
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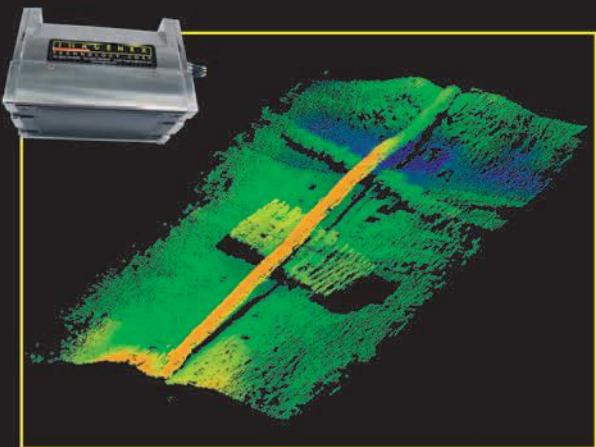
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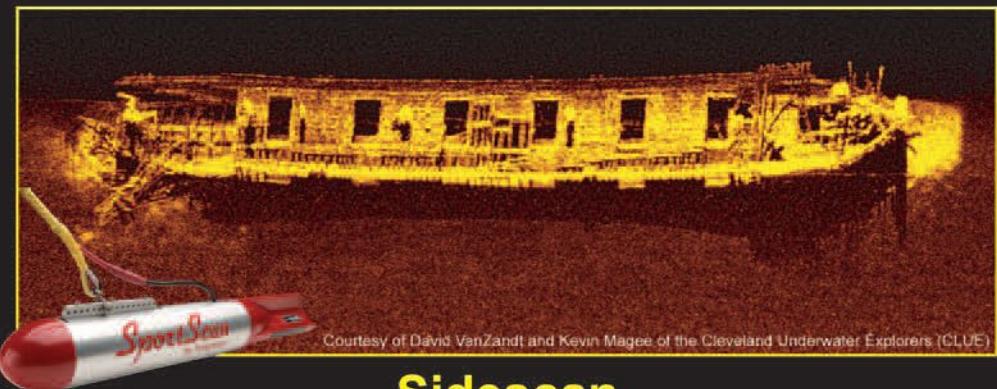
REDEFINING IMAGE CLARITY



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Sidescan

Courtesy of David VanZandt and Kevin Magee of the Cleveland Underwater Explorers (CLUE)

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Ocean Industry



Offshore Industry



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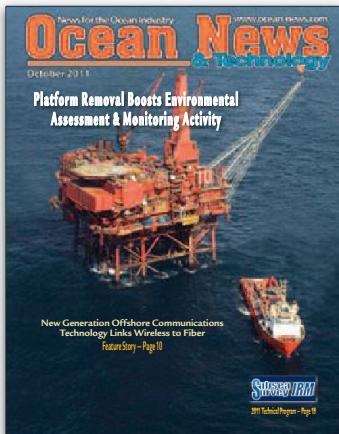
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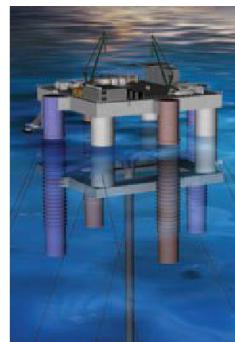
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Cover Photo
Platforms in the North Sea undergoing environmental impact assessments prior to decommissioning (courtesy of CNRI)

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Editorial

By John Manock



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Can energy infrastructure meet offshore communications needs?

The offshore wind farm market continues to grow in Northern Europe. Ten contracts for cable to support these wind farms have been awarded so far in 2011. Denmark and the United Kingdom already have numerous offshore wind farms, and Germany is in the midst of a huge building program. Many other countries worldwide, including China and Australia, are looking at large-scale deployment opportunities. In addition, tidal energy and ocean thermal energy conversion (OTEC) technologies continue to advance toward deployment stage.

In the U.S., there are no offshore wind farms. Even after the U.S. Department of Energy in September awarded \$43 million over the next five years to speed technical innovations, lower costs, and shorten the timeline for deploying offshore wind energy systems, there is still uncertainty as to when the first will be built. The long-term global trend, however, will be for more wind farms and other types of green energy generating systems off our coasts.

When it comes to offshore activities, my tendency is to look at it from the point of view of the infrastructure. To me, all of this offshore development means that a huge infrastructure of energy facilities and the cabling to connect them will someday occupy large coastal areas. Within a decade, there could be thousands of new wind turbines in coastal areas throughout the world.

As I come from the fiber optics industry, I tend to focus even further onto the cabling that will be a part of this new infrastructure. Offshore wind turbines are obviously connected by power cables to transport the electricity they generate to the shore. But less obviously, the cabling also includes optical fibers and I find it intriguing to speculate as to the potential opportunities that this new optical fiber infrastructure could present. I see this as the expansion of the national fiber optic grid into offshore areas.

Early offshore wind farms did not include fibers, but it is standard procedure now. The fibers can be bundled with the power cable at only a tiny incremental cost. They carry telemetry data from the turbines to onshore control centers, but this uses only a tiny percentage of the bandwidth potential of optical fiber. Excess bandwidth could be used for other applications. The questions are For What? and How?

The answer to the first is offshore com-

munications. I am using this term broadly to encompass any type of offshore activity, including maritime. The answer to the second is more difficult and more intriguing.

Exactly what opportunities would this new fiber optic infrastructure provide for offshore communications? The infrastructure is geographically limited, but it is about location, location, location. Many of the current wind farms and future plans are in the vicinities of large ports. When the U.S. market finally emerges, developers are looking at areas off the northeast coast near the entrances to such major shipping areas such as Long Island Sound and Chesapeake Bay.

Fiber optics provides a fast, economical and reliable medium for broadband Internet. It will never be the primary means of offshore access — there will always be a market for satellite communications — but fiber could fill an important niche market. Fiber has found this market in many offshore communications applications for the oil and gas industry. Fiber optic networks connecting platforms are no longer unusual, and these networks are getting larger and more sophisticated with each passing year.

Meanwhile, the costs of operating ships at sea are high. Every day that an LNG tanker or container ship remains waiting outside a port for paperwork or other issues can cost tens of thousands, even hundreds of thousands, of dollars. If by accessing fiber bandwidth, the time spent waiting can be reduced, resulting in significant financial savings.

This brings us to the How question. There are some companies that are looking at this opportunity. One, called RigMesh, has developed a wireless broadband system that extends the range of submarine fiber. Although developed for the oil and gas industry, this technology could be used to interconnect offshore assets to provide broadband services over a large area.

Technologies such as this could be the bridge between the unused fiber bandwidth (supply) and the need for offshore broadband access (demand).

None of this will happen overnight. Wind farm developers are looking to generate electricity, not provide offshore communications. A clear market need and financial incentive will be needed to move in this direction, but the infrastructure will be out there and, over time, people are going to find ways to use. Right now, we can only guess about what those uses will be.

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New Generation Offshore Communications Technology Links Wireless to Fiber

By Vincent Grymonprez, C.E.O., Rigmesh, Inc., Houston, TX

Complex challenges demand new solutions. In the deepwater offshore arena, exploration continues to move into increasingly remote areas, many with a myriad of technical challenges to overcome. This has led to a growing demand for more bandwidth to handle complex, multifaceted communications between multiple vessels and subcontractors at the offshore location, coupled with the need to be able to communicate reliably with onshore personnel.

Fiber optic networks have become the industry standard for providing broadband communications between platforms and other fixed assets. But since the fiber generally originates and terminates at a platform, new assets entering the operating arena, such as drill ships or subcontractor vessels, must use other means to communicate. Until recently, vessels wishing to link to the fiber optic networked assets relied on costly unreliable satellite or analog connections. However, with the advent of localized wireless communications – such as Rigmesh’s wireless network solution, it is now possible for all vessels working a field to communicate seamlessly with the field’s fixed field assets and each other. Onshore/offshore communications are maintained between the fixed asset and the shore via cable.

Rigmesh’s wireless mesh network is designed as a multi-hop system in which wireless devices assist each other in transmitting data, video, and telemetry throughout the network. This is particularly valuable in adverse or complex environments typical of offshore multi-vessel field developments. The decentralized intelligence ensures that vessels equipped with Rigmesh wireless equipment are automatically detected, tracked, and configured. No manual intervention is required, and the system does not have to be rebooted when vessels enter or leave the network area.

This type of wireless set up, though extremely sophisticated and comprehensive, is generally installed on a temporary basis, with information exchange limited to the network area. This local exchange of information works well as long as decisions can be made on location and there are adequately trained, senior-level personnel on site to address complex challenges as they arise.

Unfortunately, this is often not the case. An industry-wide shortage of skilled senior-level personnel, the increasingly complex nature of new discoveries, and the high cost associated with transporting and maintaining a team of senior-level personnel on location during field development operations has necessitated the shift of decision-making responsibility from the work site to the “beach.”

Rigmesh’s new product “ROBIN,” an acronym for Rigmesh Offshore Broadband Innovative Node, is designed specifically to address these issues.

Built around Rigmesh’s proven wireless node mesh technology, ROBIN offers enhanced and comprehensive wireless coverage of temporary and moving assets in the offshore arena, while providing wireless connection to the fiber optic network. As a result, all assets within the network area become seamlessly “linked” to the fiber network, providing real-time broadband voice, video, and data communications back to onshore locations via fiber.

ROBIN’s enhanced wireless configuration consists of built-in GPS connectivity along with eight embedded radios and antennae in a circular configuration. The result is state-of-the-art, reliable and flexible broadband communication between rigs, vessels, and onshore personnel. By providing seamless mobility, critical applications like VoIP (voice to person communications), video streaming, and data transmission are not interrupted as vessels and equipment move through the network.

For large-scale, long-distance wireless mesh networks, ROBIN represents next generation technology — combining unmatched scalability, flexibility, and capacity with the long-awaited solution to the onshore management of complex offshore developments.



A Rigmesh wireless network can be deployed from a single vessel interconnection to total field coverage. Used in combination with optic fiber, it will provide the first or last mile, extending the fiber bandwidth to the entire oil field, interconnecting sailing by vessels, collecting data from met-ocean buoys, or interconnecting temporary assets. The multifunctional, high bandwidth will enable any IP applications from video transfer, data, voice, video conferencing, etc.

Offshore Communications

Some of the key features of ROBIN include the following:

- High bandwidth – 25Mbit up to 3mls and a minimum 5Mbit in the full range, enough to accommodate complex IP applications, including simultaneous video streaming, data and voice communications.
- Robust – the multi-radio mesh platform accommodates multiple vessels and infield assets.
- Scalable – the network can be easily expanded with the addition of new nodes.
- Self-configuring – new nodes are detected and configured automatically.
- Self-healing – as assets move into or through the network area, links are automatically established and network paths are reevaluated and updated.
- Custom developed mesh routing algorithm.
- High range – providing minimum coverage of 10 to 15 miles without system degradation.
- Easy to install, mobilize, and demobilize.



ROBIN (Rigmesh Offshore Broadband Innovative Node) has been designed specifically for offshore markets to provide state-of-the-art, reliable, and flexible broadband communication between rigs, vessels and onshore personnel. By providing seamless mobility, critical applications like VoIP (voice to person communications), video streaming, and data transmission are not interrupted as they move through the network.

Field to Shore Communications

As noted, one of the key advantages of ROBIN is the system's ability to communicate directly with existing fiber optic cable networks. Onshore personnel, whose communications were previously restricted to assets with fiber cable connections, are now able to communicate directly with all moving assets and equipment within the wireless network.

Project engineers — many of whom may be working on multiple projects, can now monitor and supervise field developments remotely with the same seamless communications interface as an onsite operator.

With onshore personnel enjoying the same degree of "whole field" access to field data in real time, the need for on-site presence and lengthy offshore stays by very highly paid specialists is largely eliminated. Issues can be addressed and necessary actions implemented from the onshore office. Continuity is maintained between crew shifts, and projects are able to progress more smoothly and efficiently without costly downtime waiting for key personnel to be transported to the offshore location.

"Today's complexity in offshore operations pushes the industry towards the creation of the digital oil field," says Vincent Grymonprez. "A big challenge for this is the availability of an adequate communication network together with an ever-increasing demand in bandwidth. Rigmesh wireless networks enable a complete range of applications such as video streaming, remote conferencing, and data and VoIP integration, and we are able to instrument the effective implementation of the digital oil field. Investing in a Rigmesh solution is a proof of vision with guaranteed return on investment through maximization of productivity, security, and safety."

Rigmesh will be unveiling its new ROBIN Node at the OC Offshore Communications conference November 8 to 10, 2011 in Houston (Booth 702). Visit Rigmesh for more information.

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Vincent Grymonprez
Has an MBA in Business Management and has been active in Rigmesh for three years as VP Business Development. He is a Sales and Business Executive, with over 12 years' background and excels at positioning solutions and building relationships with large strategic customers. His interest in technology has led him to business development in several technology companies and even heading up a large air-conditioning firm.





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OCEAN INDUSTRY

James McFarlane receives IEEE Vancouver Centennial Award

Dr. James R. McFarlane, founder and president of International Submarine Engineering Ltd., has been awarded the IEEE Vancouver Section Centennial Award for a lifetime of contributions to underwater vehicles and robotics and the Canadian advanced technology sector. This is Dr. McFarlane's third IEEE Award, following a Technical Achievement Award in 1987 and Engineer of the Year in 1998.

The award was presented to Dr. McFarlane by Charles Henley, the IEEE Centennial Awards Committee Chair on 23 August 2011 at the celebration ceremony of IEEE Vancouver's 100th birthday.

Dr. McFarlane started ISE in 1974 and has been involved with the design, construction, and operation of manned, tethered, and untethered ROVs as well as subsystems of these vehicles including manipulators and computer control systems. Since that time, Dr. McFarlane has been a part of engineering teams that have built over 400 robotic manipulators and 200 vehicles. In 2009, ISE was inducted into the Offshore Energy Center Hall of Fame and named one of Canada's top 40 defense companies.

Dr. McFarlane is the author of many papers on submarines, manned submersibles, ROVs and autonomous underwater vehicles (AUVs), including the world's first automobile refueling system for Shell. He has also made keynote presentations in Europe, India, Japan, China, Korea, USA, and Canada. Two notable presentations include the inauguration of the India Chapter of IEEE, Oceanic Engineering Society at the National Institute of Ocean Technology (NIOT) in 2008, and most recently at the Institute of Industrial Science, at The University of Tokyo in 2010.

McFarlane has served on many committees for international meetings and been honored as a guest speaker at many conferences around the world. He has also received numerous awards, including the Officer of the Order of Canada, BC Science Council Award for Industrial innovation, and the BC Science and Engineering Gold Medal.

Martin Klein Receives Arnold O. Beckman Founder Award at ISA's Annual Gala

Martin Klein will receive the Arnold O. Beckman Founder Award at the ISA Honors and Awards Gala, held 17 October 2011 at the Renaissance Battle House Hotel & Spa in Mobile, Alabama.

Martin Klein is receiving recognition for the invention and development of the dual channel side scan sonar instrumentation that has opened the world's oceans for exploration, safe navigation, and underwater recovery. The Arnold O. Beckman Founder Award recognizes a significant technological contribution to the conception and implementation of a new principle of instrument design, development, or application.

Klein is an inventor and developer of the first commercial side scan sonar utilized for detection and mapping of lake and river beds and the ocean floor to the full known depth of the sea. Klein began his work on side scan sonar instrumentation in 1961 while a student at MIT and in 1968 founded his own company, Klein Associates, Inc. The Klein side scan sonar technology has been utilized to find most of the significant shipwrecks and sunken aircraft in the world, including the *Titanic*, *USS Monitor*, and the *Mary Rose*, and remains of the Space Shuttle *Challenger* to name a few. Today, the side scan sonar instrumentation is used by the U.S. government, corporations, research institutions, and marine archaeologists around the world to map ocean floors, lakes, and river beds and to find objects of great interest and value.

Klein is the author of numerous publications and holds several marine technology patents. Klein is a Senior Life Member of ISA. He received a Bachelor of Science degree in electrical engineering (BSEE) from the Massachusetts Institute of Technology (MIT).

ISA's Honors & Awards Gala, now in its 49th year, is an annual event honoring individuals for the contributions to and advancement of automation across all industries. Last year's gala was attended by over 400 guests from around the world.

For more information, visit www.isa.org.

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Fugro returns to the Aleutians for NOAA

Under its five-year Indefinite Delivery Indefinite Quantity (IDIQ) contract with U.S. National Oceanic and Atmospheric Administration (NOAA), Fugro Pelagos Inc. have commenced surveying operations around the Aleutian chain's Krenitzin Islands, Alaska in late July 2011. This 36 day program of Multi Beam Echo Sounder based bathymetry data collection for NOAA's National Ocean Service (NOS) Office of Coast Survey (OCS) will result in approximately 6,000km of survey lines being run around Akun and Akutan Islands and will provide data for updating NOAA's nautical charts of the area. Since 2006, Fugro Pelagos has successfully completed 22 task orders for NOAA. While the data collection phase of the project is expected to be complete by late August 2011, data processing and product creation is expected to run through the remainder of 2011.

Chevron USA selects BMT for EFMS

Chevron U.S.A. Inc. has awarded a contract to BMT Scientific Marine Services Inc (BMT) to provide an Environmental and Facilities Monitoring System (EFMS) for the Jack & St. Malo Floating Production Semi-Submersible (FPSS) in the Gulf of Mexico. The EFMS monitors, logs, and displays data in real-time on the local environment and facility motions. It archives the data for assessing the FPSS' integrity over time and interfaces with the facility's other platform control systems. The EFMS is composed of a computer console, topside and subsea remote sensor packages, BMT's proprietary data acquisition system, and custom HMI user display screens. The Jack & St. Malo EFMS features BMT's new deployment and retention scheme for acoustic doppler current profilers (ADCPs) which protects the instruments and allows data collection during severe storm events.

IMarEST appoints new CEO

David Loosley has been appointed Chief Executive of the Institute of Marine Engineering, Science, and Technology (IMarEST) and will be taking up the role on 7 November 2011. He joins the Institute from the United Kingdom Hydrographic Office (UKHO) where, as Head of Operations, he has been responsible for the operational delivery of maritime safety information to the British Government and the worldwide maritime community since April 2007.

CNRI turns to BMT for environmental support

BMT Cordah, a leading marine environmental consultancy and a subsidiary of BMT Group Ltd, has been awarded a major contract by Canadian Natural Resources International (CNRI). This project will see BMT provide vital support and guidance for the environmental aspects during two CNRI decommissioning projects, both of which are currently in the planning and consenting phase.

CNRI's Murchison and Ninian Northern fields located in the northern North Sea have been in operation since the early 1980s. To ensure compliance with the requirements of key legislation and regulations set out by the UK Department of Energy and Climate Change (DECC), CNRI turned to BMT to draw upon its expertise and knowledge of decommissioning projects, which includes Shelley, North West Hutton, and Maureen Alpha and dates back to 1995.

As part of its support, BMT will develop the necessary documentation to inform project decisions, assess and manage environmental issues, and ultimately support CNRI's decommissioning programs submission to DECC for approval. This includes register of environmental permits, licences, and consents; decommissioning waste management strategy; assessment of energy use and gaseous emissions; drill cuttings pile management assessment; comparative assessment of pipeline and jacket decommissioning options; and EIA (Environmental Impact Assessment) scoping report and subsequent Environmental Statement.

David Sell, managing director of BMT Cordah, comments: "The North Sea hosts almost 600 offshore platforms of which 54% are more than 15 years old. The average age of the decommissioned platforms in the North Sea to date is 17 years, indicating that decommissioning will become an increasingly significant issue in the region over the next decade."

For more information, visit www.bmtcordah.com.



Secretary Salazar names Bromwich and Beaudreau to lead new DOI bureaus

Secretary of the Interior Ken Salazar named current Bureau of Ocean Energy Management, Regulation and Enforcement (BOEMRE) Director Michael R. Bromwich to lead the newly formed Bureau of Safety and Environmental Enforcement (BSEE) and current BOEMRE Senior Advisor Tommy P. Beaudreau to lead the newly formed Bureau of Ocean Energy Management (BOEM).

Bromwich and Beaudreau have both been highly involved in the creation of the two new bureaus as well as the Department's efforts to strengthen the oversight of offshore oil and gas exploration and development. BSEE and BOEM will be officially established on 1 October 2011.

Bromwich has agreed to serve as the BSEE Director until a permanent director is selected. The Department has launched an aggressive, nationwide recruitment effort to find a permanent director. Beaudreau will serve as permanent BOEM Director.

Leading hydrographic organizations team up to help survey "Miracle Harbour"

One of the artificial harbours that played a pivotal role in supplying the Allied forces who landed on D-day is to be surveyed using the latest hydrography software and survey techniques.

In 1944, two artificial harbours, called Mulberries, were towed across the English Channel to help supply the Allied invasion force as they fought to liberate France. When constructed off the coast of Normandy, each of the mobile, prefabricated harbours consisted of 600,000 tons of concrete with 33 jetties and 10 miles of floating roadways. Mulberry "A", located off Omaha beach, was severely damaged in a storm shortly after construction, but Mulberry "B", also known as Port Winston, continued to effectively supply the British and Canadian invasion forces throughout 1944.

The Mulberry harbours were brilliantly conceived in the spirit of "necessity being the mother of invention" and are arguably the greatest engineering achievement of the Second World War. After the failure of an Allied raid on the port of Dieppe in 1942, British Commodore John Hughes-Hallett declared that if a port could not be captured, then one should be taken across the Channel. This idea was initially met with derision. Yet, Albert Speer,



Germany's Second World War Minister of Armaments and War Production described the resulting Mulberry harbours as simple genius.

An alliance of hydrographic organizations, led by the United Kingdom Hydrographic Office (UKHO), are sharing their expertise and equipment during a two-week survey mission of Mulberry "B" set to take place in October. CARIS are supplying their bathymetric processing software, HIPS and SIPS, as well as their analysis and compilation software, BASE Editor, and two dedicated computers.

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

NOAA Ship Rainier to Alaska

NOAA Ship *Rainier* has begun a month long survey of the sea floor near Alaska's Prince of Wales Island as part of a multi-year effort to update nautical charts for the area. In addition to supporting marine navigation, data acquired by the 231-ft. hydrographic survey vessel will also support marine ecosystem studies and improve inundation models for areas vulnerable to tsunamis.

"We are pleased to return to Alaska to continue these important surveys, which will ensure the safe navigation of mariners who rely on the area's waters for fishing, cargo delivery, and recreational uses," said NOAA Corps Capt. Donald Haines, commanding officer of NOAA Ship *Rainier* and the ship's chief scientist.

NOAA's survey effort in the area began in 2006 with the Gulf of Esquibel and has continued south over recent years. *Rainier*'s sophisticated sonar systems enable precise measurement of ocean depth and the creation of 3D digital terrain models of the seafloor that reveals details about the underwater landscape and potential hazards to navigation. The first surveys of the area took place in the early 1900s. Depths were acquired with lead lines, a method that was accurate at the point of the sounding, but lacked information about the surrounding area.

Commissioned in 1968, *Rainier* is one of three ships in the NOAA fleet that conduct hydrographic surveys in support of the nautical charting mission.

**Ladd Borne joins Ocean News
as ocean industry editor**

Ladd Borne has joined the editorial staff of Ocean News. He graduated from Embry-Riddle Aeronautical University in 1991 with a BS in Aerospace Engineering. In 1992, just out of school, he joined Harbor Branch Oceanographic Institution where he held several engineering positions, including Acting Engineering Director, overseeing all of HBOI's engineering activities. Borne managed many projects and grants from entities such as Raytheon, L3 Communications, Tyco Communications, NREL, ONR, NSF, NSWC, NRL and the University of Hawaii.

He holds a Professional Engineer (PE) License in the State of Florida. While at HBOI, he authored or co-authored several papers and reports.

He worked closely with the Institution's submersible and ROV teams providing engineering support for scientists and operators where needed. He worked with Florida Atlantic University on their ocean renewables project and designed and built a water tunnel.



Borne has been a Science Fair Chairman and Principle Judge at the Osceola Magnet School in Florida since 1995. He is a member of the Marine Technology Society (MTS).

Ocean News welcomes Ladd as a valuable addition to our staff.

World's first ocean-powered clean energy plants in Bahamas

Ocean Thermal Energy Corporation (OTE Corp.) and Bahamas Electricity Corporation (BEC) have signed a Memorandum of Understanding (MoU) to further the development of two ocean thermal energy conversion plants (OTEC) in The Bahamas in concert with BEC's strong policy to promote renewable energy

resources in The Bahamas to maximize Bahamian energy independence and environmental benefits.

This announcement signals the start of OTE Corp's globalization of its competitively priced renewable energy resource, OTEC, and BEC's increased focus on exploring various ways to integrate renewable energy systems in businesses and homes that reduce The Bahamas' use and dependency on fossil fuel.

The core mission of OTE Corporation is to bring OTEC to the nearly 100 tropical regions around the world where land-based commercial OTEC power plants are now an economically viable solution. With the signed MoU, OTE Corporation will immediately move forward with BEC to complete the design process that is expected to culminate with the company building, owning, and operating the world's first two commercially viable OTEC plants that produce fossil-fuel free electricity, potable water, and sustainable food production in the form of aquaculture, mariculture, and chilled soil agriculture.

For more information, visit www.otecorporation.com.

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Subsea vessel demand to grow 52% to 2015
The demand for subsea vessel operations is set to grow by 52%, totaling \$72 billion between 2011 and 2015, according to a new Douglas-Westwood report. The "World Subsea Vessel Operations Market 2011-2015" also says project timetables are accelerating, project capex is increasing, and global demand for subsea vessels is expected to exceed 310,000 days over the period, an increase of 28% on the previous five years. Spending over the period is expected to rise from \$11.2 billion this year to \$19 billion in 2015, the report predicts. It includes vessels used for subsea field development and construction, inspection/repair/maintenance, well intervention, and P&A activity.

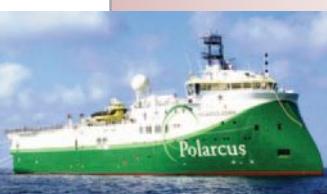
NOAA-led study: Air pollution caused by ships
New clean fuel regulations in California and voluntary slowdowns by shipping companies substantially reduce air pollution caused by nearshore ships, according to a new NOAA-led study published online in *Environmental Science & Technology*. The study examined a container ship operating under a 2009 California regulation requiring that ships switch to low-sulfur fuels as they approach the California coast, and also adhere to a voluntary state slowdown policy, intended to reduce pollution. The research team found that emissions of several health-damaging pollutants, including sulfur dioxide and particulate matter, dropped by as much as 90%. Findings of this study could have national and global significance as new international regulations by the International Maritime Organization require vessels to switch to lower-sulfur fuel near U.S. and international coasts beginning in 2012. The research team found reductions in emissions even where none were expected, meaning even greater reductions in air pollution and associated respiratory health effects in humans than regulators originally estimated.

Cathelco supplies hull protection and pipework anti-fouling systems for new Polarcus vessels

Cathelco are supplying hull corrosion protection systems and marine pipework anti-fouling systems for two new Ulstein X-Bow vessels that are being built for

Polarcus, the marine geophysical company. The systems will be installed on the newbuilds NB292 and NB293, which are being constructed by Ulstein Verft AS of Norway. The distinctive Ulstein X-Bow hull configuration provides the advantages of smoother acceleration

and more stable towing power for the high ice class, 3D seismic vessels that have the capability to deploy up to 14 solid streamers. Throughout their operational life, the hulls of the vessels will be protected from corrosion by Cathelco impressed current cathodic protection (ICCP) systems. The 200 amp systems will consist of four elliptical anodes mounted port and starboard and two reference electrodes connected to a control panel (www.cathelco.com).



B.V. awarded contract by Van Oord



Offshore Independents B.V., leading providers of EPC project management and engineering services to the international oil and gas industry, announced that it has been awarded a project management contract by international dredging, marine, and offshore contractor Van Oord of Rotterdam, The Netherlands. Under the terms of the contract, Offshore Independents will provide installation engineering, procurement, operations, and project management services to support Van Oord's newly acquired shallow water pipelay (SWPL) barge.

Van Oord purchased the SWPL barge for pipeline installation. The barge, which measures 120m long and 40m wide, has the capacity for installing 18 to 48-in. pipelines in water depths of 6 to 50m. In some cases, depending on the pipeline diameter, the depth capability can be extended to 100m. It is equipped with a 500-tonne crane and has accommodation for 300. Currently under construction in Nantong, China, it will be operational in late 2012.

The new barge will broaden and extend Van Oord's services to the offshore industry. The purchase comprises part of Van Oord's comprehensive investment scheme for 2011-2015 of EUR 1 billion and complements the planned expansion of its offshore activities and reinforcement of its position as an engineering, procurement, and construction (EPC) contractor. Together with its existing services for the construction of landfalls, installation of rock, trench dredging and backfill, and the installation of single point mooring (SPM) systems, the new barge will enable the company to offer an integrated package of offshore services to oil and gas companies as an EPC contractor.

For more information, visit www.offshoreindependents.com.

SungDong Shipbuilding & Marine Engineering Co. Ltd. expands its use of AVEVA Marine solutions

AVEVA, a leader in engineering design and information management solutions for the plant, power, and marine industries, announced that SungDong Shipbuilding & Marine Engineering Co. Ltd. (SungDong) has extended its contract for the use of AVEVA Marine to drive the design of commercial vessels. The new licenses will be used throughout its four shipyards in Korea for the design and production of vessels which include bulk carriers, container carriers, and FSOs (floating storage and offloading).

SungDong selected AVEVA as its key solution partner due to its outstanding record in hull and outfitting solutions as well as the suitability of the AVEVA solutions for offshore design and production. Additional benefits include the protection of SungDong's legacy data and AVEVA's on-site engineering support team based in Busan, which can provide responsive local support.



Following SungDong Shipbuilding & Marine Engineering Co. Ltd. establishment in 2001, the shipbuilder has quickly become one of the world's top 10 shipbuilding enterprises, producing a broad range of commercial vessel and, more recently, offshore projects.

"AVEVA is the natural choice for international companies engaged in shipbuilding and offshore projects such as those at SungDong," said SungDong Shipbuilding & Marine Engineering Co. Ltd. "Throughout our company's growth, the design and production support of commercial vessels has been built around AVEVA solutions. Our increase in AVEVA Marine licenses will play a key role in the on-going success of SungDong as we expand our business and constantly improve the efficiency of our operations."

"In SungDong, AVEVA has a very valuable partner. Our close collaborative working relationship means their input can further strengthen our shipbuilding portfolio," says Eun-Joo Park, president of AVEVA Korea Co. Ltd. "AVEVA Integrated Engineering & Design links applications through object-centric systems, improving project efficiency and reducing engineering design and costs".

AVEVA Marine is a set of integrated applications created specifically for the unique processes of the engineering and design of ship and offshore structures, design management, and the generation of accurate production information.

For more information, visit www.aveva.com/marine.

Divex wins support effort for launch and recovery technology

International diving equipment tech-



Maritime Transportation



nology company Divex have announced they have been selected by the Carbon Trust for support within the Offshore Wind Accelerator (OWA) programme for their Launch and Recovery technology.

The OWA is a project launched between the Carbon Trust and eight of the leading international offshore wind farm developers to help meet the European Union's 15% renewable energy target for the UK. The aim of the OWA is to drive down the cost of offshore wind by focusing on four research areas: foundations, wake effects, electrical systems and access.

The focus of the OWA has been to find solutions to Access to the wind turbines and, with over 450 entries submitted, Divex have been selected as one of the 13 successful applicants. As one of only two companies in Scotland to receive funding, Divex is the only company in Aberdeen to be successful.

Divex's Launch and Recovery System (LARS) uses the established ramp recovery method for high sea state launch and recovery, but applies this in a way that enables fitment to SWATH or catamaran mother vessels or possibly even mono hulls.

The principle is an inclinable and semi-submersible cradle that can be raised up to the vessel or be lowered into the sea to allow launch and recovery. The unique design of the mechanical connection to the vessel automatically alters the angle of the cradle from horizontal (when stowed) to a suitable ramp angle when the cradle/boat is in the water.

The cradle is raised and lowered by a fast action constant tension winch that automatically synchronises the cradle/boat motion with the swell to avoid slap and snatch during launching and recovery.

Another unique attribute is the provision of an automatic bow latch that holds the boat securely in the cradle until the moment of launch and similarly captures the boat during recovery.

For more information, visit www.divexglobal.com.

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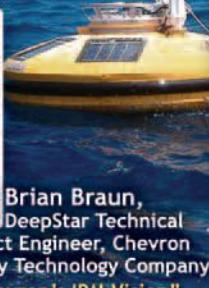
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Plenary Speakers Announced



Brian Braun,
DeepStar Technical
Project Engineer, Chevron
Energy Technology Company
"Chevron's IRM Vision"



Michael Wilems, Jr.
Facilities Manager,
Gulf of Mexico
Statoil
"The IRM Approach in the North Sea"



Paul Hillegeist,
President & COO
Quest Offshore
Quest Offshore Resources, Inc.
"Global Subsea Trends as Leading
Indicator for IRM Activities"



Douglas - Westwood
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"The Market Outlook for AUVs
and AUV Manufacturers"

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- Hi-Res geophysical surveys
- Environmental surveys
- Seafloor surveys (site and route)
- Drilling hazard
- Geotechnical surveys
- Abandonment & clearance surveys
- Survey technology & methodology

Topic 2

Metocean

- Meteorological & oceanographic measurement programs
- Metocean design criteria for rigs, fixed & floating platforms, and pipelines
- Real time metocean data collection & dissemination for marine operations
- New instrumentation and data techniques

Topic 3

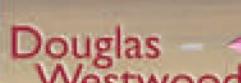
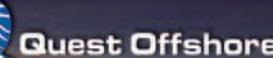
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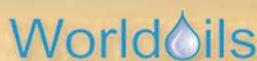
- IRM technology & methodology utilizing: Divers, ROVs & AUVs
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- Subsea field IRM
- New regulations & requirements

Optional 1/2-day Pre-Conference Workshop "Subsea Infield Fiber Optic Networking and Future Proofing"

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New for 2011

New Metocean Addition

In addition to the Subsea Survey and IRM tracks presented in the past, we have added a new topic this year.

Realizing the importance of accurate metocean in oil & gas operations, the topic is being added to the Subsea Survey IRM technical program.

The collection of metocean data is often a requirement for offshore exploration, the quality assurance and analysis of collected metocean data are a vital component in the design, installation and operation of fixed structures, floating production facilities and pipelines. The metocean field continues to evolve with rapid changes in instrumentation, data analysis processes and our understanding of the physical processes of the environment.

Optional Workshop

"Subsea Infield Fiber Optic Networking and Future Proofing"

Quickly becoming an important consideration for all new (and existing) subsea fields, Subsea Infield Fiber Optic Networks will enhance real-time field monitoring, data collection, and IRM operations.

This informative 1 day workshop will begin with an ***Introduction to Oilfield Fiber Optic Networks*** followed by the meat of the workshop, ***Infield Communication Networks Business Development***, the business case for making the investment.

This “must-attend” workshop is led by experts in the field and is sure to benefit operators, installers and equipment providers alike.

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Don't Miss Out!

Subsea Survey IRM, now in its 6th year, is the only conference dedicated to survey, metocean and IRM. You won't want to miss out on the vast amount of information presented this year whether you are an operator, service provider or manufacturer. This year, Subsea Survey IRM will focus on the technology related to seafloor survey and mapping operations, metocean operations, and the demand for technology to meet the modern inspection requirements of the offshore energy industry and to enable effective repairs and maintenance accomplished by divers, ROVs, AUVs and remote monitoring technology.

Call for Papers

Subsea Survey IRM is now accepting abstracts for Track 2 presentation in Houston.



Preliminary Technical Program

Tuesday - Plenary Session

- 9:00 am **Brian Braun** – Subsea/CSME, Chevron,
“Chevron’s IRM Vision”,
9:30 am **Michael Wilems**, Facilities Manager, Gulf of Mexico, DPNA UOF FD FAC Statoil
“Statoil IMR - The North Sea Experience and Future Applications in the Gulf of Mexico”
10:00 am **Paul Hillegeist**, President & COO, Quest Offshore Resources, Inc.,
“Global Subsea Trends as Leading Indicator for IRM Activities”
10:30 am **Steven Kopits**, Managing Director, Douglas - Westwood
“The Market Outlook for AUVs and AUV Manufacturers”
11:00 am **Q&A**
12:00 pm Lunch

Times and Speakers are subject to change
until the Final Program has been released

12:00 pm Lunch

Tuesday - Track 1

1:30 pm **Advancements in Pipeline Inspection with AUVs**, Einar Gustafson (Kongsberg Maritime), Chris Hancock (Kongsberg Underwater Technology)

2:00 pm **From dynamic positioning to multiple levels of autonomy, the journey of the smart ROV**, Ioseba Tena, SeeByte

2:30 pm **Offshore Trials for the Marlin Offshore Platform Inspection System**, Dan McLeod, Sr. Program Manager and John Jacobson, Lockheed Martin

3:00 pm Break

4:00 pm **Wave Glider UMV – Intro to a New Autonomous Remotely Piloted Ocean Data Collection Platform**, Brian Anderson, VP, Liquid Robotics Inc.

4:30 pm **Wireless Riser Monitoring**, WFS, MCS Kenny, Fugro

Wednesday - Track 1

8:30 am **Metocean monitoring in the German North Sea with a focus on underwater noise**, Andrea Lübben, Friederike Kinder, Joachim Gabriel, Thomas Neumann, DEWI GmbH, Wilhelmshaven, Germany

9:00 am **Improvements in Internal Analysis Technology for Enhanced IRM of Hydrated or Blocked Subsea Pipelines**, David Wright, president and Fernando Hernandez, subsea operations manager, Wright's Well Control Services

9:30 am **Performing Work in the “Splash Zone”**, Christian Hagan, Project Manager, LBO, Inc.

10:00 am Break

11:00 am **Accurate Time Tagging of Hydrographic Survey Data**, Lars Dall, Survey Manager, Eiva A/S

11:30 am **Reduced Cost Subsea Condition Monitoring Using ‘Send and Forget’ Acoustic Communication**, Andy Smerdon, Aquatec Group

12:00 pm Lunch

1:30 pm **Innovative ROV-based Inspection Solutions**, Derek A. Cruickshank, Commercial Manager, Fugro Subsea Services Ltd.

2:00 pm **Realizing True Benefits of Real-Time 3D Imaging Sonar Technology to Subsea IRM Application**, Blair Cunningham, Chief Technology Officer, Coda Octopus Products Inc.

2:30 pm **The Dark Art of Acoustic Positioning - NASNet® MkII**, Laura Cummins, Nautronix

3:00 pm Break

4:00 pm TBD

4:30 pm TBD

Tuesday - Track 2

1:30 pm **Gulf Of Mexico Deepwater Current Structure Observations**, Andy Brown, Regional Manager, CSA International nc., Richard Crout, Ph.D., Chief Data Officer, National Data Buoy Center, Pak Leung, Ph.D., Metocean Consultant, GL Noble Denton

2:00 pm **Integrating Integrity Management and Life-of Asset Benefits**, Dirk L. van Oostendorp, Chris Muller, Rob Swindell and Jim McGhee, Xodus Group

2:30 pm **Post Installed ROV Friendly Vortex Strakes and Fairings**, Troy McGinty, AIMS International

3:00 pm Break

4:00 pm **Hurricane Downed Structures - Excavation Challenges and their Technical Solutions**, John Lariviere - Director of Projects, EPIC Divers

4:30 pm **Deep Water, electric line cable simulations for RLWI operations**, Morten Iversen, Welttec

Wednesday - Track 2

8:30 am **Environmental Monitoring with AUVs**, Chris Hancock (Kongsberg Underwater Technology), Einar Gustafson (Kongsberg Maritime)

9:00 am **Monitoring Rig-Generated Underwater Noise in the Designated Critical Habitat of Cook Inlet, Alaska**, Adam Frankel, Mark Wilson, and Lee Shores, Marine Acoustics, Inc.

9:30 am **Risk Management: Fighting for Support**, Jay Stittleburg, Area Manager (Americas) for ULQ Systems LLC (USA)

10:00 am Break

11:00 am **IRM Support Based on AUV & HYBRID ROV: Cost Effective FPSO/ FPU/ SPAR Mooring & Riser Inspection**, Jacques Schoellkopf, President, Advanced Subsea

11:30 am **“METOCLEAN”: Off-the-Shelf**, Rick Cole, RDSEA International, Inc., St Pete Beach, Florida, USA, and Jeffrey Kinder, Down East Instrumentation, LLC, Cary, NC, USA

12:00 pm Lunch

1:30 pm **The Affects of Biological Interference on Acoustic Current Velocity Measurements**, Rosemary Smith, Xiaorui (Amy) Guan, Sergio Jaramillo, Fugro GEOS

2:00 pm **Wireless Riser Monitoring**, WFS, MCS Kenny, Fugro

2:30 pm **Propulsion System Selection and Optimization for IRM Support Vessels**, Lee Erdman, Product Manager, Voith Turbo Marine

3:00 pm Break

4:00 pm TBD

4:30 pm TBD

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<input type="checkbox"/> Student (Full-Time Only, ID Required)	\$300	\$400	\$500
<input type="checkbox"/> Presenter (per paper)	\$350	\$350	
<input type="checkbox"/> Pre-Conference Workshop	\$495	\$495	\$495
<input type="checkbox"/> Exhibits Only <small>Includes Admission to Exhibit Hall</small>	\$15/Day	\$15/Day	\$15/Day
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Individual Items			
<input type="checkbox"/> Lunch (<small>Included with Full Conference</small>)	\$25	\$25	\$25
Indicate Day: Tue <input type="checkbox"/> Wed <input type="checkbox"/> Thur <input type="checkbox"/> Unknown <input type="checkbox"/>			
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PAYMENT/CANCELLATION POLICY

Attendee: Attendee cancellation up to two weeks from the start of the event will result in a cancellation fee of 25% of registration fee. No refunds will be made within two weeks of the event. A substitute attendee from the same organization is allowed. **Exhibitors:** Applications for exhibit space received by October 31, 2011 require 50% non-refundable deposit. Space application without required deposit will delay assignment until deposit is received. The remaining 50% must be received 30 days from receipt of invoice or by October 31, 2011, whichever comes first. If payment is not received in accordance with above, assigned space will be released. Applications for exhibit space received after October 31, 2011 require payment in full to process the assignment. **Cancellation:** A 50% refund on exhibit space will be given if written notice is received 60 days prior to event. No refunds after that date. **Sponsors:** Full payment is due within 30 days of sponsorship registration. Sponsorship registrations received after October 31, 2011, will require 100% payment with registration. **Note:** Sponsorships paid by credit card will be assessed a 5% processing fee. **Cancellation:** No refunds on sponsorships. **Presenters:** Payment in full is due upon acceptance of abstract. **Cancellation:** No refunds. A substitute speaker is allowed.

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New study underway on coral reef restoration
A team of researchers from the Georgia Institute of Technology is using the Aquarius underwater laboratory off the coast of Florida to study how the diversity of seaweed-eating fish affects endangered coral reefs. The research mission, which began 13 September may provide new information to help scientists protect and even restore damaged coral reefs in the Caribbean. The research team has been studying how seaweeds and fish affect the health of coral reefs in the Pacific Ocean and Caribbean Sea. They have shown that the natural defenses of seaweeds can harm the coral and that plant-eating fish can control the growth of the noxious seaweed. The new studies will build on that knowledge and provide new information on the complex factors affecting reef ecosystems.

Human pathogen killing corals in Florida Keys

A research team from Rollins College in Florida and the University of Georgia has identified human sewage as the source of the coral-killing pathogen that causes white pox disease of Caribbean elkhorn coral. Once the most common coral in the Caribbean, elkhorn coral was listed for protection under the U.S. Endangered Species Act in 2006, largely due to white pox disease.

Amateur divers find 13th century treasure in Bay of Tallinn

Amateur SCUBA divers found a 13th century treasure chest while exploring the underwater beauties of the Bay of Tallinn. The chest that sank some eight centuries ago contained ancient scales with a set of tin weights, more than 200 old coins, and some other merchant belongings. Over the centuries, the chest settled in rocks and it took the efforts of four men to raise it from the bottom. Museum specialists said the treasure was a "stunning find." Its coins helped to establish the age of the find and the route their former owner followed, between Tallinn and Sweden's Visby, while the scales with the set of weights are the only such scales surviving to this day. The scales were used to weigh silver and spice. The treasures have been handed over to the Historical Museum in Tallinn and will be displayed already next year.

Odyssey confirms discovery of WWII-era SS Gairsoppa shipwreck in 4,700 meters of water

Odyssey Marine Exploration, Inc. announced that it has confirmed the identity and location of the shipwreck site of the SS Gairsoppa nearly 4,700m below the surface of the North Atlantic, approximately 300 miles off the coast of Ireland in international waters. The SS Gairsoppa was a 412-ft. steel-hulled British cargo ship that was torpedoed by a German U-boat in February 1941 while enlisted in the service of the United Kingdom (UK) Ministry of War Transport. Contemporary research and official documents indicate that the ship was carrying £600,000 (1941 value) or 7 million total ounces of silver, including over 3 million ounces of private silver bullion insured by the UK government, which would make it the largest known precious metal cargo ever recovered from the sea. In 2010, the UK Government Department for Transport awarded Odyssey, through a competitive tender process, the exclusive salvage contract for the cargo of the SS Gairsoppa. Under the salvage agreement, Odyssey will retain 80% of the net salved value of the silver bullion recovered under the contract.

10th smart buoy deployed in Chesapeake Bay



AXYS Technologies Inc. (AXYS) is pleased to announce the deployment of the tenth "smart buoy" into the NOAA Chesapeake Bay Interpretive Buoy System (CBIBS). The 1.7m diameter AXYS WatchKeeper™ buoy was deployed 17 August by the Chesapeake Bay Bridge-Tunnel near Virginia Beach. It transmits near real-time data on winds, air and water temperature, barometric pressure, waves, currents, and water quality. These data are used by weather forecasters, maritime safety personnel, coastal decision-makers, and recreational boaters and fishermen. Scientists and educators also use data from the buoys in the curriculum for innovative online activities that bring the science of the Chesapeake Bay to life.

CBIBS was created by NOAA as an information system focused on the Chesapeake Bay and its surrounding estuarine environment to provide information on current marine conditions for educational and scientific purposes. Learn more about CBIBS and access live data from all 10 buoys at <http://buoybay.noaa.gov>.

For further information, visit www.axystechnologies.com.

Argo floats help monitor ocean acidity

Scientists can now remotely monitor the ocean's changing chemistry with help from some of the 5-ft. tall Argo floats that drift with deep ocean currents and transmit data via satellite back to land. A new and innovative method shows how readings of the acidity (pH) and total carbon dioxide (CO_2) content of seawater can help scientists understand changes in the chemistry of the world's ocean.

A U.S.-based research team and its Canadian colleagues developed the new approach by determining the relationships between seawater temperature, oxygen, pH and CO_2 from observations collected on previous ship-based expeditions in the region in the last five years. These relationships were then applied to high-resolution observations of temperature and oxygen collected by an Argo float deployed in the North Pacific in early 2010.

"Most observations have been taken by scientists aboard specialized research ships, so this represents a major step forward in the ability to monitor ocean chemistry at higher frequency and

lower cost," said Dr. Lauren Juranek, oceanographer at the University of Washington Joint Institute for the Study of Atmosphere and Ocean (JISAO) and the study's lead author.

To determine pH and total CO₂ content, scientists need measurements of dissolved oxygen concentration; about 10% of the floats have the sensors that can measure dissolved oxygen.

The profiling Argo floats used in the study are part of the international Argo observing network (<http://www.argo.net/>). The floats have been deployed by researchers in over 30 countries, and approximately 3,000 active floats are distributed throughout the global ocean at any time.

The bright yellow floats ride the ocean currents, descend into the water column down to 3,000 or even 6,000 ft. and as they rise to the surface after about 10 days, collect temperature, salinity, and other data that are then transmitted via satellite when the float reaches the water's surface. Each float acquires 200 profiles over a 5-year lifetime.

"These measurements can be used to complement traditional ship-based obser-

vations, not replace them. Because we can't sample as frequently as we would like to, this approach allows us to provide repeat data on 10-day intervals," said Richard Feely, a NOAA senior scientist and a coauthor of the study. He noted that ship-based work is still essential for calibrating the Argo float data for pH and total CO₂ concentrations.

"Autonomous profiling systems, such as the Argo floats, give us a new perspective on ocean physics and chemistry, and a more comprehensive deployment of chemical sensors in the ocean interior will provide a much more complete view of the ocean carbon system," Feely said.

The ocean's absorption of CO₂ causes the level of acidity in seawater to rise. This process, called ocean acidification, can have adverse effects on organisms that form calcium carbonate shells, such as corals, mussels, oysters, and feed stock for salmon like pteropods. The NOAA scientists and researchers at the University of Washington will continue investigating how organisms are impacted by these conditions.

For more information, visit www.pmel.noaa.gov/co2.

Aquarius Yields NASA's First Global Map of Ocean Salinity

NASA's new Aquarius instrument has produced its first global map of the salinity of the ocean surface, providing an early glimpse of the mission's anticipated discoveries.

Aquarius, which is aboard the Aquarius/SAC-D (Satélite de Aplicaciones Científicas) observatory, is making NASA's first space observations of ocean surface salinity variations — a key component of Earth's climate. Salinity changes are linked to the cycling of freshwater around the planet and influence ocean circulation. Aquarius soon will allow scientists to explore the connections between global rainfall, ocean currents, and climate variations.

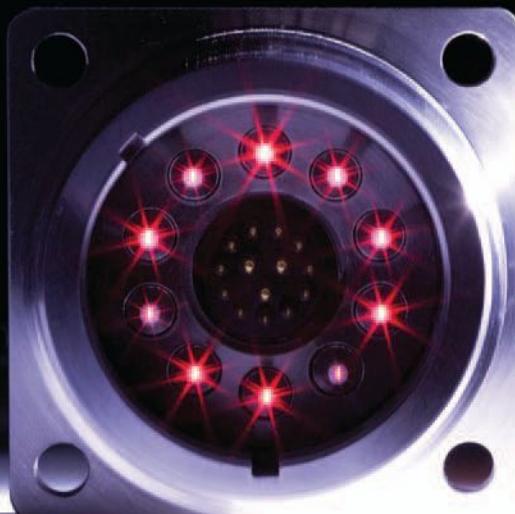
The new map, which shows a tapestry of salinity patterns, demonstrates Aquarius' ability to detect large-scale salinity distribution features clearly and with sharp contrast. The map is a composite of the data since Aquarius became operational on 25 August. The mission was launched 10 June from Vandenberg Air Force Base in California.

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Intelligent, Self-Healing Mesh Networks

By Brian Lavallée, Director of Submarine Industry Marketing, Ciena

Fueling Borderless Communications

Globalization is fueling our dependence on the global network that encompasses our planet, creating an essentially borderless information-sharing network. A conservative increase in bandwidth demands of 50% CAGR is resulting in undersea cable upgrades—from 2.5Gb/s and 10Gb/s to 40Gb/s and 100Gb/s channel rates—bringing transported capacities to unprecedented levels. The unabated bandwidth demand growth is primarily driven by more users coming online with faster broadband connections, coupled with increasingly popular video-centric content. Although meeting this demand growth is a popular topic within the submarine networking industry, open discussions on how this significant increase in undersea cable capacity will be protected has been overshadowed. Traditional ring-based protection pales in comparison to the improved level of network resilience offered by self-healing, mesh-based networks implemented with an intelligent Control Plane.

Severe Tests of Submarine Network Resilience

In 2006, an earthquake off the southern coast of Taiwan disrupted telecommunications for hundreds of millions of people. An estimated 10 undersea cables were damaged in over 20 locations by underwater landslides, resulting in cable repairs that took weeks to complete. This major incident had an immediate and far-reaching effect as all major voice and data routes to Asia were adversely affected, with services to Taiwan completely knocked out and Hong Kong also significantly impacted. In 2009, a typhoon struck Taiwan causing major damage to more than 10 undersea cables that again resulted in wide-scale network outages. Both of these incidents resulted in major damage and subsequent outages because numerous undersea cables pass to the south of Taiwan in the Luzon Straits.

In 2008, multiple cable cuts in the Mediterranean Sea and Persian Gulf, believed to be caused by ship anchors, impacted close to 100 million people as regional networks either slowed to a crawl or shut down. Although the cause was manmade and not due to major forces of nature, the regional impact was nonetheless quite extensive, further emphasizing the need for improved network resilience.

In 2011, a large earthquake struck off the east coast of Japan followed by a major tsunami, resulting in extensive damage throughout Japan, including an estimated 12 outages to five separate undersea cables. Cable landing stations also sustained damage, adding to the overall impact to the region's communications infrastructure. Although some carriers had implemented mesh networks that immediately rerouted around failures, most carriers did not.

According to the International Cable Protection Committee, undersea submarine optical cables carry close to 100% of all international Internet traffic and more than 95% of all combined international voice and data traffic. There is no alternative transmission technology able to cost-effectively scale to the incredible amount of bandwidth currently carried over the global undersea cable network, including satellite technology.

Undersea cables, now approaching terabit-carrying capacities, will only exacerbate future outages. Clearly, a better way of ensuring the global network is resilient to undersea cable damage is required — that technology is intelligent, mesh-based optical networks.

Network Intelligence and the Control Plane

The “brain” of the intelligent undersea network is the Control Plane, which is comprised of hardware and software working together to enable a self-aware network that autonomously maintains a timely database of all its available resources. Traditional networks use external intelligence, usually in the form of management software residing on a workstation, which maintains the network database. The Control Plane essentially creates a network “nervous system” that autonomously controls the underlying network assets and then informs the user of changes performed, resulting in far faster decision-making and connection control. This fundamental shift in decision-making and control from the traditional external centralized model to the internal decentralized model is what enables numerous other benefits that result in significant savings in operational costs. Removing operational costs is always attractive.

Intelligent Self-Healing Network Resilience

One of the primary values enabled by a mesh-based network managed by a Control Plane is the rapid rerouting of connections around inevitable network failures (**Figure 1**). Properly designed mesh networks can achieve an availability of 99.9999%, which translates into only 31 seconds of annual downtime, yielding a ten-fold improvement when compared to traditional ring-based networks. This ten-fold increase in availability is due to the ability of mesh-based networks to survive multiple. Mesh-based networks, by virtue of their interconnected topology, can reduce required network capacity by over 30% when compared to ring-based networks, as protection bandwidth need not be locked up. Instead, network intelligence rapidly reroutes connections around failures using its database

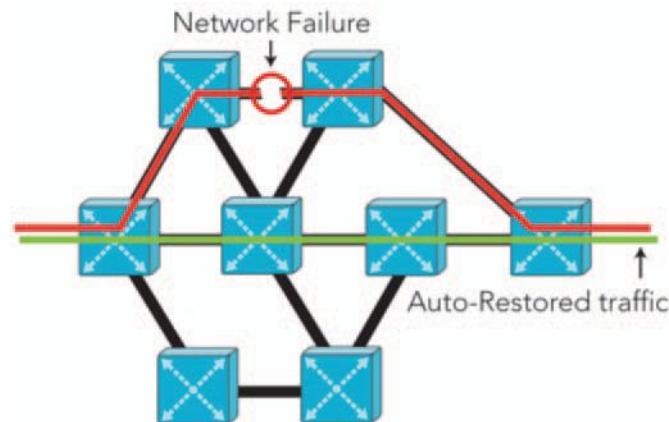


Figure 1 Intelligently rerouting around network failures

of available network resources as its reference. This innate ability to yield a ten-fold availability improvement with less overall network capacity means significant cost savings from an operational and capital perspective, two coveted goals of any successful service provider.

Automated Self-Inventory

A self-aware network regularly polls its network nodes to gather relevant information required to make routing decisions (**Figure 2**). This allows the Control Plane to create an accurate and timely topological view of the network and related resource map, which together are the basis for future connection decisions. Each change to the network, such as when a link goes down or is increased in capacity, is auto-discovered and the network database updated. Each network node is fully aware of the connections passing through it as well as associated performance guarantees, so in the event of a failure, the network connections are rapidly rerouted to available resources while still respecting service level guarantees to the end-user. A side benefit of each node having a timely database of the network in which it resides is that multiple redundant nodes are subsequently created, allowing for a resilient network with no single point of failure.

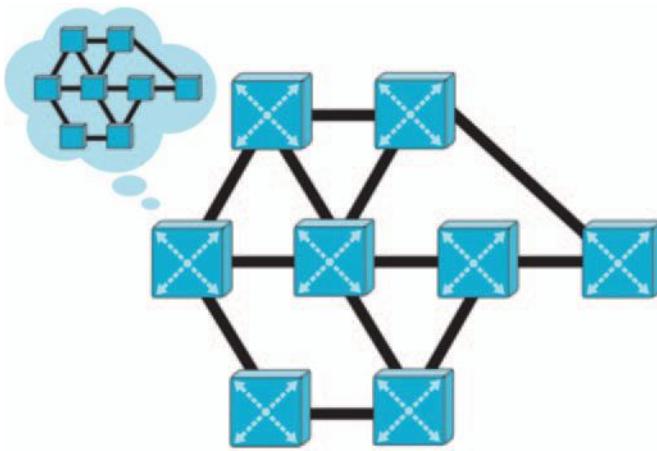


Figure 2 Self-aware network intelligence

Automated Connection Management

The self-aware network greatly facilitates connection management by allowing the network itself to decide how to route connections that will respect performance expectations (**Figure 3**). Since an intelligent network uses autonomous node-to-node signaling and routing, connection management is extremely fast and very reliable. Error-prone manual operations that are prevalent in legacy networks are completely eliminated. Since most manual intervention is eliminated, significant cost savings are readily achieved, as experienced by carriers who have already implemented intelligent mesh networks.

Efficient Operational Procedures

Every network requires proactive, and reactive in the event of a failure, maintenance to ensure the network is maintained to an expected level of health. Proactive maintenance includes operations such as adding new nodes to the network or performing

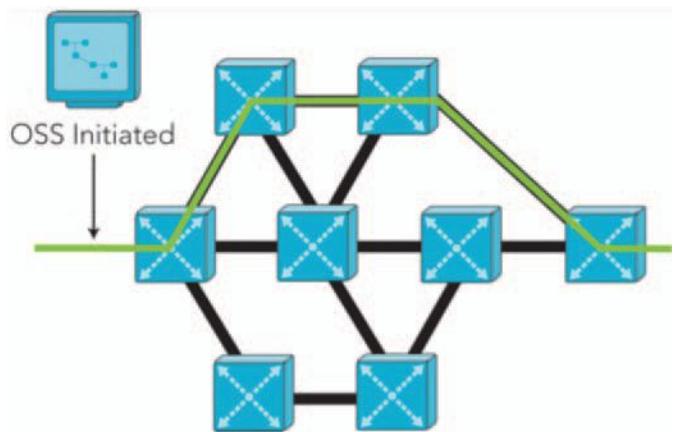


Figure 3 Autonomous connection management

ing a software upgrade. This typically means moving traffic from one part of the network to another such that the area requiring maintenance is fully isolated in case something goes awry. Network intelligence allows the network to automatically reroute connections to a new route with the same performance simply and effectively, which can automatically be initiated based on the time of the day (**Figure 4**). Once a complicated and manually-intensive task, periodic traffic regrooming to balance network connections is vastly simplified by having the network itself perform this task quickly and reliably, resulting in

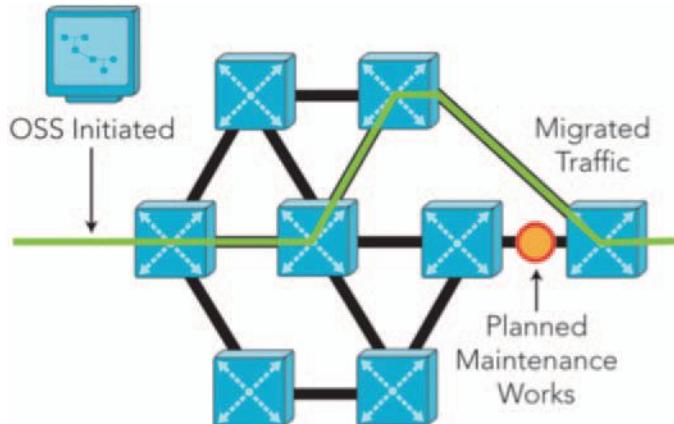


Figure 4 Automatic rerouting of connections for maintenance purposes

significant time and money savings.

Growing bandwidth demands will continue to be addressed by 40Gb/s and 100Gb/s channel upgrades raising undersea cable capacities to unprecedented levels. Maintaining global network availability in the event of inevitable future undersea cable cuts will only increase in importance as the world becomes more dependent on this precious resource. Intelligent mesh networks ensure network availability even after multiple failures, which is precisely why several service providers have already started to implement this powerful switching technology. Higher speed undersea cables, coupled with intelligent self-healing mesh networks, is the best way to build tomorrow's global communications network.

Reliable rotors for the wind industry

Wind turbine blade manufacturing is a developing business as the wind energy industry looks to have fewer, larger turbines offshore, which presents performance challenges for composite materials. The situation is complicated by the cost pressures in the renewable energy markets, wanting turbines at a cheaper price, so some of the types of technology used in aerospace are not cost-effective here. The global windmill blade manufacturing community came together in December last year to network on common issues for the industry – Wind Turbine Blade Manufacture 2011 is scheduled again for 6 to 8 December 2011 at the Maritim Hotel in Dusseldorf, Germany. The exhibition provides leading suppliers with the opportunity to demonstrate their products to decision makers and R&D experts. The conference kicks off this year with a review of the wind blade industry from Frank Virenfeldt Nielsen, the CTO of LM Windpower and a leading figure in the market.

Interior launches leasing process for wind energy offshore Rhode Island

The U.S. Department of the Interior (DOI) announced on 17 August the initial steps to develop commercial wind energy on the Outer Continental Shelf offshore of Rhode Island and Massachusetts. DOI's BOEMRE issued a "call for information and nominations," which invites developers to identify locations within an offshore area in which they seek commercial leases for developing wind projects. BOEMRE is also seeking public comment on important environmental issues and reasonable alternatives related to the proposed leasing, site characterization, and assessment activities in the offshore area under consideration. The announcement is the latest step in the "Smart from the Start" offshore wind initiative to facilitate renewable energy development offshore.

DOE Awards \$43 Million for Offshore Wind

DOE announced on 8 September that it will award \$43 million over the next five years to speed technical innovations, lower costs, and shorten the timeline for deploying offshore wind energy systems. The 41 funded projects across 20 states will advance wind turbine design tools and hardware, improve information about U.S. offshore wind resources, and reduce market barriers related to supply chain development, transmission, and infrastructure. The awards will help the United States compete in the global wind energy manufacturing sector while promoting economic development and job creation. Funding is subject to congressional appropriations. Some projects will focus on three technical approaches to advancing offshore technology. Certain projects will advance the current state-of-the-art modeling and analysis tools for the design, performance assessment, system modeling, and cost assessment of offshore wind systems. Offshore wind system design studies will develop conceptual designs and assessments of offshore wind plant systems that enhance energy capture, improve performance and reliability, and reduce the cost of energy from integrated wind plant systems. Other projects will support the research and development of innovative rotor and control systems designs for advanced components and integrated systems to reduce capital costs of these systems by up to 50%.

Aubin completes GLS trials

Aubin, a leading independent supplier of specialist chemicals to the energy industry, has successfully completed offshore sea trials for the recently launched Gel Lift System (GLS).

GLS, a potentially game-changing new product that could save millions of pounds when installing offshore renewables infrastructure, was tested off the coast of Orkney.

The technology uses a low-density gel that is non hazardous and environmentally responsible to provide incompressible buoyancy subsea and can be used to install all types of offshore structures, including wind, wave, and tidal.

During the tests, a lift bag of GLS was attached to a 1050kg clump weight and used to controllably place it on the seabed. By pumping GLS into the lift bag, the weight could then be supported in the water. Pumping small quantities GLS into or out of the bag enabled the weight to be raised, lowered, or even made neutrally buoyant so it would float underwater.

Aubin Managing Director Paddy Collins said, "The testing went exceptionally well; the lift was assisted and monitored by divers from Leask Marine who reported the rate of decent and ascent was exceptionally well controlled."

"By accurately controlling the volume of GLS in the lift bag we were able to control the amount of lift generated. This allowed us to make the weight neutrally buoyant so it would float mid water and to reduce the perceived weight to the point that a diver could lift 1050kg using only two fingers."

GLS can be used for lifts from any size, from 20kg to 2,000 tonnes to a water depth of 150m.

Aubin, together with Aberdeen-based engineering partner Ecosse Subsea, is currently developing installation techniques utilizing GLS for offshore renewable technologies.

The company received SMART funding to develop the GLS technology from the Scottish Government scheme providing financial assistance to individuals and SMEs to help support commercially viable projects that represent a significant technological advance.

Aubin is also supported by the Carbon Trust Entrepreneurs Fast Track, which helps create step-change growth in the UK's best low carbon technology businesses.

For more information, please contact Fiona McWhirr at thinkPR on 01224 623960/ 07827 278725 or e-mail Fiona@thinkpr.co.uk.



Ground-breaking marine energy finance deal with Barclays

Aquamarine Power, the pioneering wave energy company, has agreed to a £3.4 million loan with Barclays Corporate in a deal that marks an important milestone for investment in the marine energy sector.

The groundbreaking transaction is the first time a UK marine energy project has succeeded in securing bank debt finance.

Aquamarine Power's Oyster wave power technology captures energy in nearshore waves and converts it into clean sustainable electricity. The newly announced 5-year loan will provide the funds Aquamarine Power needs to complete a 2.4MW Oyster array, located at the European Marine Energy Centre (EMEC), Orkney.

The array will comprise three of the company's next-generation Oyster wave power devices. The company successfully installed its first 800kW Oyster 800 device at Billia Croo near Stromness in Orkney last month (pictured). Two further devices will be installed in 2012 and 2013.

The company previously installed a single full-scale 315kW Oyster 1 device at Billia Croo in 2009.

The loan will be repaid over five years from revenue generated by the 2.4MW array.

Aquamarine took another major step towards the commercialization of its Oyster technology with the announcement on 27 September of £7 million of new funding and a commitment of further investment in the company from its existing shareholders over the next two years.

The company has closed a funding round of £7 million comprising £3 million each from major shareholders SSE Venture Capital, the ventures unit of SSE (Scottish and Southern Energy), and ABB, the multinational power and automation company, together with another £1 million from Scottish Enterprise, the Scottish Government's enterprise agency, via the Scottish Investment Bank.

In addition, Aquamarine Power's existing major shareholders (SSE, ABB, and Scottish Enterprise) are working together to develop a further funding package of £18 million to take the company to commercialization in 2014.

For more information, contact Diane Stewart at dianes@buchanan.uk.com.

Corvus to store ship's energy

Corvus Energy Ltd., the Richmond, B.C.-based makers of a revolutionary

6.5kWh lithium-polymer battery, has joined the groundbreaking Aquarius Wind and Solar Power System project.

Fukuoka, Japan's Eco Marine Power Co. Ltd. announced that Corvus Energy will supply the energy storage component for its groundbreaking, patent-pending Aquarius Wind and Solar Power System for ocean-going ships.

Since 2010, Eco Marine Power has worked on developing an advanced integrated system of rigid, photovoltaic-

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Ocean Energy

equipped sails and energy storage modules to allow ocean-going ships to harness renewable energies and reduce their need for oil. The rigid sails are used for propulsion and covered in solar panels to capture solar energy.

Corvus Energy's advanced lithium-polymer battery technology will store energy collected by the array of wind and solar panels. The batteries will then be used to power the ship's operational equipment or, alternatively, be used as a power source when at harbor or at anchor.

Conservative estimates suggest that the Aquarius System will reduce operational costs by up to 20%. A prototype will be ready for testing in 2012.

Corvus Energy's energy storage modules are up to 10 times more powerful than lead-acid batteries and are, at minimum, 22% more powerful than current alternative lithium-polymer competitors. The batteries are built to handle the world's most hazardous ocean conditions. Fully waterproof to 1 atmosphere, the modules can operate from -20° to 60° C and feature standard shock ratings at 30 G and 5-axis vibration ratings of 8 G.

For more information, visit www.corvus-energy.com.



OPT and Lockheed Martin to team on Oregon wave power project

Ocean Power Technologies, Inc. has announced it will collaborate with Lockheed Martin in connection with OPT's proposed commercial-scale wave power generation project at Reedsport, Oregon.

Lockheed Martin will provide design, manufacturing, system integration, and supply chain management expertise to enhance OPT's PowerBuoy® technology. This builds on previous work conducted by Lockheed Martin and OPT.

This collaboration follows a \$2.4 million contract awarded by the U.S. Department of Energy (DOE) to OPT as part of U.S. Secretary of Energy Steven Chu's initiatives announced in September 2010 to promote the development of renewable marine energy.

"OPT's engineering and innovation efforts for the utility market are focused on improving power conversion efficiency, reliability, and manufacturability and

lowering the costs of marine operations and maintenance," said Charles F. Dunleavy, Chief Executive Officer of the Company. "We will be rolling out the PB150 PowerBuoy product, our latest utility market offering, over the next few years and will also leverage this experience for the next generation of the PowerBuoy, our 500kW device that is currently under development. Lockheed Martin's reputation and track record in manufacturing technology and its focus on renewable energy technologies will greatly assist us in this endeavor."

Construction of the Oregon PB150 PowerBuoy's steel structure has been completed, and testing of the advanced power take-off and control system is in progress at OPT's production facility in a test environment simulating the varying wave conditions that exist off the Oregon coast. Assembly, systems integration, and land testing of the PowerBuoy is planned to occur over the next several months. It is intended to be the first of a proposed 10-buoy wave power station with a peak generating capacity of 1.5MW, equivalent to the power needs of about 1,500 homes.

For more information, visit www.oceanpowertechnologies.com.



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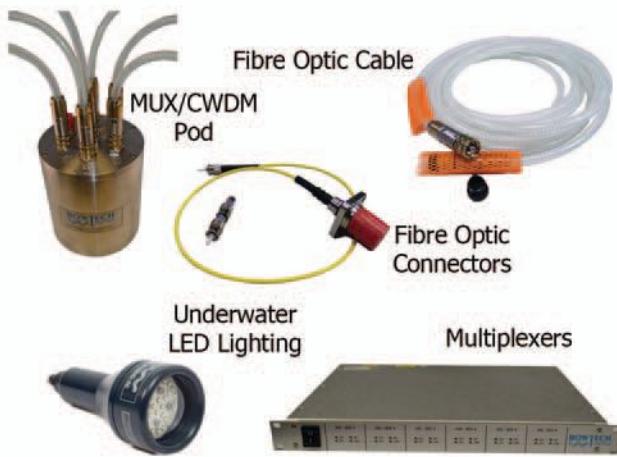
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Challenges and Promise of Ocean Thermal Energy Conversion

By Duke Hartman, Makai Ocean Engineering, Inc.

Overview

Ocean Thermal Energy Conversion (OTEC) is a process that generates electricity using temperature differences that naturally occur in the ocean. The surface of the tropical ocean captures and stores solar thermal energy in its upper layers 24/7, year-round, that can be converted to electricity using a power cycle. An offshore floating OTEC plant pumps deep cold seawater and warm surface seawater through heat exchangers to boil a refrigerant that drives a turbine to generate electricity. Rising electricity costs, increased concerns for global warming, and a political commitment to energy security have made OTEC attractive in tropical regions where a high percentage of electricity production is oil based. OTEC power plants operating a few miles from the coast could furnish baseload electrical power at a predictable cost with no significant air pollution. OTEC is an environmentally sustainable option with large, stable power producing potential. OTEC has two unique advantages over most renewables:

1. OTEC is firm or baseload power, meaning power is delivered 24/7.
2. OTEC is offshore, and does not compete for land, food, or freshwater.

Challenges

Virtually all the components required to build an OTEC plant have been in use in different industrial applications for decades or more. The challenge to OTEC is not whether building an OTEC plant is possible, but whether it can be built economically. An intensive engineering effort has been underway since 2007 to address this question by reducing costs and improving plant efficiencies as much as possible to make a utility sized system economically viable.

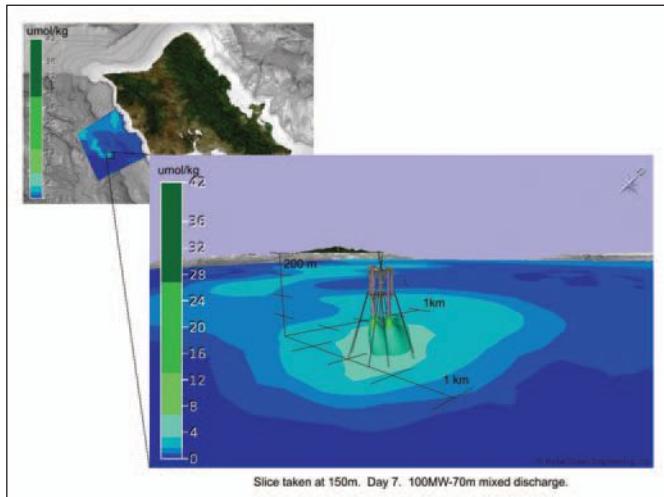
To retire final technical risk and demonstrate overall performance, a significant size pilot plant in the 2.5MW to 10MW range will be necessary before commercial sized plants can be built. Because OTEC exhibits economies of scale, the pilot plant would not pay for itself in electricity revenue. Long-term investment with an eye toward a massive industry is needed.

Current Work

Risk and cost reductions are a priority on every level of an OTEC design. Since 2007, engineers at Makai Ocean Engineering have been involved in risk and cost reduction work in the following areas of OTEC: discharge-plume modeling, cold water pipe fabrication and handling, heat exchanger corrosion and performance design and testing, and design of a low-cost offshore pilot plant. These studies have been supported by the US Navy (ONR and NavFac), DOE, CEROS (DARPA), and Lockheed Martin.

Hydrodynamic and biological discharge-plume modeling

Because a commercial OTEC plant has not yet operated, it is prudent and responsible for developers to study its effects on the environment to ensure that they will be benign. Meeting regulatory requirements will be a critical part in the development of a commercial OTEC industry.

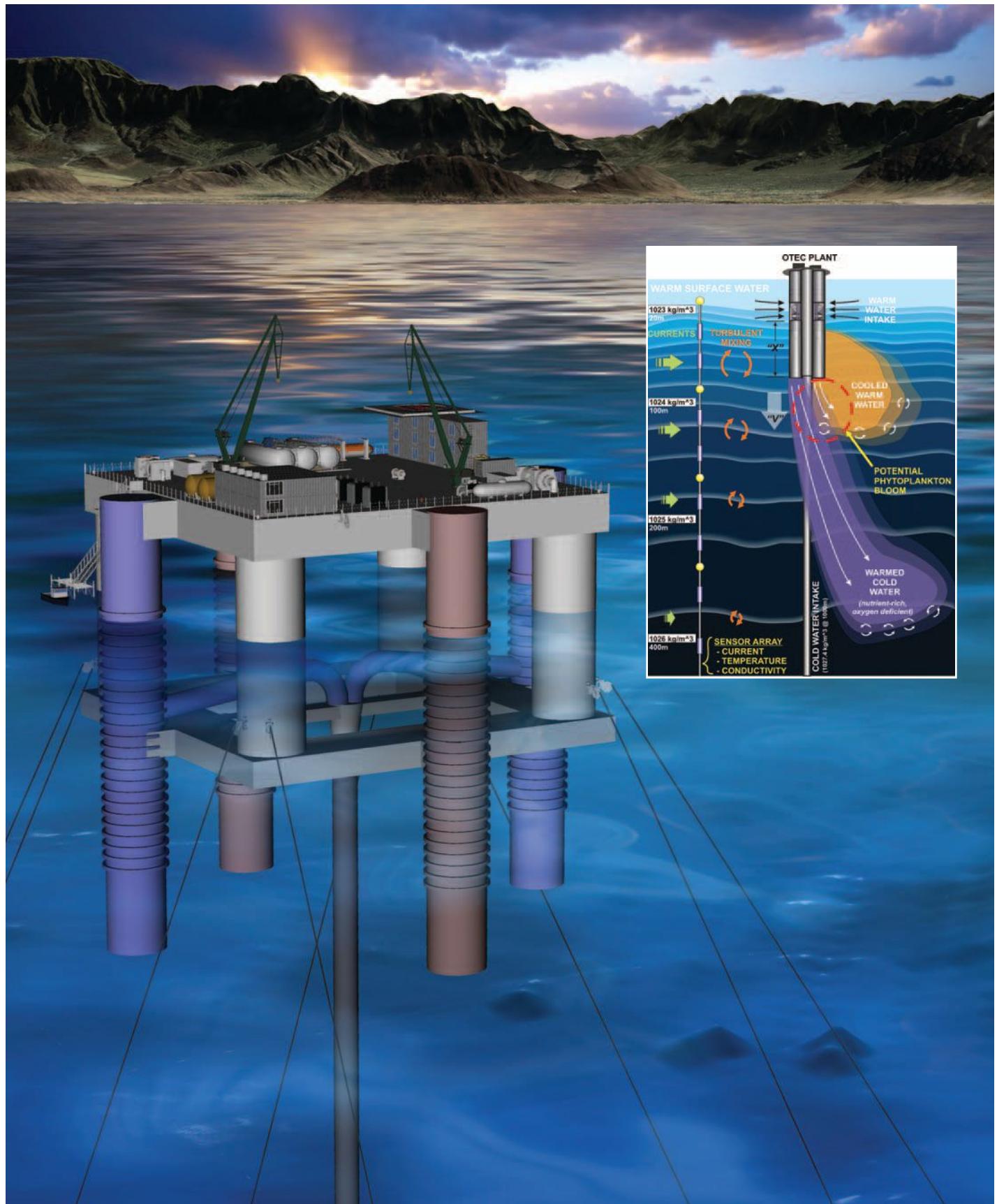


A plan view of a 100MW OTEC plant at the planned location off the southwest coast of Oahu, Hawaii (background image) and a close-up view of a slice taken of the plume volumetric data for the nitrate concentration in mol/kg taken at 150m depth (foreground image)

A numerical hydrodynamic model was recently completed to study these effects by simulating the large discharges of OTEC plants in the ocean environment. The goal of the model was to answer the following questions: Can one or more OTEC plants be operated without affecting the local environment by disturbing local temperatures and nutrients? Can an OTEC plant be operated without cooling its own thermal resource or a neighboring plant's resource? The deep water has nutrient levels nearly 40 times the surface water levels. What configuration of discharge depth, velocity, or pre-discharge mixing will protect the thermal resource and adequately dilute the nutrient and temperature concentrations? OTEC is a capital intensive process, and cost reduction is a primary goal of OTEC plant design. Every configuration change has an associated cost. How can the plant be economically configured while achieving sustainable operations? What are the effects of realistic variable currents, eddies, and seasonal changes?

The 3D hydrodynamic model is based on the EPA-approved Environmental Fluid Dynamics Code and receives realistic oceanographic currents and density data supplied by the Hawaii Regional Ocean Modeling System. Dynamically coupled finite-

Ocean Thermal Energy Conversion



element, jet-plume models simulate the entrainment and turbulent mixing of large OTEC plumes. To give an idea of the scale of these plumes, a 100MW OTEC plant is projected to have flow rates on the order of $740\text{m}^3/\text{s}$ (12 million gpm) total flow, with $320\text{m}^3/\text{s}$ (5.1 million gpm) cold water and $420\text{m}^3/\text{s}$ (6.7 million gpm) warm water.

Nitrate is an important nutrient in marine biological growth, thus monitoring the impact of an OTEC plant on the ocean's nitrate distribution is important. Results from this study suggest that, with proper design, the nitrate concentration perturbations will remain within the natural variations of the ocean. The model is also being adapted to simulate any increased biochemical productivity that may occur because of the nutrient-rich discharges.

Cold water pipe fabrication and handling

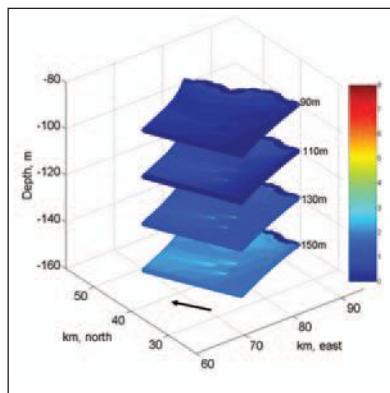
The long cold water pipe is considered a relatively high-risk component. Because of the large flows involved in a 100 MW OTEC plant, a large 10m diameter pipe is required for the cold water intake from a depth of 1,000m (3,300-ft.). This pipe would be the first of its kind in the world, and must be able to accommodate the dynamic motions of the platform as well as currents.

Advances in high-strength composites and fabrication techniques have greatly improved the strength of cold water pipe designs. The primary innovative design being developed by Lockheed Martin is a fiberglass reinforced pipeline that would be fabricated onboard the offshore floating platform at sea. Makai has developed for Lockheed Martin under a contract with NavFac a pipe handling apparatus that lowers the pipe safely into the ocean from the platform as new sections are fabricated on deck. A 1/20th scale model of the pipe handling apparatus was built and tested, validating the concept.

Heat exchanger corrosion, performance studies

Heat exchanger cost reduction is critical to successful commercialization of OTEC power plants because they are the single most expensive OTEC component and the primary cost driver. Heat exchangers within a 100MW OTEC power plant would be comparable to the size of a 6.1m tall (20-ft), 970m^2 (10,000 square foot) building. Heat exchanger cost reduction is three-fold: reducing capital cost, extending useful life, and improving performance.

Small changes in heat exchanger performance and failure from corrosion or fouling would have significant economic consequences. For OTEC and other low ΔT applications, the heat exchangers should maximize heat transfer per unit area while minimizing pressure losses, corrosion, biofouling, and the cost of materials. Heat exchanger units being developed and prototyped are geared toward application in ocean renewable energy, but have applications in once-through cooling for steam condensers and other maritime applications.



Average nitrate concentrations in mol/liter at 90 m, 110 m, 130 m and 150 m depth from three 100MW OTEC plants spaced 3 km apart using ocean data from February-March 2008.

In terms of materials, titanium is an industry standard for heat exchangers in marine applications, but the large OTEC demand presents problems with cost and availability. Aluminum alloy heat exchangers are a possible lower-cost solution, but will require mitigation of corrosion mechanisms for long-term seawater service. Various joining methods of these alloys, as well as various surface conditions, are being studied.

Primary OTEC heat exchanger testing is conducted at a land-based OTEC demonstration plant and heat exchanger test facility built by Makai earlier this year at the Natural Energy Laboratory of Hawaii Authority (NELHA), a state-owned business technology park located on the Big Island of Hawaii. NELHA is the only industrial park in the world that is specifically designed to provide the infrastructure to immediately and economically support such a test program, with ready access to deep and surface seawater as well as the necessary drainage facilities and utilities. The deep seawater is obtained via a 620m deep, 1.02m diameter intake pipeline, or a 914m deep, 1.40m diameter intake pipeline. NELHA can furnish a total of $2.51\text{m}^3/\text{s}$ (40,000 gpm) cold seawater, with corresponding warm water flows.

The facility houses a nearly-complete OTEC system for demonstration and component testing purposes. This facility will allow engineers to demonstrate the actual thermodynamic performance, life expectancy, and cost of a variety of these huge heat exchangers in a cost-effective manner. The next planned step is to install a turbine at the facility to complete the OTEC cycle and produce power that would be connected to the local electrical grid.



A 1/20th scale model of a cold water pipe handling apparatus was built and tested in Hawaii



Primary OTEC heat exchanger testing is done at the OTEC demonstration plant at the Natural Energy Lab of Hawaii Authority (NELHA) in Kona, Hawaii

"Makai" is a Hawaiian word meaning "toward the sea." Makai Ocean Engineering, Inc., established in 1973, provides ocean engineering services worldwide, specializing in submarine cable software, visualization software, OTEC, and marine pipelines. For more information, visit www.makai.com.

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URS gets U.S. Navy contract

URS Corporation has been awarded a contract by the U.S. Navy to provide engineering and technical support dealing with electromagnetic environmental effects (E3) to the Naval Surface Warfare Center in Dahlgren, Virginia. Under the terms of the contract, URS will support engineering requirements to E3 challenges experienced by a variety of sea, air, and land platforms across the Department of Defense. Services provided include electromagnetic compatibility engineering, and test & evaluation, integration, electromagnetic vulnerability assessments.

U.S. Navy to commission new destroyer Spruance

The U.S. Navy commissioned the newest Arleigh Burke class guided-missile destroyer, Spruance, 1 October 2011, at Naval Air Station Key West, Florida. Designated DDG 111, the new destroyer honors legendary Adm. Raymond Spruance, whose calm and decisive leadership at the Battle of Midway contributed to a pivotal American victory during World War II. Vice Chief of Naval Operations Adm. Mark E. Ferguson III will deliver the ceremony's principal address. Ellen Spruance Holscher, granddaughter of the ship's namesake will serve as the sponsor. The ceremony will be highlighted by a time-honored Navy tradition when she gives the first order to "man our ship and bring her to life!" The restart of the U.S. Navy's DDG 51 Arleigh Burke destroyer building program swung in to a higher gear 26 September with the award of two construction contracts and an option for a third. The newest Arleigh Burke-class destroyer, the Spruance, will be commissioned 1 October at Key West, Fla. Two more ships of the class were ordered 26 September along with an option for another.

First Turkish-built warship joins Navy's fleet

Turkey's first warship built by a local shipyard, a corvette, entered Turkish Navy service 27 September, and a second corvette of the same class was put to sea during a televised ceremony in Istanbul. The moves come amid rising tensions with former ally Israel in the eastern Mediterranean. The Heybeliada, the first corvette built in Turkey, and the Buyukada are the first two ships of Turkey's \$3 billion MILGEM (National Ship) program. The program calls for design, development, outfitting, integration, and construction of 12 patrol and anti-submarine warships, four of them optional. These ships have been designed with the eventual objective of export to allied and friendly countries.

Russia's Typhoon submarines to be scrapped

The world's largest ballistic missile submarines of Project 941 Akula (Shark), known as Typhoon, will be decommissioned before 2014 and used for scrap metal, a source at Russia's Defense Ministry announced. All three operating submarines of the project — Arkhangelsk, Severstal, and Dmitry Donskoi — will thus be destroyed. The Dmitry Donskoi cruiser was previously used as the base for launching Russia's new Bulava ballistic missile. Specialists of Sevmash Enterprise (the maker of the subs) said that it could be possible to redesign the submarines to use them as undersea gas tankers or all-season marine freight vessels. However, cost for this work would be unreasonably high.

US Seismic Systems demonstrates fiber optic intruder detection system for harbor protection

U.S. Seismic Systems (USSI), a subsidiary company of Acorn Energy, Inc., announced it successfully completed a demonstration of its underwater harbor security system this month at a Lake Erie, Pennsylvania, test site under a contract with Penn State's Electro Optic Center sponsored by the Naval Surface Warfare Center (NSWC), Crane, Indiana. USSI had installed two fiber optic sonar arrays on the lake bottom to detect small craft attempting to enter a protected region of interest (ROI).

The USSI system positively detected 100% of the intrusion attempts at ranges up to 4km. USSI's equipment was part of a much larger integrated harbor security system called Harbor Sentinel, which included surface search radar, thermal imaging cameras and Automated Identification System (AIS) ship tracking information. The USSI system demonstrated the feasibility of using a very low cost fiber optic underwater sonar array to provide automated tripwire and ROI alarms in a harbor environment without operator intervention. In May, USSI achieved similar results during testing of the system in San Diego's Mission Bay.

USSI, formerly US Sensor Systems Inc., designs, integrates, manufactures, and sells fiber optic sensing systems and solutions for the Energy and Defense markets. USSI utilizes all-optical fiber sensing technology for its state-of-the-art sensors. USSI's proprietary optical fiber and electronics combine to form the sensor system. It is designed to replace the legacy electronic-based sensor systems at a lower cost and with improved performance and reliability.

For more information, visit the USSI website at www.ussensorsystems.com.

Unmanned maritime systems maturing from big problems to big opportunities

The world's unmanned maritime systems market is evolving rapidly under the combined impact of changing maritime threats as well as changing economic, operational, and technological advances, creating a wealth of opportunities.

To provide insight into this growing multi-billion dollar market, Market Intel Group LLC (MiG) is launching a new, comprehensive market and technology forecast titled "Unmanned Maritime Systems - Defense & Security UUV & USV - Markets, Technologies & Opportunities Outlook - 2012-2020."

This analysis-based, 530-page research effort, with its wealth of figures (292) and tables (223), examines, analyses, and predicts the evolution of USVs and UUVs for defense, security and anti-piracy missions. The twin-scenario report provides executives and strategists; business development managers; policy developers; vendors; users; program managers; and sales, marketing, and acquisition managers a focused, reasoned, and actionable analysis covering these subjects:

- Current / Future Markets
- Current / Future Technologies
- Current / Future Uses
- Current Vendors & Platforms
- Mine Counter-Measures
- Anti-Submarine Warfare
- Port and Harbor Security
- Counter-Terrorism
- Counter-Piracy
- UUV/AUV/USV

Furthermore, the report includes 50 detailed and reasoned business opportunities for equipment, sub-systems, sensors, and services providers — ideas that can help establish, maintain, and increase market competitiveness as well as leverage existing or potential capabilities into new markets.

The report's lead analyst, Mr. Antoine Martin, combines experience in systems and ocean engineering with business development to help companies take the necessary steps to successfully compete in the unmanned systems market.

MiG's unique after-sale assistance policy gives customers free access to the report's lead analyst, to maximize their return on investment and ensure optimal use of the report.

For more information, visit www.MarketIntelGroup.com.

Former NAVSEA Commander Vice Adm. Sullivan joins Gibbs & Cox

Gibbs & Cox, the premier naval architecture and marine engineering firm, today announced Vice Admiral Paul Sullivan, USN (Retired) has been unanimously elected to the firm's Board of Directors. The Board believes his extensive naval command, marine engineering and government

services experience will prove invaluable to Gibbs & Cox's goal of expanding its role as a maritime thought leader, meeting the increasingly complex demands in naval architecture, ship design, systems integration and program management.

Navy christens first JHSV

The U.S. Navy christened the Joint High Speed Vessel (JHSV) *Spearhead* on 17 September 2011, at a ceremony at Austal's U.S. shipyard in Mobile, Alabama. Construction of *Spearhead* commenced at Austal USA in July 2010.

As a world leader in the design and construction of customized aluminum and defense vessels, Austal USA is based in Mobile, Alabama, a city with a long history of shipbuilding.

The 103m aluminum catamaran, *Spearhead*, is the first of its class under construction at Austal USA. *Spearhead* and the nine other JHSVs under contract are ideal for fast, intra-theater transportation of troops, military vehicles, supplies, and equipment. They are capable of transporting 600 short tons, 1,200 nautical miles at an average speed of 35 knots and can operate in shallow-draft ports and waterways, providing U.S. forces added mobility and flexibility. The JHSVs also

have an aviation flight deck to support day and night air vehicle launch and recovery operations. JHSVs have berthing space for up to 146 personnel and airline-style seating for up to 312.

Military commanders will have the flexibility to use the JHSV in a variety of roles to include supporting overseas contingency operations, conducting humanitarian assistance and disaster relief, supporting special operations forces and supporting emerging joint sea-basing concepts.

Upon delivery to the U.S. Navy's Military Sealift Command (MSC), *Spearhead* will be designated as a United States Naval Ship (USNS), and will have a core crew of 21 civilian mariners who will operate and navigate the ships. The first four JHSVs — including *Spearhead* — will be crewed by federally employed civil service mariners, and the remaining six will be crewed by civilian contract mariners working for private shipping companies under contract to MSC. Military mission personnel will embark as required by the mission sponsors.

Austal USA is also in the midst of a US\$160 million facility expansion and plans to nearly double its workforce to complete an estimated US\$5.2 billion in contracts with the U.S. Navy.

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Alpine Expands Its Portfolio of Marine Environmental Data Collection Services

Alpine Ocean Seismic Survey provides marine surveying and data collection services, including geophysical, hydrographic, oceanographic, geotechnical, environmental, and positioning services for offshore, coastal, inshore, and inland marine and freshwater projects. Founded in 1957 and now part of the Gardline Marine Sciences Group, Alpine has completed thousands of projects for public and private sector clients all over the world. With a variety of research vessels and professional services, the company delivers turn-key data collection for a wide range of industry sectors, including offshore renewable energy, civil engineering, shoreline protection, submarine pipeline and cable, and oil and natural gas.

Alpine has expanded its portfolio of environmental data collection services with the addition of a new suite of underwater video camera and sediment sampling technologies. Strengthening its status as a premier provider of geophysical, hydrographic, oceanographic, geotechnical, environmental, and positioning services, Alpine's expanded offerings now allow clients to take advantage of the latest environmental data collection technology on the market.

"With our team now handling everything from geophysical mapping to environmental data collection, we offer one-stop, turn-key services throughout North America and beyond," says Robert Mecarini, president of Alpine. As part of the UK-based Gardline Marine Sciences Group, Alpine can now leverage both its own record compiled over more than 50 years in the offshore survey industry and Gardline's extensive resources and innovative technologies.

Superior Data-Collection Capabilities for Environmental Projects

Alpine's data collection services apply to the entire offshore project lifecycle, from pre-consenting baseline characterization and impact assessment, through regular monitoring and post-construction surveying. Its market approach also makes Alpine an ideal partner for environmental consulting firms by complementing their offerings and/or supplementing their existing data collection capacity for services such as the following:

- Environmental baseline surveys;
- Post-development surveys;
- Habitat mapping;
- Benthic surveys;
- Deepwater surveys.

As part of the expansion of its environmental services, Alpine is introducing to the U.S. market a suite of innovative underwater



camera systems that offers an impressive array of configurations and deployment options in a cost-efficient package. Developed by Gardline, the cameras can record real-time video footage of the seabed as well as capturing digital stills on demand or at preset intervals. They offer options for shallow (0-250m) and deepwater (0 to 3,000m) operation, and can accommodate auxiliary sensors, including high-definition video cameras, CTDs, fluorometers, altimeters, laser scale bars, and profiling/imaging sonars.

A key component in the suite is Gardline's innovative freshwater lens camera, whose specially designed lens enables images to be collected in highly turbid environments where traditional underwater video and photography would be ineffective. This system allows scientists to overcome the challenges associated with high concentrations of suspended particulate matter, while still enabling relatively unintrusive sampling and habitat mapping.

"We've designed the camera with a distilled water lens, dedicated flash, and adjustable lighting to optimize results dependent on the level of turbidity," says Jon Spink, environmental scientist with Alpine. "With projects in shallow waters, there's often poor visibility due to suspended solids; but, our camera system's lens creates the clarity needed to capture seabed images in these environments without reducing the visual footprint."

Alpine is also introducing a suite of highly effective environmental grab samplers that are widely deployed in European markets but are not yet commonly used in the U.S. The grabs have been designed to gather high-quality samples across the range of nearshore and offshore marine environments. The samplers include the following:

- The Multicorer – the premier sampler for truly undisturbed environmental sediment core recovery. Gardline is one of the few companies in the world with experience using these units.
- A modified 0.25m² USNEL box corer for deepwater surveys.

Although Alpine's scientists can work from a variety of vessels, its clients can now benefit from its newly commissioned state-of-the-art research vessel, the *Shearwater*, which provides an ideal platform for offshore environmental data collection. This highly maneuverable 110-ft. twin hull survey platform has an azimuth thruster propulsion system, allowing it to conduct most sampling operations without the need to anchor. The vessel also features a laboratory with on board data processing capabilities, two equipment moon pools, a two-ton stern hydraulic A-frame, a five-ton starboard fixed A-frame, and a 14-ton (two-ton at 38-ft. extension) crane.

For more information, visit www.alpineocean.com.

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Expandable, Adaptable, Portable

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- Once the mission(s) are completed, the OCB can be moved to a new location. The OCB is particularly suited to remote areas or areas located far offshore.
- Suited both for long-term and short-term projects

Cost Effective

- The OCB represents a proven network module that has been designed, constructed and tested, eliminating upstart time and cost
- Each OCB module is expandable and can be configured to accommodate large or small applications at a predictable cost
- Networks that will ultimately be cabled to shore may be deployed and operated via the OceanNET satellite telemetry system while cable routes are still being negotiated



Typical Projects Served by the OCB

- Oil & gas exploration and site assessment
- Equipment, pipeline, reservoir monitoring activities
- Scientific ocean observing systems
- Tsunami and seismic warning systems
- Pipeline and infrastructure security monitoring

Finally, an End-to-End Service Provider

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OFFSHORE INDUSTRY

Subsea vessel demand to grow 52% to 2015: Douglas-Westwood

The demand for subsea vessel operations is set to grow by 52%, totaling \$72 billion between 2011 and 2015, according to a recent Douglas-Westwood report.

The World Subsea Vessel Operations Market 2011-2015 also says project timetables are accelerating, project capital expenditures are increasing, and global demand for subsea vessels is expected to exceed 310,000 days over the period, an increase of 28% on the previous five years.

Spending over the period is expected to rise from \$11.2 billion this year to \$19 billion in 2015, the report predicts. It includes vessels used for subsea field development and construction, inspection-repair-maintenance, well intervention, and well plugging and abandonment activity.

Offshore drilling could help add 1 million jobs: Wood Mackenzie

The United States could create more than 1 million jobs by 2030 by expanding offshore drilling, limiting federal regulation of shale gas development, and quickly approving a Canadian oil sands pipeline, according to a study commissioned by an oil industry group.

However, The study's bottom line would depend on some major policy shifts by President Barack Obama and Congress.

The study was conducted by consulting firm Wood Mackenzie and paid for by the American Petroleum Institute; the findings were released in September. The consultants found that 1.4 million new jobs could be created through more oil and natural gas development.

"Our new Wood Mac analysis is what our industry has to offer: jobs, increased federal revenue, and economic and energy security. Our industry has long been a leader in these areas, but what we are here to say is we can do even more," API head Jack Gerard said.

Transocean launches \$2.2B bid for Norway's Aker Drilling

Transocean reached a \$2.23 billion agreement to buy Norway's Aker Drilling in a deal that carries a hefty premium of nearly 100%. The acquisition reflects Transocean's confidence in the oil explo-

ration market despite economic turbulence. Switzerland-based Transocean, the world's largest offshore driller, said the deal will contribute \$1 billion in backlog and immediately add to its bottom line. The deal will be financed with existing cash and debt facilities, the company said.

"Aker Drilling is an excellent strategic fit for Transocean," said Steven Newman, Transocean's chief executive officer, said in a statement. "It allows us to enhance our position in Norway where we have enjoyed a long-term presence and excellent customer relationships."

Based in Stavanger, Aker Drilling owns and operates two of the world's largest and most advanced sixth-generation semi-submersible drilling units. The company is also building a pair of ultra-deepwater drillships in South Korea.

Final report on Macondo well blowout faults BP, contractors

The final federal report on last year's blowout of BP's Macondo well, which killed 11 workers and eventually leaked 4.9 million barrels of oil into the Gulf of Mexico, faults the British energy giant and Deepwater Horizon rig owner Transocean Ltd. and Halliburton, which performed the concrete job on the well.

"The loss of life at the Macondo site ... and the subsequent pollution of the Gulf of Mexico through the summer of 2010 were the result of poor risk management, last-minute changes to plans, failure to observe and respond to critical indicators, inadequate well-control response, and insufficient emergency bridge response training by companies and individuals responsible for drilling at the Macondo well and for the operation of the Deepwater Horizon," the report stated.

The report includes tough language about BP, noting for instance that 'cost or time saving decisions without considering contingencies and mitigation were contributing causes of the Macondo blowout.' The Interior Department-U.S. Coast Guard report followed almost a year's worth of hearings.

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U.S. schedules first offshore oil and gas lease sale since Gulf spill

The federal government will offer tens of millions of acres in the western Gulf of Mexico for oil and gas drilling for the first time since last year's Deepwater Horizon explosion and massive oil spill. The lease sale is the first since the April 2010 spill, which led to an overhaul of the offshore drilling agency and safety regulations.

The proposed Western Gulf of Mexico Lease Sale 218 is scheduled to be held in New Orleans, Louisiana., on 14 December 2011. The sale will include all available unleased areas in the Western Gulf Planning Area offshore Texas.

The DOI said it would charge a minimum of \$100 per acre for the right to explore in deeper waters of 1,312-ft. and greater to ensure that tracts are drilled. The previous minimum was \$37.50.

"This change is based on a rigorous historical analysis of the last 15 years of lease sales in the Gulf of Mexico. The analysis, adjusted for energy prices at time of each sale, demonstrates that leases that received high bids of less than \$100 per acre have experienced virtually no exploration and development activities," BOEMRE contends.

The proposed lease sale encompasses about 3,900 un-leased blocks covering approximately 20.6 million acres. The blocks are located from nine to about 250 miles offshore, in water depths ranging from 16 ft. to more than 10,975 ft.

BOEMRE estimates the proposed lease sale could result in the production of 222 to 423 mbbl and 1.49 to 2.65 tcf of natural gas.

Lease Sale 218 is the last remaining Western Gulf Planning Area sale scheduled in the 2007 – 2012 Outer Continental Shelf Oil and Natural Gas Leasing Program.

National oil companies dominate global offshore oil, gas discoveries

There were 543 global offshore oil and gas discoveries during 2007-2010, according to GlobalData. Among these, the top 10 global offshore oil and gas companies contributed 248 (46%). Two national oil companies (NOCs), Petrobras of Brazil and Statoil of Norway, have together contributed to around 21% to the total global offshore oil and gas discoveries.

Latin America and Africa have become attractive investment destinations globally for oil and gas due to major offshore discoveries with huge amounts of reserves. "The offshore oil and gas discoveries made in these regions have abundant proved reserves with high production potential," GlobalData said.

During 2007-2010, 82 offshore oil and gas discoveries were made in Africa and 111 in Latin America. Asia-Pacific and Europe occupy the top positions in the number of offshore oil and gas discoveries made during this period, but Latin America and Africa "have seen giant offshore oil and gas discoveries that have much bigger reserves," GlobalData said, adding that the number of discoveries in Latin America and Africa has remained more or less consistent, showing considerable increase over the past years.

BP CEO: close to \$10B paid into U.S. Gulf of Mexico oil spill fund

BP plc had paid nearly \$10 billion into a compensation fund by mid-September to meet claims stemming from last year's Deepwater Horizon accident and subsequent oil spill in the Gulf of Mexico, the UK oil major's chief executive said.

"By mid-year, \$8.6 billion had been paid into the (Gulf Coast Claims Facility) trust fund. In fact, that total is now close to \$10 billion," Robert Dudley, BP's chief executive officer, reportedly said in a speech delivered in New York.

However, while BP beefed up the spill fund, the company had actually paid out about \$5 billion to 204,434 victims, according to fund administrator Kenneth Feinberg. So far, 947,892 claims have been filed from all 50 U.S. states and residents of 36 countries. Nearly all of the successful claimants come from four states: Florida, Louisiana, Alabama, and Mississippi. In addition to the \$5 billion paid to claimants, the fund has spent another \$1.7 billion on cleanup efforts, government claims, and other expenses.

In the wake of the Deepwater Horizon oil spill, BP agreed to fund the Gulf Coast Claims Facility to the tune of \$20 billion



Deepwater Horizon on fire in U.S. Gulf

to pay for clean-up costs and compensate businesses and individuals whose livelihoods were in jeopardy. In the summer of 2010, the massive spill wrought major damage in the region's economy, which is highly dependent on the oil industry, fishing, and tourism.

That \$20 billion figure, however, is "not a cap, and it's not a minimum," a BP officer said during a July conference call with investors.

Alaska plans to delay state oil and gas lease sale until December

The state of Alaska plans to delay an oil and natural gas lease sale to December from late October to add land for exploration and increase promotion of the sale, Natural Resources Commissioner Dan Sullivan said.

"We haven't given a definitive date yet, but it will probably be at the beginning of December," Sullivan said in an interview with Bloomberg. "We have the potential to gain back some more leases that either have expired or have come out of litigation, and we want to be able to get as many leases into that lease sale as possible."

The sale of 14.7 million acres in the Beaufort Sea, on the North Slope, and in the North Slope foothills was scheduled for 26 October.

Technip to acquire 100% of Global Industries for around \$1.073B

Technip and Global Industries have entered into a definitive merger agreement whereby Technip will pay \$8 per Global Industries share, valuing Global Industries at \$1.073 billion, including approximately \$136 million of net debt. The deal reinforces Technip's leadership in the fast-growing subsea segment of oil services. The board of directors of Global Industries unanimously approved the transaction.

The transaction price represents a 55% premium to Global Industries' share closing price on 9 September 2011, the last day prior to announcement of the transaction. The transaction, expected to

close early in 2012, is to be financed using existing cash balances and credit facilities.

Global Industries brings to Technip its complementary subsea know-how, assets, and experience, comprising 2,300 employees operating 14 vessels, including notably two newly-built leading edge S-Lay vessels as well as strong positions in the Gulf of Mexico (U.S. and Mexican waters), Asia-Pacific, and the Middle East.

Strong revenue synergies are expected, expanding Technip's addressable market by around 30% in deep-to-shore subsea infrastructure. Cost synergies are estimated to be at least \$30 million.

E&P leads all oil and gas sectors in merger and acquisitions activity

The upstream merger and acquisitions market continued to be the segment with the most transaction activity in the first half of 2011, although some falloff took place in May and June, Deloitte LLP said in its midyear Oil & Gas Mergers and Acquisitions report.

Overall deal count in the exploration and production (E&P) segment was 149 during the first six months of 2011, compared to 164 deals during the first six months of 2010. The value of the transactions fell sharply, however, by 33.4% from \$80.5 billion in the first half of 2010 to \$53.6 billion in the first half of 2011. The falloff in the value was particularly pronounced due to several large international asset and corporate deals that occurred last year, Deloitte said.

Deal activity for the first half of 2011 remained concentrated in the North American market, specifically onshore, in domestic exploration and production, with U.S. shale plays still attracting lots of deal activity and interest. A significant factor driving the transaction market in domestic E&P activity has been the prolonged weakness in natural gas prices, Deloitte said, noting that depressed prices are causing difficulties for small and mid-sized producers, which in turn can create enticing opportunities for major oil companies with deep pockets and a long-term time horizon.

Offshore, deepwater continued to be the focus of activity for the supermajor oil companies throughout the world. "Deepwater is the next E&P frontier," Deloitte said. "We will continue to see transaction activity in this area in the form of joint ventures and partnerships."

As with the onshore unconventional assets, deepwater E&P favors larger companies with the deeper pockets, better access to technological experience, and the longest-term time horizon.

Buccaneer secures jack-up rig for operations in Alaska's Cook Inlet

Buccaneer Energy subsidiary Kenai Offshore Ventures, LLC (KOV) has executed a binding purchase agreement with Transocean Offshore Resources Ltd., a subsidiary of Switzerland-based Transocean Ltd., to acquire the GSF Adriatic XI jack-up rig for work in Alaska's Cook Inlet.

Settlement of the purchase was scheduled to take place between 30 September and 25 October 2011. Upon settlement, the rig will immediately be transported to an Asian-based shipyard to undergo modifications to enable operations in the Cook Inlet. K OV was in the process of finalizing modification and mobilization budgets. Offshore drilling in Cook Inlet is expected to commence in early 2012. K OV anticipates that the total budget to acquire, modify and mobilize the rig to Cook Inlet will be about \$86.5 million. The rig will be capable of operating in water depths of 300 ft.

Buccaneer anticipates contracting day-to-day operation of the rig out to an established rig operator. Senior members of Buccaneer's existing management team are said to have direct jack-up rig operating experience.

The GSF Adriatic XI is a Marathon LeTourneau 116-C jack-up. It was first constructed in 1982 and upgraded in 2004. The rig has been cold-stacked in Malaysia since September 2009 due to a lack of drilling commitments. K OV and its advisors have already completed two inspections of the rig while cold stacked and consider the rig to be in good condition.



The GSF Adriatic XI jack-up rig

Buccaneer will have the first right of refusal with K OV to use the rig until 31 December 2014, and Buccaneer will commit to drill a minimum of four wells in the Cook Inlet using the rig. The first well to be drilled by the Adriatic XI will be located on Buccaneer's 100%-owned Southern Cross project where Netherland, Sewell & Associates have estimated proven and probable (2P) Reserve of 12.7 mmbboe and additional P50 resource of 14.7 mmbboe.

The Southern Cross project is in approximately 50 ft. of water with no unusual technical hurdles to drill and develop, Buccaneer said, noting that Southern Cross is within five miles of four significant oil and gas fields.

Buccaneer Energy owns a 50% direct interest in K OV with its 50% joint venture partner being Singaporean-based Ezion Holdings Ltd., with each funding an equal 50% of the required \$6.85 million deposit.

The Pipe-Pulse technology is a remote, non-intrusive method of locating and removing blockages in long distance pipework and is designed to be connected to the topsides of the host platform either through the pig launcher or the umbilical termination unit to remove the blockages.

The unit releases high energy and volume pressure pulses into the pipeline or subsea umbilical, which helps remove blockages several miles away.

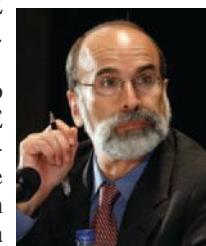
BOEMRE implements web tools to help operators with applications

BOEMRE said the bureau has developed and implemented several new tools to help offshore oil and gas operators improve their exploration and development plan and permit applications. These tools will allow offshore operators to better track their submissions and improve the quality and completeness of their applications, which will decrease processing delays, BOEMRE believes.

"Our goal is to reduce the amount of back and forth with plan and permit applications and to help the industry learn from the best practices that many operators have developed to submit successful applications," BOEMRE Director Michael R. Bromwich said.

With respect to permits, BOEMRE has added a new feature to its online application system (eWells), which allows authorized users to track the status of permit applications. This allows operators to follow where their application is in the processing system. This increases transparency and provides greater predictability for operators.

With respect to plans, BOEMRE has announced a new online resource to help operators improve the accuracy of their exploration plan (EP) and development operation coordination document (DOCD) submissions. The website offers fact sheets and documents to assist offshore operators in submitting complete applications, which will decrease processing delays. Guidance includes a fact sheet that offers information on how operators can submit stronger applications, frequently asked questions on the specific elements of a successful submission, and a new EP/DOCD checklist that can be used to ensure the inclusion of needed information in an operator's application.



Michael Bromwich

Demand said to be strengthening for ultra-deepwater drilling rigs

The supply of ultra-deepwater drilling rigs up to 7,500 ft. water depth continues to grow, with the number of newbuild orders placed since last October increasing to 37, according to Seadrill.

However, due to high demand, uncontracted ultra-deepwater newbuilds are being absorbed by oil companies prior to delivery from the yards. This, Seadrill said, has cut the number of ultra deepwater rigs available over the next 12 months from 18 rigs in the 2010 fourth quarter to around eight rigs currently available.

Seadrill expects that newbuilds ordered on speculation will continue to be absorbed into the market with no significant impact on utilization rates or day rates over the next couple of years.

Demand for ultra-deepwater rigs is particularly strong offshore Brazil, with opportunities also emerging of Nigeria,

Angola, Ghana, and Egypt. But drilling in the U.S. Gulf of Mexico remains hampered by the fall-out from the Macondo incident, Seadrill said, and continued regulatory uncertainty and the slow pace of permit approvals are discouraging oil companies from making long-term commitments in the area.

The company has also seen a strong pick-up in demand for premium jack-up rigs up to 350 ft. water depth, with increased tendering activity and climbing day rates in most regions. As a result, eight new jack-ups have been ordered, bringing the total number of newbuilds ordered since last October to about 48.

Paradigm uses new technology to boost North Sea production

Paradigm Flow Solutions has implemented a new technology, Pipe-Pulse, to increase production in a North Sea field by over 3,000 bbl/d.

KBR awarded contract for BP Quad 204 project
 KBR received a letter of award from Hyundai Heavy Industries Co. Ltd. to perform engineering design and procurement support services for the BP Quad 204 floating, production, storage, and offload (FPSO) project to be located west of Shetland Isles in UK waters. The Quad 204 FPSO will be designed to meet the strict safety and environmental regulations for harsh weather operations. KBR has been involved in the Quad 204 project since 2008, when work started on the select and define engineering of the FPSO. Services for the Quad 204 project will be provided through KBR's offices in Singapore and Jakarta, Indonesia. This award follows the recent announcement by BP and its co-venturers to progress with a major re-development of the Schiehallion and Loyal oil fields.

Technip gets contract for Mozambique LNG

Technip was awarded a contract by Anadarko Mozambique Area 1 Limitada (AMA1) for the pre-front-end engineering and design (pre-FEED) studies of a grassroots liquefied natural gas (LNG) facility in Northern Mozambique, near the Tanzanian border. If built, Mozambique LNG would be a world-scale production complex and one of the biggest industrial projects in East Africa. The onshore facility will be designed to receive, pre-treat, and liquefy lean gas from deepwater offshore fields to produce LNG in multiple trains. This contract covers the entire onshore site, including marine facilities, construction of temporary facilities, and permanent facilities.

NOV secures \$1.5B in equipment contracts

National Oilwell Varco has signed contracts worth \$1.5 billion to supply drilling equipment packages for seven drillships to Brazilian firm Estaleiro Atlântico. The company will supply drilling riser and pressure control equipment under what it says is its largest single order in its 150-year history. National Oilwell Varco chairman, president, and CEO Pete Miller said Brazil's deepwater discoveries of the past several years have made it a significant offshore market where the company expects to grow. 'We are pleased to have been selected as the drilling equipment supplier for this prominent project and excited to work with one of Brazil's premier shipyard companies,' Miller said.

SeaBird moves to meet 4C-3D seismic contract

The Oil and Natural Gas Corp. Ltd. (ONGC) of India has notified SeaBird Exploration plc of an award for a 4C-3D Seismic API Pilot Project in Mumbai High field offshore India. The data is to be used by ONGC for planning placement of two development wells from upcoming platforms by June 2012. The Hugin Explorer and Munin Explorer will mobilize from the Norwegian Sea to India upon completion of a current contract with ExxonMobil to begin deploying more than 2,300 ocean bottom nodes at intervals of 656 ft. for data acquisition. Acquisition will be in two swaths by rolling phases of 760 nodes each. The contract is valued at \$40 million, and the duration is estimated at 110 days.

BP discloses significant resource extension of Mad Dog field in Gulf of Mexico

Drilling results from a successful appraisal well in a previously untested northern segment of the Mad Dog field in the U.S. Gulf of Mexico confirmed a significant resource extension for the Mad Dog complex, which includes the existing field, in production since 2005, and appraisal drilling of the Mad Dog South field in 2008 and 2009, unit operator BP said. Pending confirmation through future appraisal drilling, the total hydrocarbons initially in place in the field complex are now estimated to be up to 4 Bboe, the company added.



Mad Dog platform

The well, drilled by partner BHP Billiton on behalf of the unit operator, is located on Green Canyon Block 738 about 140 mi. south of Grand Isle, Louisiana, in about 4,500 ft. of water. The well encountered about 166 net ft. of hydrocarbons in the objective Miocene hydrocarbon-bearing sands and discovered an oil column of more than 300 ft.

"With these additional hydrocarbon resources north of the main field, Mad Dog has been firmly established as a giant field in BP's Gulf of Mexico portfolio, rivaling Thunder Horse in size of resource," said Bob Dudley, BP group chief executive. Thunder Horse is the largest field ever discovered in the Gulf.

The Mad Dog Field started production in 2005 and uses a truss spar platform, equipped with facilities for simultaneous production and drilling operations. The facility is designed to process 80,000 bbl/d of oil and 60,000 ccf/d of gas.

Oil and gas is transported to existing shelf and onshore interconnections via the Mardi Gras Transportation System.

Chevron scores major discovery at Moccasin in U.S. Gulf

Chevron Corp. said it has a major new oil discovery at the Moccasin prospect in the deepwater U.S. Gulf of Mexico. The Keathley Canyon Block 736 Well No. 1 encountered more than 380 ft. of net pay in the Lower Tertiary Wilcox Sands, the company said. The well is located about 216 miles off the Louisiana coast in 6,759 ft. of water and was drilled to a depth of 31,545 ft.

"The Moccasin discovery underscores the importance of the deepwater Gulf of Mexico as a source of domestic energy for the United States and as a focus area for Chevron's worldwide exploration portfolio," said George Kirkland, vice chairman, Chevron Corp. 'Moccasin is an important addition to our queue of high-quality opportunities around the globe.'

Chevron began drilling the Moccasin well in March 2010. That activity was stopped in June 2010 when the U.S. government imposed a moratorium on deepwater drilling in the Gulf of Mexico because of the Deepwater Horizon disaster. Drilling resumed in March 2011 after the BOMERE approved Chevron's revised drilling permit application.

The well results are still being evaluated, and additional work will be needed to determine the extent of the resource, Chevron said. Chevron, with a 43.75% working interest in the prospect, was the operator of the Moccasin discovery well. Other Moccasin owners are BP, with 43.75%, and Samson Offshore Co., with 12.5%.

ExxonMobil sells Gulf of Mexico assets to Dynamic Offshore

ExxonMobil has sold the Gulf of Mexico assets of its XTO Energy unit for \$182.5 million to Dynamic Offshore Resources. The 90 structures and blocks include West Cameron 507, Main Pass 125, Breton Sound 53, South Marsh 269, and South Marsh 41.

The assets include 79 leases covering 130,000 acres that produce more than 7,000 boe/d, ExxonMobil said.

ExxonMobil said the assets have total proved reserves of 13.5 mmboe and are situated in water depths of less than 300 ft.

Well results indicate hydrocarbon bearing sands at Lafitte prospect

Results from McMoRan Exploration Co. drilling operations at the Lafitte ultra-deep exploration well on Eugene Island Block 223 in the Gulf of Mexico indicate several Lower Miocene sands below 24,300 ft. that appear to be hydrocarbon bearing. The Lafitte well, drilled in 140 ft. of water, commenced drilling on Oct. 3, 2010 and has been drilled to 27,038 ft. The sands have various thicknesses that aggregate about 200 ft., some of which are

contained within a thin-bedded, sand-shale formation. These Lower Miocene aged sands are correlative to Lower Miocene sands seen onshore and in the deepwater of the Gulf of Mexico and provide additional confirmation of McMoRan's ultra-deep geologic model, the company said. Lafitte is McMoRan's third ultra-deep prospect to encounter Miocene age sands below the salt weld on the continental shelf.

McMoRan is preparing to set casing in the Lafitte well to 27,000 ft. and plans to deepen the well to a proposed total depth of 29,950 ft. to evaluate deeper Miocene objectives and possibly the Oligocene section.

McMoRan holds a 72% working interest and 58.3% net revenue interest in Lafitte. Other working interest owners in Lafitte include EXXI (18.0%) and Moncrief Offshore LLC (10.0%).

ATP adds to Telemark oil production total in U.S. Gulf of Mexico

ATP Oil & Gas Corp. reports first oil produced from its Mississippi Canyon block 941 A-2 well to the Telemark Hub using the ATP Titan floating drilling and

production platform. All permits to spud the fourth well, MC 942 No. 2, have been approved, and production projected later this year.

The well is in the Mirage field and is the third brought on production at Telemark, in approximately 4,000 ft. water depth in the Gulf of Mexico.

The well delivered on ATP's original expectations with an initial rate exceeding 7,000 bbl/d. When drilled, the A-2 well encountered four Miocene sands that are approximately 500 ft. structurally higher than the same sands in the MC 941 A-1 well. The A-2 well is completed at a measured depth of 17,600 ft. in the C and D sands.

Technip to build Truss Spar hull for Anadarko GoM field project

Technip has received a letter of intent from Anadarko Petroleum to construct and transport a 23,000 ton Truss Spar hull for the Lucius field development in the US Gulf of Mexico.

The hull will have a capacity of over 80,000 bbl and 450 mmcft once built. First oil production from the field is expected in 2014.




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Aramco delivers first gas from Karan off eastern Saudi Arabia

Saudi Aramco has started production from Karan, its first non-associated gas field development. Gas began flowing earlier this month and is being transported via a 68-mile subsea pipeline for processing at the onshore Khursaniyah Gas Plant. Offshore facilities comprise five production platform complexes connected to a main tie-in platform equipped with electrical power, communication, and remote monitoring and control facilities. Detailed design work began in March 2009.

Karan was discovered in April 2006 in 131 to 107 ft. water depth off eastern Saudi Arabia, 99 miles north of Dhahran. The Karan-6 well, drilled into Khuff formations, found gas in carbonate reservoirs from Permian and Triassic intervals.

Its Khuff's reservoir section is the thickest encountered to date in Saudi Arabia, with gross thickness of up to 1,000 ft. The Khuff formation ranges in depth from 10,500 to 13,700 ft.).

Karan's development is designed to produce 1.8 bcf/d of raw, dry gas by 2013 from 21 increment wells spread around five wellhead platforms. Five wells have been commissioned so far from one platform, each producing 120 mmcf/d.

Vietnamese joint venture delivers first production from TGT field

First crude-wet gas has flowed from the Te Giac Trang field (TGT) in the Nam Con Son basin off southern Vietnam.

The field, discovered in August 2005, is operated by the Hoang Long Joint Operating Co. (HLJOC), comprising SOCO, PetroVietnam, and PTT Exploration and Production.

Vietnam's government approved the initial development of the TGT field H1 area in September 2009. The facilities comprise an FPSO; two wellhead platforms on the H1 and H4 areas; and a sub-sea pipeline system providing transportation of hydrocarbons, gas export, gas lift, and water for injection.

Produced crude heads via the pipeline system to the FPSO Armada TGT 1, designed to process and store 55,000 bbl/d of oil, which is exported via tankers to regional oil refineries.

TGT's gas will be transported through a pipeline to the nearby Bach Ho facilities for processing and transportation to shore via existing pipeline infrastructure for further distribution to meet domestic needs. Oil output from the field should plateau at around 55,000 bbl/d and gas at 30 mmcf/d.

HLJOC continues to drill production wells in the H4 area of the TGT field and has commissioned platform topsides in preparation for start-up here in August 2012.

Petrobras starts production at platform P-56 in Campos Basin

Petrobras has begun production from its semi-submersible platform P-56 in the Marlim Sul field, in Brazil's Campos Basin. The platform, which started production through well 7-MLS-163HPRJS, is 125m long, 110m wide and 137m tall. It weighs more than 54,000 tons and is installed at a water depth of 1,670m.

P-56 is capable of processing 100,000 bbl/d at peak capacity, which is expected in early 2012.

In addition to a heavy oil of 18 degree API, the platform will have a capacity to process and treat up to 6mmcs/d and will be connected to 21 wells, of which ten are producers and 11 are water injectors.

The oil will be transported through an oil pipeline to platform P-38 and to shuttle tankers, while the natural gas will be delivered through a gas pipeline to the Cabiunas terminal.

Roc Oil's Shanghai block in China's Bohai Bay starts production

Roc Oil has begun production from its first appraisal well drilled on the Shanghai block in Bohai Bay, offshore China. The company started drilling well ZD CP2N-H-1 from the Zhao Dong C4 platform and encountered 310m of a horizontal reservoir section.

Production through existing C4 facilities started at an initial rate of 3,546 bbl/d.

Roc said PetroChina exercised its rights under the production sharing contract to participate with a 51% interest in the new Zhao Dong blocks on the commencement of completion activities and the commercial development of the well.

This resulted in the reduction of Roc's interest in the new blocks from 80% to 39.2% and that of joint venture partner Sinochem from 20% to 9.8%.

The company will drill a second appraisal well during 2012 and will bear an 80% cost obligation on a dry-hole basis.

Hardy aiming to redevelop PY-3 oil field offshore eastern India

Hardy Oil and Gas has temporarily shut-in production from the PY-3 oil field in the Cauvery basin offshore eastern India. The suspension will remain until Hardy receives approvals to award a contract for the lease of the floating production system (FPS) Tahara, which has been in service on the field. Once production resumes, the field should continue to produce more than 3,000 bbl/d of oil for the remainder of this year.

Hardy continues to work with all interested parties to finalize a full field redevelopment plan, designed to enhance production and ultimate recovery from the field in block CY-OS 90/1. This will involve drilling additional wells and installing artificial lift facilities.

The operating committee has recommended drilling two further production wells and upgrading equipment, including gas compression for gas lift and sales gas evacuation.

PY-3 is 49.7 miles south of Pondicherry, in water depths varying from 131 to 1,476 ft. The license, operated by Hardy, covers 31 sq. miles.

BP Trinidad begins natural gas production from Serrette field

BP Trinidad and Tobago (BPTT) has started the production of natural gas from the Serrette field, offshore Trinidad. Production from the field is tied into BPTT's Cassia B hub through a 26-in., 32-mile pipeline. The prospect is expected to produce a daily average of 400 mmcf of gas and associated condensate from five wells.

The natural gas will supply the domestic market and Atlantic LNG's liquefaction plant for export as LNG to international markets, such as the United States and Europe. Serrette is an unmanned installation and is wholly owned by BPTT.

Phase II drilling lifts oil production at Ebok field offshore Nigeria

Production from the shallow water Ebok field offshore Nigeria, West Africa, is building to 17,000 bbl/d, according to operator Afren. The Phase I development came onstream earlier this year through five wells in the D2 reservoir. Afren has since brought on line another producer well targeting the D1 reservoir in the same central fault block area.

This well has delivered 4,000 bbl/d, with the assistance of a downhole pump. Due to the strong performance, the partners plan additional development of the D1 reservoir at this location.

Field Development**Noble Corp. contracts fourth ultra-deepwater drillship from Hyundai**

Noble Corp. has exercised an option with Hyundai Heavy Industries Co. Ltd. for construction of a fourth ultra-deepwater drillship. Delivery is expected in the second half of 2014.

The \$630-million vessel will be based on Hyundai's Gusto P10000 design and will be equipped to work in waters to 10,000 ft. Noble said it will be DP-3 equipped and can handle two BOP systems and multiple parallel activities.

"We continue to see an increase in deepwater demand, both near and longer-term," said David W. Williams, Noble's chief executive officer. "This view is bolstered not only by geologic successes in the traditional regions offshore the U.S. Gulf of Mexico and Brazil, but also by emerging regions offshore West Africa, Indonesia, the Black Sea, India, and eas'ern Africa."

Odfjell to manage semi-submersible 'Island Innovator' offshore Norway

Odfjell Drilling has signed a management agreement for the semi-submersible Island Innovator, owned by Marine

Accurate Well ASA. The rig is under construction at Cosco in China, and plans to be ready for operations offshore Norway during the 2012 fourth quarter.

Simen Lieungh, chief executive officer of Odfjell Drilling, said the drilling-intervention rig would also be tendered for work internationally. Odfjell Drilling will be responsible for management including crew, quality systems, and technical operation.

Four-year contract secured for ultra-deepwater West Hercules

A four-year contract has been secured for the ultra-deepwater rig West Hercules for operations for harsh environment for the international energy company Statoil. The potential contract revenue value is \$787 million, including \$50 in mobilization fees. Statoil has, in addition, the right to extend the contract for an additional 1-year period.

West Hercules is a sixth generation, dynamically positioned, high-specification, state-of-the-art semi-submersible drilling unit. The unit has been working in the South China Sea since delivery from the yard in November 2008.

Atwood Eagle contracts daily to Chevron Australia for \$370,000

Atwood Oceanics Inc. says it has received a 6-month contract from Chevron Australia Pty Ltd. The day rate is approximately \$370,000.

The Atwood Eagle now has firm contractual commitments expected to extend through July 2012.

The semi-submersible drilling rig is capable of work in as much as 5,000 ft. of water and drilling depths of 25,000 ft. The rig was constructed in 1982.

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Marathon proves oil discovery on Earb South prospect in North Sea

Marathon Oil Norge has discovered oil in the Earb South prospect in the Norwegian North Sea, its first well on license PL 505. The semi-submersible Transocean Winner drilled wildcat well 25/10-11 8 in 393 ft. water depth, 4.9 mi. southwest of the 25/7-2 discovery and 24.8 mi. south of the Heimdal field.

The main exploration target for the well was to prove petroleum in Upper Jurassic reservoir rocks (Draupne and Heather formation). A secondary target was reservoir rocks in the Middle Jurassic (Hugin formation).

According to partner Lundin Petroleum, the well encountered three separate hydrocarbon-bearing Jurassic sandstones sequences with poor reservoir quality. The uppermost oil-bearing interval comprised a 20 to 26-ft. thick sand sequence immediately below the Draupne shale.

Extensive data acquisition will form the basis for further evaluation of prospectivity in the area. Transocean Winner now heads to PL 431 in the Norwegian Sea to drill wildcat well 6406/3-9 for Maersk Oil Norway.

Rockhopper Exploration spuds well near Sea Lion in Falklands

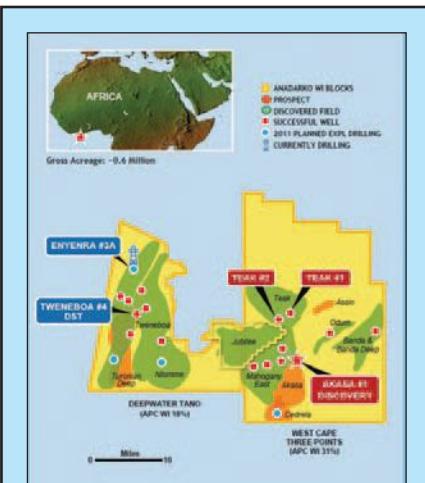
Rockhopper Exploration has begun drilling exploration well 14 / 10-7 to further test the Sea Lion oil discovery in the North Falkland Basin. The well is located 3.3km from the original Sea Lion discovery 14 / 10-2 and will be tested for the presence of hydrocarbons towards the northern limit of the Sea Lion Main Complex, within an area of relatively low amplitudes.

The company said the reservoir is expected to be thinner than the one encountered in the 14 / 10-2 discovery well. Licence PL302, where the license is located, is wholly owned by Rockhopper Exploration, and drilling operations were expected to take approximately 32 days.

Petronas scores natural gas in two exploration wells off Sabah

Petronas Carigali Sdn Bhd reported two natural gas discoveries in shallow water off western Sabah in Malaysia. The Zuhal East-1 discovery is in the Samarang Asam Paya block about 81 mi. southwest of Kota Kinabalu in water depth of 125 ft. and reached a total depth of 7,664 ft. The current estimate of gas-initially-in-place is about 550 bcf. Petronas Carigali is the sole equity holder in the block.

The second discovery, the Menggatal-



Akasa-1 exploration well strikes light oil offshore Republic of Ghana

A light oil discovery at the Akasa-1 exploration well was disclosed on the West Cape Three Points Block offshore the Republic of Ghana. The well encountered 108 net ft. of primarily high-quality, oil-bearing pay from four main Turonian-aged sand packages, similar to those found in the Jubilee and Mahogany East areas. Samples recovered from the Akasa-1 well indicate oil of approximately 38 degrees API gravity.

The Atwood Hunter rig drilled the well to a total depth of about 12,850 ft in approximately 3,800 feet of water. The partnership plans to preserve the Akasa-1 discovery well for future use and plans further delineation in the area with appraisal activity at both Akasa and Teak.

Anadarko Petroleum holds an 18% working interest in the Deepwater Tano Block. Tullow Oil plc is the operator with a 49.95% working interest, and the other partners in the block are Kosmos Energy (18% working interest), Sabre Oil & Gas Holdings Ltd. (4.05% working interest) and the Ghana National Petroleum Corp. (10% carried interest).

The partnership also successfully tested the Tweneboa-4 well, which resulted in sustained flow rates of approximately 3,500 barrels of condensate per day and 30 million cubic feet of natural gas per day.

1 well, is in block SB312, about 68 mi. northeast of Kota Kinabalu. The well is in water depth of 787 ft. and reached a total depth of 6,890 ft. It was production-tested and flowed gas at a rate of 19 mmcf/d through a 36/64-in. choke with no recorded CO₂ or H₂S content. Gas-initially-in-place is currently estimated to be about

650 bcf. Block SB312 PSC is a joint-venture between Petronas Carigali with 60% equity and KUFPEC Malaysia (SB 312) Ltd., a subsidiary of Kuwait Foreign Petroleum Exploration Co. (KUFPEC). Further appraisals are being planned in the near future to delineate the extent of these discoveries.

Cobalt initiates drilling operations on Cameia No. 1 Offshore Angola

Cobalt International has initiated drilling operations on its Cameia No. 1 well in Block 21, offshore Angola. Well operations are being conducted with the Diamond Ocean Confidence drilling rig. After drilling and evaluating the Cameia-1 prospect, Cobalt will drill the Bicuar-1A well to test the Bicuar prospect, also in Block 21. Both wells are targeting pre-salt objectives.

As previously announced, Cobalt expects each well to take 80 to 100 days to drill and an additional 10 to 20 days to evaluate, if successful. Cobalt is the operator of Cameia and Bicuar and has a 40% working interest in each prospect.

MEO signs agreement with Fugro for Zeus survey offshore Australia

MEO Australia has signed an agreement with Fugro Multi Client Services to acquire the Zeus 3D survey in the Carnarvon basin, offshore Western Australia. Exploration well WA-361-P, where the data were gathered, is located in close proximity to the North West Shelf Gas Project and the Pluto LNG project.

The acquired data will enable improved mapping of Heracles and other leads that are potential candidates for drilling in 2014. MEO said the 3D survey is being acquired in an east-west direction, which enables enhanced imaging via multi-azimuth reprocessing.

Completion of the survey is expected to take seven weeks and possible extensions to the planned programme and the final processed volume of data will be delivered in 2012.

Russia, Turkmenistan to explore for oil and gas in Caspian Sea

Russian state-controlled oil company Zarubezhneft and Curacao-based Itera have entered a production sharing agreement with Turkmenistan to explore the country's section of the Caspian Sea for oil and natural gas. Under the agreement, the companies will jointly develop the 21st block of Turkmenistan's offshore sector. Initial estimates put recoverable oil at 219 million tons, associated gas at 92 billion cubic meters and natural gas at 100 billion cubic meters.

Exploration

Rosneft, ExxonMobil sign major exploration and development pact

Rosneft and ExxonMobil have executed a strategic cooperation agreement under which the companies plan to undertake joint exploration and development of hydrocarbon resources in Russia, the United States and other countries throughout the world and commence technology and expertise sharing activities.

The agreement, signed by Rosneft President Eduard Khudainatov and ExxonMobil Development Co. president Neil Duffin in the presence of Russian Prime Minister Vladimir Putin, includes approximately \$3.2 billion to be spent financing exploration of East Prinovozemelskiy Blocks 1, 2, and 3 in the Kara Sea and the Tuapse License Block in the Black Sea, which are among the most promising and least explored offshore areas globally, with high potential for liquids and gas.

In the course of these projects, the companies will use global best practices to develop state-of-the-art safety and environmental protection systems.

The agreement also provides Rosneft with an opportunity to gain equity interest in a number of ExxonMobil's explo-

ration opportunities in North America, including deepwater Gulf of Mexico and tight oil fields in Texas as well as additional opportunities in other countries. The companies have also agreed to conduct a joint study of developing tight oil resources in Western Siberia.

Rex Tillerson, chairman and chief executive of ExxonMobil said ExxonMobil will benefit Russian energy development by working closely with Rosneft.

'This large-scale partnership represents a significant strategic step by both companies,' said Tillerson. 'This agreement takes our relationship to a new level and will create substantial value for both companies.'

The companies will create an Arctic Research and Design Center for Offshore Developments in St. Petersburg, which will be staffed by Rosneft and ExxonMobil employees. The center will use proprietary ExxonMobil and Rosneft



Rex Tillerson

technology and will develop new technology to support the joint Arctic projects, including drilling, production and ice-class drilling platforms, as well as other Rosneft projects. The agreement provides for constructive dialogue with the Russian Federation government concerning creation of a fiscal regime based on global best practices.

Shell confirms deepwater oil discovery offshore French Guiana

As part of the Tullow-operated joint venture, Shell recently confirmed an oil discovery in the Guyane Maritime permit approximately 150km offshore French Guiana. The GM-ES-1 well is being drilled in a water depth of over 2,000m and, to date, has drilled to a depth of 5,711 meters. The well has encountered over 70m of net oil pay in two objectives. The joint venture plans to drill ahead to the planned target depth.

"We are pleased with the preliminary results of this first ever deepwater well offshore French Guiana," said Dave Lawrence, Shell's executive vice president of exploration. "We are early in the evaluation, but the initial results are encouraging for this new play..."

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Development drilling starts at Noa North gas project offshore Israel

Delek Drilling and Avner Oil Exploration have approved the Noa North gas development in the eastern Mediterranean Sea, offshore Israel. This will provide additional supplies of gas to the Israeli market, mainly to customers that have signed natural gas supply agreements with the partnership, until supplies reach land from the deepwater Tamar project.

Development will include drilling of two diagonal wells with subsea completions (Noa 2 and Noa 3) to a planned vertical depth of 6,168 ft., including a water depth of 2,624 ft.

The wells should deliver 3.5 tcf/d through a pipeline to the Mari B reserve's extraction platform for processing, and onward transportation through an existing 30-in. pipeline to the Yam Tethys project's Ashdod receiving station. Drilling of Noa 2 started on July 28, using the Noble Homer Ferrington. Development drilling on Noa North should be completed by September 2012.

The overall cost of the development is estimated at \$212 million — \$54 million to be incurred by Delek Drilling and \$49 million by Avner Oil Exploration.

Pertamina to invest \$40B in Indonesian gas field project

Oil and gas company Pertamina and its partners are to invest up to \$40 billion in the Natuna gas field project, offshore Indonesia.

Partners ExxonMobil, Total, Petronas, and Pertamina are engaged in discussions about whether to develop the field at full capacity or split it into several stages.

The companies also intend to seek government incentives to develop the project, which could take up to 10 years for production to start.

The East Natuna prospect has approximately 46 tcf of gas reserves and contains 71% carbon dioxide, Reuters reported. The companies could transmit the natural gas through pipelines or liquefy it for exports.

ITERA, Zarubezhneft to jointly develop offshore Caspian block

ITERA Oil and Gas and OJSC Zarubezhneft have signed a joint operation agreement for a production sharing agreement (PSA) in the Turkmen sector of the Caspian Sea.

The companies entered into the PSA for block 21 with the government Agency on Control and Usage of Hydrocarbon Resources under the President of Turkmenistan in September 2009. This new agreement sets forth the procedures



Andrew platform to receive new oil

BP, co-venturers to invest \$1.1B to develop Kinnoull North Sea field

British oil company BP and its co-venturers will invest up to \$1.1 billion to develop the Kinnoull reservoir in the central North Sea.

This reservoir, which contains 45 million barrels of oil equivalent, will be connected to BP's Andrew platform and enable production to be extended to 2020 and beyond.

BP said production from the reservoir is forecast to peak at 45,000 barrels per day and be exported through the existing Forties pipeline system to Kinneil and the CATS pipeline system to Teesside.

The project will install a new subsea system and caisson onto the Andrew platform in order to access the new reservoir.

The Andrew platform will undergo major modifications including the addition of a 750-ton process module.

Construction is expected to be completed over two years, and the new facilities are scheduled to commence production in 2013.

BP holds a 77.06% interest in the project with Eni and Summit Petroleum holding 16.67% and 6.27% interests, respectively.

According to BP, Kinnoull is the largest of three reservoirs which are being developed as part of the Andrew Area developments project.

that the parties will follow to jointly implement exploration, development, construction, and operation of any discovered fields in the block. Investments could amount to up to \$6 billion.

OJSC Zarubezhneft will act as the project operator and authorized to perform all oil operations under the PSA on behalf of contracting companies.

The parties also signed an agreement establishing the procedure and terms of

transfer of a 51% interest in the project to OJSC Zarubezhneft. ITERA will hold the remaining 49%.

According to ITERA, block 21 is thought to hold recoverable oil reserves of 219 million tons (1.6 Bbbl), 92 bcm (3.5 tcf) of associated gas, and 100 bcm of natural gas.

Ithaca Energy picks GE Oil & Gas for Stella field development

GE Oil & Gas subsea systems and services have been selected by Ithaca Energy for the Stella oil and gas field development project in the central North Sea. Under the \$17 million contract, GE will supply an integrated package of 'S' Series Shallow Water Vertical Tree (SVXT) systems, controls, and SG1 wellheads to be installed using a jack-up rig.

Phase 1 for the Stella project will be four trees for the planned development wells with a possible additional tree for a further well in the area.

According to GE, the SVXT system was developed for ease of installation, minimal ROV dependency, reduction on weather influenced installation operations due to smart tools, higher load carrying capacities, and increased pressure envelopes.

The scope of the GE contract includes S Series shallow water vertical trees, SG1 drill-through wellhead systems, and a full services support package comprising rental tools and manpower. The equipment will be engineered and manufactured at GE's facilities in the UK with the equipment scheduled for shipment in the fourth quarter of 2012.

Noble Energy's Equatorial Guinea Aseng project nearing completion

Development of the Noble Energy-operated Aseng field in block 1 off Equatorial Guinea is ahead of schedule.

Partner PA Resources (PAR) said start-up should now occur by the end of this year, having previously been estimated at the first quarter of 2012. Production should then build steadily toward the forecast plateau.

All the development wells have been drilled and completed, and subsea installation activities are ongoing. The FPSO should depart Singapore in September, arriving at the field early in October to begin hookup and commissioning.

Development of the Alen field, the second project in the block, also is progressing. Construction of the production platform has begun, and the wellhead jacket is largely complete. Subsea development drilling and completions should start this summer.

OFFSHORE LIGHT TOWER

Gulf Engine Receives US Patent for Offshore Light Tower Design

Gulf Engine / Les Palmisano, Jr. have been awarded U.S. Patent 7,988,343 for its "Offshore Light Tower" design. This innovative compact equipment design allows for safe and secure transportation of a portable vertical light tower. The unique features ensure this equipment design will be delivered to offshore work locations without damage to lighting or other fragile components. Gulf Engine continues to be a leader in the design, fabrication and assembly of quality offshore rental equipment.

For more information on this Offshore Light Tower or any other Gulf-Tek product, visit us on the web at www.gulfengine.com or call us toll free 1-800-925-4966.



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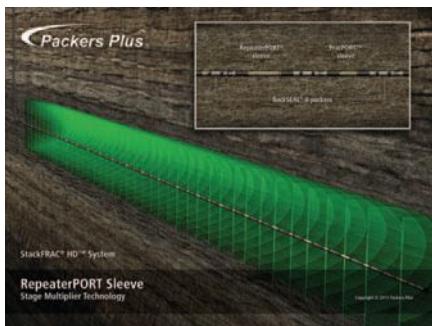
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Packers Plus introduces industry's first stage multiplier technology

Packers Plus Energy Services Inc. released its newest technology, called the RepeaterPORT® sleeve, that enables fracturing of up to 60 stages per lateral. This new stage multiplier technology is the first of its kind in the industry.

"The RepeaterPORT sleeve represents a great innovation within our industry," said Dan Themig, president of Packers Plus. "We can actually drop the same size ball multiple times and activate specific ports within the system."

The advantage for operators is that they can increase stage numbers, increase ultimate recovery, and increase ball seat size, which reduces friction pressures allowing for higher rate treatments," added Themig.

The RepeaterPORT effectively increases the number of stages available in the StackFRAC® HD™ system. By using the same size ball, the RepeaterPORT sleeve multiplies the number of available stages that can be fractured allowing for optimization of fracture crews and the use of less fracture fluid. There are a variety of ball seat sizes, allowing numerous stages to be run in sequence.

"The RepeaterPORT has been successfully field-tested in the United States and our operators are looking to use this tool to complete longer laterals or to reduce spacing between stages to capitalize on better recovery and higher production," said James Athans, U.S. general manager for Packers Plus.

The Packers Plus RepeaterPORT is now available worldwide. More information about the system is available on the Packers Plus website under Products – www.packersplus.com.

Computer test for automobiles could prevent pipeline accidents

A computer model that tests automobile components for crashworthiness could also be of use to the oil and gas industry, according to researchers at MIT's Impact and Crashworthiness

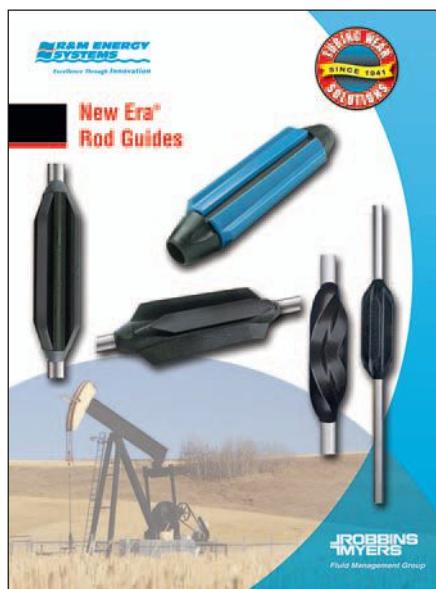
Laboratory, who are now using their simulations of material deformation in car crashes to predict how pipes may fracture in offshore drilling accidents.

As a case study, the team simulated the forces involved in the 2010 Deepwater Horizon explosion in the Gulf of Mexico, finding that their model accurately predicted the location and propagation of cracks in the oil rig's drill riser — the portion of pipe connecting the surface drilling platform to the seafloor. In a side-by-side comparison, the researchers found that their model's reconstruction closely resembled an image of the actual fractured pipe taken by a remotely operated vehicle shortly after the accident occurred.

Tomasz Wierzbicki, professor of applied mechanics at MIT, said such a simulation could help oil and gas companies identify stronger or more flexible pipe materials that could help minimize the impact of a future large-scale accident.

"We are looking at what would happen during a severe accident, and we're trying to determine what should be the material that would not fail under those conditions," Wierzbicki said. "For that, you need technology to predict the limits of a material's behavior."

R&M Energy catalog highlights the latest in rod guide technology



R&M Energy Systems recently released a free, updated version of its New Era® Rod Guide catalog. Engineered to prevent rod and tubing wear, New Era Rod Guides feature advanced design characteristics that result in increased production and decreased workover costs.

Manufactured from engineered plastics enhanced with performance additives, R&M Energy Systems features the broadest range of rod guides in the industry, including rotating rod guides for use with progressing cavity downhole pumps as well as high-performance, high-temperature, and classic rod guides for use with reciprocating beam pumps.

The 20-page, full-color catalog offers valuable technical data on the latest rod guide advancements such as:

- *Pathfinder™ - specifically designed for progressing cavity pumped wells to allow fluid to easily flow through four distinct channels molded directly into the rod guide.

- Blazer™ - manufactured from proprietary, engineered plastics enhanced with performance additives to withstand high temperature well conditions.

- FAST™ - engineered for high performance in progressing cavity pumped wells, use of these rod guides eliminates the need to remove sucker rods from the well site.

- Stealth XL™ - designed for high performance field installation using a proprietary RC material for superior holding power and a high temperature rating.

For more information, contact Angel Santos, R&M Energy Systems, 10586 Highway 75 North, Willis, TX, 77378. Phone: (936) 890-1064; Fax: (936) 890-9595; E-mail: fmg.marketing@robn.com.

Interwell: HP retrievable bridge plug eases interventions

Interwell has introduced what it claims is the world's first high pressure (HP) retrievable bridge plug capable of withstanding a differential pressure of 15,000 psi (1,034 bar). The company developed the slim, 2.2-in. (5.6cm) OD plug to provide a reliable barrier in extremely high pressure conditions.

The ISO 14310 qualified tool features a packer back-up design which both compresses and constrains the element, reducing the risk of extrusion in extreme conditions and enables its operation to 15,000 psi. Interwell claims the ultra-slim design of the patented element back-up segments reduce the risk of deployment and retrieval through narrow wellbore restrictions.

Efficiency is further enhanced by each plug taking just one run to set and one to retrieve, making the system a cost-effective solution for well interventions, the company added.

The tool can be run on slickline, e-line, coiled tubing, or pipe, and features a scale-tolerant slip design, ensuring that it adequately grips the casing.

Oilfield Equipment**A reliable, energy-efficient solution for large-capacity applications**

TMEIC TMdrive-XL Series, among the largest capacity drives available today, offers optimum performance to meet the needs of large-capacity applications in the oil and gas, mining, power generation, and propulsion industries.

The drives — L-55, XL-75 and XL-85 — combine increased power device capability and a wide variation both in voltage and capacity with unparalleled energy efficiency, resulting in reliable, cost-effective operation, said Donn Samsa, director of market development, TMEIC. The drives perform at higher efficiency than conventional drives, ranging from 97% to 98.6% in actual factory load tests. Mean time between failure (MTBF) testing exceeds 20 years, he added.

"The TMEIC TMdrive-XL series uses the largest switching power device as well as the largest voltage gate power device currently available in the world," said Samsa. "That technology, combined with the reliability of TMEIC drive products, will make this new line very popular for high-power applications with customers worldwide."

The drives are offered in two series:



6kV class-5 level inverter and 3kV class-3 level inverter. These, combined with 2/4kV Class Dura-Bilt 5i MV drives, cover a broad capacity range for diverse applications, Samsa says.

"LNG plants, large gas pipelines, and industrial compressor applications will benefit from this series, as well as mining conveyors and power gen applications," said Samsa. "They are an ideal fit for large capacity blowers and fans, and pumps as well."

For more information on TMdrive™ XL Series drives, visit www.tmeic.com.

Advanced reservoir characterization technology introduced by BH

Baker Hughes has introduced the next generation of its Reservoir Characterization eXplorer (RCX) and In-situ Fluids eXplorer (IFX) formation testing services. Used jointly, these services characterize fluid properties in real time.

The RCX service is designed for enhanced reliability in challenging high-pressure-high-temperature wells. Its high-capacity pumps also improve operations in overbalanced wells. The service gathers comprehensive pressure data and representative fluid samples at up to 27,000 psi and 395° F.

Designed primarily for deepwater and high-temperature wells, the IFX service characterizes downhole fluid compositions in real time to allow robust fluid identification, optimize sample collection and provide input to the petrophysical evaluations for early assessments of a reservoir's value.

The IFX service has a tuning fork sensor and separate sound speed transducer that provide high-resolution density and viscosity and sound speed information. For more information, visit www.bakerhughes.com.

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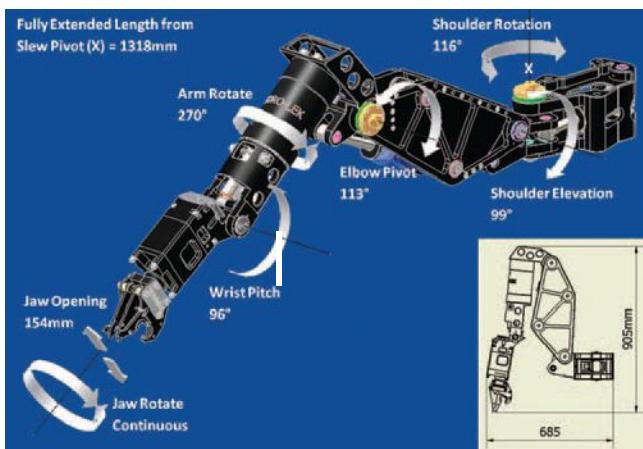
Hydro-Lek is a leading manufacturer of remote handling systems for the subsea, nuclear, and defense industries. Products range from simple hydraulic components to fully integrated telemetry-controlled remote manipulator systems for ROV's and remote access platforms. Our extensive engineering experience and no-nonsense approach has positioned Hydro-Lek as the supplier of choice for simple-to-operate, highly robust and sufficient-for-the-task remote handling systems. With the general increase in demand for more powerful but compact ROVs, Hydro-Lek's products are used reliably and extensively in some of the most hostile environments worldwide by a wide range of major ROV manufacturers, including the Forum Group, Fugro, Saab Seaeye, Subsea7, Hytec, Hallin Marine, and RPM.

Durability is the hallmark of Hydro-Lek products. Many of our manipulators have been used successfully by many companies for many years, including deep ocean salvage company, Phoenix International:

"Phoenix International has used Hydro-Lek's 6-function rate manipulator for over 10 years now. The unit cost a fifth of other types in the market and was the only unit available in the size we needed. It offers excellent value for money and has helped perform successful salvage operations for our government clients in depths of up to 5,400m" Steven Saint Amour, Phoenix International.

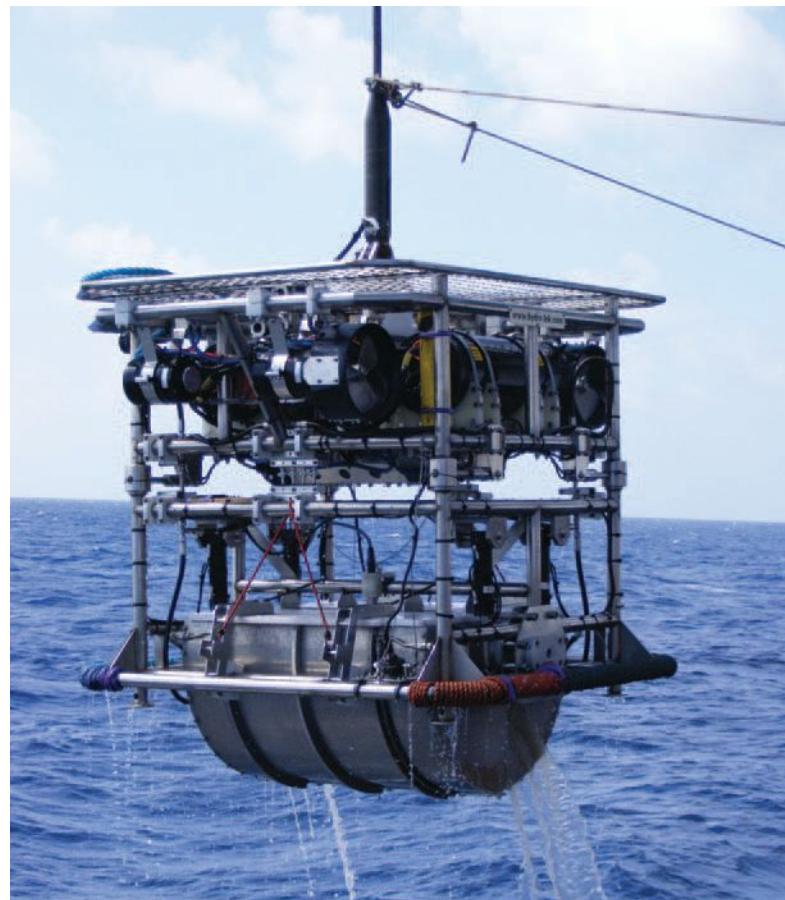
Modular Design

Hydro-Lek was founded in 1996 by Chris Lokuciewski who has over 37 years experience in engineering and underwater operations involving manned and unmanned submarines. Since then, Hydro-Lek has continually developed its product line in a modular format so that bespoke solutions can be produced readily and cost-effectively to suit customer requirements without the need for extensive redesign.



Innovative Design Engineering

At Hydro-Lek, we pride ourselves on being able to provide a complete engineering design solution. The company employs a dedicated team of multi-disciplined engineers with the experience and expertise to understand the challenges presented by working in remote and inhospitable environments and to then visualize and deliver the best possible solution to your specification – and budget.



Efficient Service and Support

Hydro-Lek maintains high stock levels of all standard products and spare parts to ensure fast deliveries for new orders and after-sales. Our location close to London Heathrow Airport provides us with a first rate equipment despatch point to deliver quickly and efficiently to anywhere in the world. We are also able to provide full maintenance support and comprehensive training worldwide on all our products.

"In our experience, the products and services offered by Hydro-Lek are innovative and user-friendly. The company is always pro-active in its approach to producing solutions to problems we encounter in the subsea services sector," said Chris Gardner, Asset Manager, Hallin Marine UK.

To find out more about Hydro-Lek products and services, visit our website www.hydro-lek.com or send an e-mail to enquiries@hydro-lek.com.



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Cleaner Cougar for wind turbines

Seen as ideal for shallow-water wind turbine construction work, four specially designed leaner versions of the Saab Seaeye Cougar XT ROV have been ordered by Pommec, the leading Netherlands-based technology provider to the diving industry.

Custom designed to be both low profile and powerful enough to handle the strong currents found in the shallow waters off the Belgium coast, the slim-line Saab Seaeye Cougar XT Compact will be used by Pommec's customer, D.E.C.O. (Diving Engineering & Consultancy Office), out of Bruges, Belgium, during the construction of 48 turbines.

D.E.C.O. needed an ROV system that could function in strong currents and poor visibility and also work alongside uninterrupted high-cost pile-driving operations, 24 hours a day, with zero down time. After several meetings with D.E.C.O., Pommec and Saab Seaeye, Pommec's solution was a duplicated system-spread with two identical Cougar XT

"It is not possible to use divers for this work due to poor visibility, strong currents and the need for continuous working. The Cougar XT Compact is ideal. It is more powerful than any other ROV of its size – which is why we chose it."

The Cougar XT's unrivalled power and maneuverability comes from six thrusters: four vectored horizontal thrusters and two vertical thrusters. Each has velocity feedback for precise control in all directions and is interfaced to a fast-acting control system and solid-state gyro for enhanced azimuth stability.



Compacts in each system – making it easy to switch instantly between ROVs and between systems.

In putting together the spread, Pommec has supplied the control and maintenance containers and the stainless steel launch and recovery system. The two 20-ft. containers, internally split between control and maintenance sections, can each store their twin Cougars and tether winches.

The launch and recovery systems will allow the Cougars to be deployed and operated in the harshest of sea conditions.

Managing director, Rudi Pommé, says that his company has sold many ROVs, but this is the first time he has used Saab Seaeye vehicles.

"Together with D.E.C.O., we've chosen the compact version of the Cougar XT because it is a small, but very powerful work-class ROV that is easy to handle and maintain by just two men. It is also a good product with lots of benefits."

He explains that the Cougars will be used primarily for checking that piles are correctly positioned before each platform is fitted.

To create a compact version and minimize the effect of current, Saab Seaeye engineers set about reducing the frame size, buoyancy, and weight. A thinner 17mm tether is also used to minimize drag. Overall, the compact design has the highest thrust to weight ratio in its class.

Each D.E.C.O./Pommec Cougar is fitted with a low-light color camera; rear-facing B&W camera; and Kongsberg high-definition, low-light CDD camera. A Tritech Super SeaKing sonar is also fitted along with a free-issue Linquest tracking system. A bare tooling skid is supplied as well as a Gauntlet Plus four function manipulator.

Saab Seaeye believes that the Cougar XT Compact, along with other specialist vehicles like the Panther XT Plus, is ideally suited for the specific and growing needs of the renewable energy industry.

For more information, visit www.seaeye.com

SMIT expands global fleet with Schilling HD ROVs

Schilling Robotics, LLC, experts in subsea systems, announced the order for two Heavy-Duty™ (HD™) ROV systems from maritime operator SMIT. The HD™ systems will be rated for 4,000m and will be supplied with tether management systems (TMS), control vans, and launch and recovery systems (LARS). SMIT will install the HD™ ROV systems onboard their subsea diving support vessels in support of the company's expanding global subsea operations. The systems will be delivered first quarter of 2012.

"As a global leader in the offshore market, we are delighted that SMIT has selected Schilling and the HD™ ROV system, which incorporates innovative technical solutions that provide superior system performance and reliability," states Tyler Schilling, chief executive officer for Schilling Robotics.

Dennis M. Stolk, manager operations for SMIT Subsea, stated, "With the addition of Schilling's HD™ work-class ROV systems, SMIT is expanding and diversifying its global based inspection-class ROV fleet. These work-class ROVs will be outfitted with a comprehensive range of survey and tooling equipment to support subsea construction and IRM operations therewith increasing the versatility of our dive support vessels."

For more information, visit www.schilling.com.

Six times around the world

C & C Technologies, Inc., the worldwide leader in deepwater autonomous underwater vehicle (AUV) operations, announces that its AUV fleet has completed over 240,000km of deepwater mapping since beginning commercial operations in January 2001.

C & C Technologies pioneered the world's first commercially operated AUV for oil and gas exploration, setting the standard in deepwater AUV capability. C & C continues to lead the market with its four AUVs. C & C's 240,000km AUV distance achievement is comparable to encircling the globe six times. This AUV work was performed on 335 major projects for 64 different clients worldwide.

C & C is committed to delivering the best possible data to its clients in a timely manner. 'Our in-house AUV R&D capabilities allow for rapid innovation, maximum reliability and safety, and the most advanced technology,' said Scott Croft, VP of Geosciences at C & C Technologies. Some of the current

upgrades to C & C's AUV fleet include a dynamically focused side scan sonar with a smaller beam width and a higher cross track resolution (230kHz vs. 120kHz), and a subbottom profiler using lower frequency (1-6kHz) for deeper penetration with four transmit transducers and an 8-element receiver array. Additionally, the C-Surveyor™ proprietary camera system takes flash illuminated black and white photographs of the seabed. The camera is available to take photos at fixed time intervals and each photograph has a resolution of 1360 by 1024 pixels, allowing for pipeline inspection and regional ocean bottom mosaics.

For more information, visit www.cctechnol.com.

For ROVs only

Imenco's ANGEL Shark Green Laser Underwater is intended for ROV use only where measurements are needed from video images.

The green light ensures good visibility even at long distances due to less absorption of green light in water.

"Our laser is the strongest and most visible underwater laser exist in the market. We have received great deal of support from our various customers such as BP, Fugro, Subsea 7, and such," says Al Cohen-VP of Business Development.

By paralleling two lasers, calibrated at set distance, accurate measurements from video images is possible. The 150mW, 532nm Green Laser is built into a stainless steel housing with a depth rating to 3,000m of seawater. Due to the light intensity, it is clearly marked and personnel working with or close to the light source should be made aware of the dangers involved if looking straight into the light path. For a comparison, the laser is more than 20 times stronger than a normal laser pointer and should be treated with great care.

For more information, visit www.imenco.com.

Bluefin Robotics acquires Hawkes Remotes and expands into ROV market

Bluefin Robotics, a leader in the design and manufacturing of Autonomous Underwater Vehicles (AUVs) announced that the company has acquired the assets of Hawkes Remotes, Inc (HRI), a spinoff from Hawkes Ocean

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Technologies (HOT), that develops advanced Remotely Operated Vehicles (ROVs). Bluefin plans to leverage their AUV autonomy and subsea vehicle experience to add hybrid capabilities to the Hawkes' ROVs and offer them as an extension of their current product line to the oil and gas industry.

Bluefin's decision to acquire the HRI designs stems from their mission to develop highly capable platforms for sub-sea survey and inspection-related tasks for the oil and gas industries. The Hawkes technology and design approach stood out among the crowd because it challenges the economics of deep ocean access via a ROV. The designs offer scalable, modular solutions, including a thin, armored fiber-optic tether and onboard high-energy density batteries that will reduce the total cost of ownership/operating costs while simultaneously outperforming existing ROV technology.

By combining the HRI technology with their own, Bluefin will provide a superior platform capable of providing an enhanced benefit to the commercial IRM market. The acquisition will enhance Bluefin's product

line by spanning the gap between the company's fully autonomous systems and traditional ROVs.

As part of the acquisition, Bluefin and Hawkes Ocean Technologies entered into a strategic relationship to bring the HRI ROV technology to market, but also to continuously advance the design and development of ROV platforms and technology.

For more information, visit www.bluefinrobotics.com.

Subsea cable burial gets innovative underwater vehicle

Pharos Offshore Group has started construction of a newly designed remotely operated vehicle (ROV) specifically for the offshore wind farm cable market.

The new Inter Turbine Array Trencher, the ITAT 800™, is an 800 hp. (600kW) self-propelled trenching ROV that can be more easily maneuvered by the operators onboard its support ship than a towed plough. It uses a unique water jetting technology to cut the seabed. The technology is safer than a metal plough share or mechanical cutter around the valuable power cable. The water jets "fluidize" the

sea floor material and allow the interconnecting power cables of a wind farm to sink in up to three meters deep.

Wind farm developers and cable installers can also gain scheduling flexibility when using a trenching ROV like the ITAT 800™ when compared to a conventional cable ploughs. The inter-array cable can be laid on the sea floor to connect the wind turbines more quickly and then a process called Post Lay Inspection and Burial – PLIB is used to complete the burial process using a trenching ROV.

The cable maintenance version of the ROV, named the MENTOR 800™ provides the ITAT's powerful jetting capability to depths up to 3000m for deeper cable and oil and gas pipeline work. Interchangeable tooling systems provide the flexibility to accommodate the most demanding undersea cable installation and maintenance operations. Pharos Offshore Group plans to sell and lease multiple vehicles to serve Round 3 wind farm projects in the United Kingdom and upcoming projects in North America.

For more information, visit www.pharosoffshoregroup.com.

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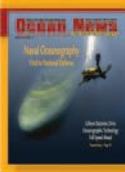
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One Horizon Group, SingTel to provide Horizon Solution

One Horizon Group Plc has announced that its wholly-owned subsidiary, Horizon Globex, has signed an agreement to provide its Horizon platform to Asia's leading communications group, Singapore Telecommunications Limited (SingTel). Horizon provides optimized communications over the Internet. Enabled by the company's SmartPacket technology, it offers voice over Internet protocol (VoIP) from only 2kbps — the world's most bandwidth efficient - and a range of optimized data applications including compressed e-mail, optimized web browsing, and, instant messaging. Operating on a secure, reliable network, capable of interconnecting any phone system over IP and providing integrated pre-paid and post paid billing options, Horizon offers a complete end-to-end solution for network operators and service providers. In this strategic partnership, SingTel's satellite division is to sell the Horizon solution as a key part of its offering to the maritime market (www.onehorizongroup.com).

GMN to provide Iridium AxcessPoint Mail & Web service

Global Marine Networks (GMN), the leaders in advancing satellite data speeds and services, announced a strategic partnership with Iridium to provide Iridium AxcessPoint Mail & Web. The service enables Iridium subscribers to access e-mail and connect via Wi-Fi to the Internet for light web browsing from anywhere on Earth's surface using their smartphones, laptop, and tablet computers, with the Iridium AxcessPoint Wi-Fi hotspot accessory and Iridium Extreme or Iridium 9555 handset. Iridium Mail & Web is free to Iridium subscribers when used with the required Iridium AxcessPoint Wi-Fi device. Standard airtime charges apply for use over the Iridium network. Users will be able to download the new Iridium AxcessPoint Mail & Web application beginning in fall of 2011 from Iridium.com.

Marlink Supplies VSAT to Training Vessel

Global satellite communications provider Marlink has donated Sealink™ VSAT system hardware to the Norwegian maritime training vessel *MS Gann*. The vessel provides training programs to prepare school leavers for a career at sea. Marlink's Sealink™ services will provide *MS Gann* with up to four voice channels and always-on bandwidth to support an extensive range of applications, enabling students and teachers to stay in touch via the web-based learning system "It's learning." In addition, the services will ensure students are able to stay in touch with family and friends while away at sea (www.marlink.com).

SkyStream expands its reach with Intelsat

Intelsat S.A. has signed two contracts with SkyStream FZ LLC, a Dubai-based provider of connectivity and satellite services solutions. SkyStream has contracted for nearly 40MHz of new C-band capacity on Intelsat 17 at 66° E to offer GSM backhaul, Internet access, and On-Demand video service to its maritime and terrestrial customers. SkyStream will offer Internet and On-Demand services to luxury yachts across the Persian Gulf, the Indian Ocean, and the Mediterranean and to fixed sites in Asia, the Middle East, and Africa. SkyStream will provide these services via Intelsat 17 and the IntelsatONE(SM) advanced terrestrial network, with connectivity support from Intelsat's teleport in Fuchsstadt, Germany. SkyStream is also using part of the capacity to offer GSM backhaul services from the yachts and terrestrial sites back to its customers in the United Arab Emirates (www.intelsat.com).

Farstad Shipping signs contract with Harris Caprock

Harris CapRock Communications has been chosen by Farstad Shipping to deliver turn-key Very Small Aperture Terminal (VSAT) communications to its fleet of 53 vessels. Farstad Shipping is an international supplier of modern offshore supply vessels that operate in the North Sea, Brazil, and Australia and Indian Pacific regions.

Harris CapRock will deploy end-to-end VSAT communications via a Time Division Multiple Access (TDMA) network to enable corporate networking, Internet access, crew calling solutions and e-mail service. The turn-key solution includes equipment and installation, service and 24/7 support from Harris CapRock's help desk.

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 teleport 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.caprock.com.

Marlink to supply FleetBroadband to Wilson Ship Management

Marlink has signed an agreement with Wilson Ship Management, one of the largest shipping operators in the European short sea segment, to provide 80 of its ships with SCAP FleetBroadband on a 36-month contract. The contract is a full-service package including both hardware from Thrane and Thrane and airtime.

Marlink has been awarded the contract due to its strong customer support and the ability to offer a total package tailored specifically to the requirements of Wilson Ship Management.

Other Marlink value added services have been included in the contract, such as such as Vizada Traffic Manager and Data Manager. A specially designed Data Manager fleet log-in has also been created for Wilson in order to keep the management of fleet-wide system settings as easy as possible.

Marlink is a global satellite communications provider, offering maritime customers a single source for a broad range of voice and data solutions, backed by an established service and support network. Marlink offers on-demand services such as Inmarsat, Iridium, and Thuraya as well as its own range of C-band and Ku-band VSAT solutions. Across its wide range of satellite communications products and solutions, Marlink routes communications through its own teleports to ensure high quality, reliability, and flexibility for Marlink customers. With offices worldwide, including Athens, Brussels, Dubai, Hamburg, Houston, London, Mumbai, Oslo, Singapore, Stavanger, Tokyo, and Washington, D.C., Marlink deliv-



ers a wide choice in satellite communication solutions as well as installation and customer support on a global basis.

For more information, visit www.marlink.com.

Stratos announces availability of Iridium Extreme satellite phone

Stratos Global announced the commercial availability of the new Iridium Extreme™ satellite phone. Stratos will begin shipping Iridium Extreme from all of its warehouses worldwide. Stratos is one of the world's largest Iridium service providers with nearly 50,000 Iridium subscribers around the globe.

The new Iridium Extreme is the latest addition to Stratos' comprehensive line of satellite phone solutions, all of which are supported by The Stratos Advantage suite of value-added services.

The Iridium Extreme offers users a single, in-hand solution for voice, data, GPS, SOS, SMS, and online tracking. It is the smallest, lightest Iridium handset and the first satellite phone to feature a dedicated, two-way emergency SOS button. It offers the ability to locate users anywhere on the surface of the planet. Iridium Extreme's PIN-protected tracking function can be turned off for users who prefer not to share their location.

As an added benefit, Stratos announced it also will be offering the Iridium AxcessPoint accessory, a lightweight, portable device that connects Iridium phones to smart phones, tablets, and laptops to establish a Wi-Fi hotspot anywhere in the world — via Iridium's global network. Iridium AxcessPoint is expected to be commercially available in the fourth quarter of this year.

Customers selecting Iridium Extreme from Stratos will benefit from a wide range of value-added services, known as The Stratos Advantage, to attain the highest possible performance, security, and

cost control. All Stratos Iridium customers can take full advantage of Stratos Dashboard for Iridium, a convenient application that enables users to manage and control their Iridium services online. Customers also can order and reload prepaid vouchers as well as view traffic data for all their SIM cards. This provides Stratos Iridium customers with full control of their Iridium ser-

vices and eliminates the time-consuming process of completing and submitting forms. As with all Stratos services, customers selecting Iridium Extreme from Stratos will benefit from a fully supported International Customer Care Center 24 hours a day, 365 days a year.

For more information, visit www.stratosglobal.com.

MCP wins Corsica & Sardinia Ferries contract

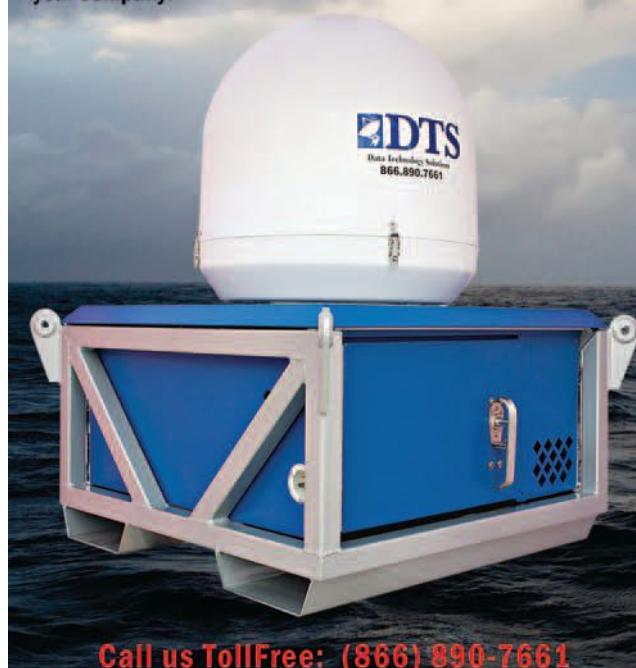
Maritime Communications Partner (MCP) has strengthened its foothold in the Mediterranean through a major turn-key telecommunications contract with Corsica & Sardinia Ferries, one of Italy's most prestigious ferry operators.

The 5-year contract covers mobile telephones, mobile Internet, WiFi, and VSAT for eight passenger ferries and plays a key role in supporting Corsica's ongoing aims to provide crew and passengers with competitive wireless communications backed by a highly reliable, quality cellular network. Corsica & Sardinia Ferries are one of the biggest operators on the Western Mediterranean Sea, transporting about 3.5 million passengers annually aboard its ferries running to and from France and Italy to Corsica and Sardinia. MCP, the leading onboard communications partner, will transform Corsica's onboard communication to a premium mobile telecoms service



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The contract includes the supply of network equipment and design, engineering, and product management system integration and operations. MCP's network connects through the VSAT satellite communications system to a terrestrial gateway that routes calls and data to and from the fixed telecommunications network. MCP's mobile network is switched on and off two nautical miles from shore. Passengers may roam this network and use voice and data services, including messaging, MMS, mail, mobile Internet, and BlackBerry services.

According to MCP, Mediterranean ferry operators face a growing demand for reliable wireless access by passengers and commuters wishing to take advantage of the Internet and other communication services. Wireless trends are surging, and upbeat ferry operators must be highly adaptable to the mobile social networking revolution.

MCP engineers, together with local agent VBS Italy, start site surveys this month and expect total VSAT, cellular, and equipment installation completed and in operation for the first vessels in October.

Corsica & Sardinia Ferries will use the MCP network for real-time connection of its headquarters, thereby streamlining fleet operation logistics, monitoring, and managing onboard sales and providing even better service management and optimization.

For more information, visit www.mcp.com.

Emergency services professionals choose KVH TracPhone V3

KVH Industries, Inc., announced a portable configuration of its ultra-compact TracPhone® V3 mobile satellite communication system designed for use by emergency responders. The kit, created by KVH distributor Mackay Communications, houses the TracPhone V3 antenna, modem, control unit, and cabling in two compact, hard-sided cases that can be transported easily and are small enough to be checked as baggage on commercial aircraft. This configuration allows responders to quickly and easily deploy KVH's global mini-VSAT broadband communications service at disaster or emergency sites where terrestrial cellular services are overloaded or unavailable.

The global mini-VSAT broadband network offers excellent coverage that is invaluable for relief and military contingency operations addressing piracy, politi-



cal unrest, oil spills, and natural disasters like earthquakes or tsunamis. In all of these situations, mini-VSAT broadband's spread spectrum technology delivers ultra-reliable connections over multiple beams, providing overlapping coverage that can be balanced in real time to ensure quality of service. This differs significantly from older technologies like BGAN that are quickly overwhelmed in these environments, defeating the very purpose behind why they were acquired.

The U.S. Federal Communications Commission (FCC)-licensed TracPhone V3 includes a fully stabilized, 14.5-ft. antenna that weighs just 25 lb.; a powerful ViaSat ArcLight® spread spectrum modem; and a sleek antenna control unit that are all fully integrated and configured for easy installation. ArcLight® spread spectrum technology enables very small antennas like KVH's 14.5-ft. (37cm) TracPhone V3 to receive satellite transmissions with the speed and reliability of older, 1m VSAT antennas that use TDMA transmission schemes. KVH's high-efficiency RingFire™ antenna design and dielectric feed rod technology mean the TracPhone V3 offers great performance, even in poor weather, and its rugged, lightweight (25 lb.) design is perfect for use on small high-speed patrol craft or other response vehicles.

With more than 1,500 antenna systems shipped and global coverage, KVH's mini-VSAT broadband network is the world's largest and fastest growing maritime Ku-band satellite communications network. A managed airtime network solution, it equips vessels with true broadband connections as well as Voice over IP (VoIP) telephone lines with optimized service and prioritization of applications.

For more information, visit www.kvh.com.

Stratos activates FleetBroadband pricing for single-vessel operators and small fleets

Stratos Global is the first Inmarsat Distribution Partner to activate Inmarsat's new FleetBroadband Large Money Bundle for single-vessel operators and fleets with fewer than 10 vessels.

The new Large Money Bundles offer the high-performance (up to 432kbps), global coverage, simplicity, and reliability of Inmarsat FleetBroadband — in addition to The Stratos Advantage value-added services — all at an affordable, fixed monthly rate. The packages include monthly data-connectivity plans as large as 5GB in addition to highly competitive rates for voice calls.

The new plans meet the increasing data requirements of yachts and other vessels. The plans provide a high level of monthly bandwidth for e-mail, web browsing, social networking, GSM, and other popular applications. With these plans, FleetBroadband is available on terminals as small as 25cm.



The first FleetBroadband Large Money Bundle was activated by Stratos Channel Partner e3 Systems for one of the largest private sailing yachts built by Royal Huisman in Holland.

FleetBroadband from Stratos provides cost-effective, high-speed data, and voice communications — available simultaneously — at speeds up to 432kbps. FleetBroadband from Stratos also provides on-demand, guaranteed IP data rates, regardless of the vessel's location. The above-deck, stabilized, compact directional antennas are smaller and less expensive than VSAT solutions.

Stratos' more than 9,000 FleetBroadband activations encompass all major geographic regions and vessel types, from customers including Wallem Shipmanagement, Bernhard Schulte Shipmanagement, Varun Shipping Co., MISC Berhad, Albacora Group, MPC Steamship, and the Royal Netherlands Navy.

For more information, visit www.stratosglobal.com or www.e3s.com.

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LION2 lands in Kenya

Construction of the Lower Indian Ocean Network 2 (LION2) submarine fiber optic cable system has been completed with the landing of the cable in Kenya. LION2 extends from Kenya to Madagascar, where it connects with LION, providing ongoing services to Mauritius and La Reunion. LION entered service in 2010. LION2 is expected to be ready for service during the first half of 2012. France Telecom is the lead investor in the EUR 56.5 million LION2 project, along with its subsidiaries in the region – Orange Kenya, Orange Madagascar, and Telecom Mauritius (www.orange.com).

US Seismic Systems ocean bottom cable solution

US Seismic Systems Inc. (USSI), a subsidiary company of Acorn Energy, Inc., is expanding its offering of Ultra High Sensitivity (UHS) fiber optic sensors to include Ocean Bottom Cables (OBC), which are a critical component for the rapidly emerging market for Permanent Reservoir Monitoring (PRM). The 4D seismic market, of which Permanent Reservoir Monitoring is an integral and increasing part, was estimated to be over \$1 billion in 2010, with the majority of the data being acquired by towed streamers according to ODS PetroData. Expectations are for the Marine 4D market to exceed \$2 billion annually within the next several years. Currently, several major companies are supplying electronic sensors, but many industry experts believe that a new technology is needed to spur widespread adoption of PRM. Fiber optic systems like USSI's solution are expected to lead this revolution because of their improved performance, higher reliability, and lower cost (www.usseismsystems.com).

Chinese plan Australia-New Zealand cable

Axin, the New Zealand unit of China Communications Services, which in turn is 51% owned by China Telecom, announced that it would begin building a submarine fiber optic cable connecting Australia and New Zealand across the Tasman Sea by the end of this year. Axin will work with Huawei Marine on the project, and funding would come from the Export-Import Bank of China. The new cable system will be 2,300km long and will enter service in early 2013. It will use 40G technology to deliver up to 3.2Tbps per fiber pair. New Zealand is currently served by a single cable system, Southern Cross. Pacific Fibre, a new venture, is moving forward with its plans to build a system linking Australia, New Zealand, and the United States by 2014 (www.chinaccs.com.hk).

Israel-Cyprus cable planned

An Israeli startup, owned by a prominent businessman, has formally launched its plans for a new submarine fiber optic cable link for Israel at an event held on the evening of September 12. The company, Tamares Telecom Ltd., a vehicle of Finnish-British businessman Poju Zabludowicz, plans to link Israel with Cyprus, where it will have ongoing connectivity to Marseille, Paris, Madrid, Frankfurt, and London. Tamares Telecom recently won a tender to partner with Israel Electric Corporation in the latter's entry into the telecommunications market. The cable will use state-of-the-art technology and have a capacity of 42Tbps, according to Tamares. Work on the cable is due to begin by the end of the year and will be completed in 2012 (www.tamarestelecom.com).

TE SubCom, Alcatel Lucent extend maintenance coverage in the Northern Pacific



TE SubCom, a TE Connectivity Ltd. company, and Alcatel-Lucent announced a significant expansion to their joint maintenance program for submarine optical communication links throughout the Pacific basin. The Pacific End-to-End Maintenance Solution boosts the companies' ability to maintain and repair undersea cables in the northern Pacific region in order to support current telecommunications clients and other potential customers seeking marine services.

Submarine cable networks connect countries and continents, carrying vast amounts of data traffic, including video. They are developed for high reliability over their 25-year design life. However, cables can be damaged by external forces such as earthquakes, hurricanes, intense fishing activity and ship anchors. Marine maintenance services repair damaged cable and help restore normal operation as quickly as possible, limiting disruption to global communications and commerce.

TE SubCom and Alcatel-Lucent first joined forces in the Pacific in 2008, with two cable ships serving the northwestern portion of the region. The deployment of additional cable ships in the course of this year as a maintenance resource in the northeastern region provides complete coverage for the entire northern Pacific. The companies' cable ships operating in the Pacific are all fully equipped and strategically located to efficiently and effectively repair and maintain cable systems and provide customers with a single, streamlined marine solution for Pacific operations.

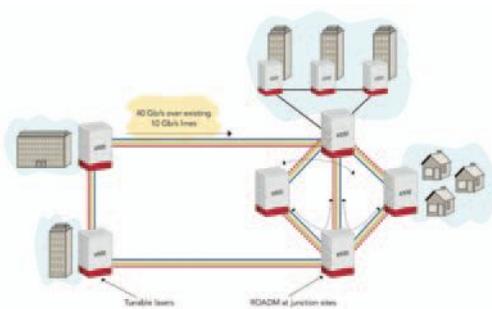
For more information, visit www.alcatel-lucent.com or www.subcom.com.

Reliance upgrades Asian cables with Ciena's 40G technology

Ciena® Corporation announced that Reliance Globalcom has completed an upgrade of its FNAL submarine network with Ciena's market-leading coherent 40G optical networking solution. The first coherent 40G submarine network in Asia, Reliance Globalcom's enhanced network brings massive capacity increases to two key routes that each span approximately 5,000km to connect Japan, Taiwan, South Korea, and Hong Kong.

Powered by Ciena's industry-leading WaveLogic™ coherent optical processors, the upgraded submarine cable network will add a total of 4Tbps of capacity and lay the foundation for a path to 100G in the near future.

Subsea Telecom



Ciena provided Reliance Globalcom its 6500 Packet-Optical Platform with 40G ultra long haul interfaces, which are designed to significantly increase submarine network capacity without disrupting existing customer traffic or adding cost and complexity to the network. Ciena also provided deployment services and quickly turned up the system with in-service traffic migration from existing 10G to coherent 40G. To ensure optimal network performance, Reliance Globalcomm is also utilizing Ciena's network management software solutions.

This upgrade is also believed to be the first submarine deployment with reconfigurable optical add-drop multiplexers (ROADM), which provide flexibility to add or drop select wavelengths at intermediate sites. In addition to reducing latency on the route, this gives Reliance Globalcom the ability to quickly react to changing traffic demands and increase network availability.

This deployment builds on a long-standing relationship between Ciena and Reliance Globalcom and its parent company, Reliance Communications. Earlier this year, the companies announced a separate 40G ultra long haul deployment on the Reliance Globalcom network to support a 6,400km submarine link connecting the UK, Spain, Italy, and Egypt.

Ciena's WaveLogic coherent optical processors enable operators to maximize the reach, capacity, and flexibility of submarine networks with a focus on ease-of-deployment, cost efficiency, and network investment protection. Using innovative coherent receiver and dual polarization phase shift key (DP PSK) modulation technology, Ciena's technology enables seamless upgrades to 40G/100G on submarine networks with only the addition of new terminal equipment, significantly extending the life of existing cable plants, the company said in a statement.

For more information, visit www.ciena.com.

Boskalis to install Argentine domestic cable

Royal Boskalis Westminster N.V. (Boskalis) has been awarded a contract worth approximately €30 million to

provide and install a submarine fiber optic cable across the Strait of Magellan, Argentina. The contract was awarded by the state-owned corporation AR-SAT (Empresa Argentina de Soluciones Satelitales S.A.).

The fiber optic cable, which will be used for Internet and digital television, will connect the city of Rio Gallegos in the province of Santa Cruz with the city of Rio Grande in the province of Tierra del Fuego.

The length of the submarine fiber optic cable is approximately 40km. The water depth (up to 70m), strong currents, and high tidal conditions make for a challenging operating environment.

Boskalis will execute this project together with subcontractor Alcatel Lucent. A large trailing suction hopper dredger and a seagoing cable-laying vessel will be deployed for this turn-key project. The cable will be trenched, using both a jetting sledge and a plough. Dredging will

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be required for some parts of the seabed where the soil is too hard to use a jetting sledge. Boskalis will also be responsible for the shore approaches on both sides as well as for installing about 60km of land cable on the mainland of Argentina and on Tierra del Fuego. Work on the project is expected to commence shortly and last for a total of approximately 8 months.

The Boskalis strategy is designed to benefit from the key macro-economic drivers that are fueling global demand in our selected markets: global trade, increasing energy consumption, expanding population pressures, and the challenges of changing climate conditions.

For more information, visit www.boskalis.com.

Nexans to supply marine seismic lead-in cable systems

Nexans has been awarded a €3 million turn-key contract to supply lead-in cable systems for the advanced GeoStreamer seismic array technology that Petroleum Geo-Services (PGS) is deploying on its fleet of offshore survey vessels. The contract provides an important market reference for Nexans as it makes a key strategic move from its well-established position as

a supplier of seismic and oceanographic cables to delivering a complete service for lead-in cable systems, including fairings and terminations.

To deliver the total order of 35 systems for the GeoStreamer deployment, Nexans' specialized seismic cable manufacturing facility in Rognan, Norway has joined forces with MøreNot AS for the fairing installation and Siemens Subsea Products (formerly Bennex AS) for terminations.

PGS acquires, processes, markets, and sells high quality seismic data worldwide. Oil and gas companies use these data to explore for hydrocarbon accumulations, to develop new oil and gas fields, and to manage their producing fields.

During the survey process, the vessels typically tow between 8 and 18 cables that are up to 8km long in an array that may be over 1km in width. The cables, each of which has a lead-in, are packed with sensitive electronic listening and recording devices.

The lead-in cables, usually around 1.1km in length and containing various electrical and fiber optic internal cores protected by three layers of steel wire armoring, play a vital role in transferring the seismic signals from the recording devices

in the array to the processing and analysis equipment onboard the vessel. The reliability of the lead-in cable is crucial as it reduces unwanted noise and protects against potential corruption of the data. Bad data are unacceptable and mean parts of the acquisition have to be repeated, which could delay the survey or even result in operational losses.

The ribbon fairings, in the form of short polymer strips attached to the outer armouring, play an important role in reducing the vibration of the cable as it is towed through the water. This helps improve the quality of the signal passed to the survey vessel's sophisticated analysis equipment.

The lead-in cables for the PGS fleet are scheduled for delivery by February 2012.

For more information, visit www.nexans.com.

GBI moves to 100G

Gulf Bridge International (GBI), the Persian Gulf's first privately owned submarine cable operator, is the first operator to offer true 100G connectivity on parts of its undersea cable network. GBI has made the move to 100G to meet the growing demand from the carrier community for



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100G signals a new era of interconnectedness and demonstrates the kinds of technological innovation happening in the Middle East. GBI has invested \$500 million in its network infrastructure and is committed to delivering future-proof network technology ready to meet the capacity demands of today as well as tomorrow. The networking technology uses state-of-the-art DWDM technology and total system design capacity has increased to close to 10Tbps on certain sections.

As a result of this announcement and the recent announcements of the extended coverage across Europe, the GBI network is now going much further and faster than originally envisaged.

For more information, visit www.gbi-inc.com.

OOI cable installation completed

Installation of the backbone Ocean Observatory Initiative (OOI) cable off the coast of Oregon was completed on 5 September 2011. The OOI is funded by the National Science Foundation with the purpose of constructing a networked infrastructure of science-driven sensor systems

to measure the physical, chemical, geological, and biological variables in the ocean and seafloor.

Of the 900km backbone, 300 km was buried out to 1km seaward of the water depth of 700 fathoms in order to allow continued fishing in those areas. ROVs were used to conduct post-lay inspections and any needed remedial burial. The remaining 600km of cable were laid in deep waters without the need of burial.

The installation team was made up of individuals from L3 MariPro, the contractor for the design and build of the cabled Primary Infrastructure; TE Subcom, L3 MariPro's subcontractor for cable installation; the Oregon Fishermen's Cable Committee; National Marine Fisheries Service Protected Species Visual Observers program; OOI Regional Scale Nodes Marine Operations; and the Consortium for Ocean Leadership.

Originally scheduled as a 2-month operation that began on 28 June 2011, a short and break occurred in late August for a vessel and ROV switch in Portland, Oregon. The ROV carried on the cable ship TE SubCom Dependable needed repairs and the installation team returned to finish the job within a few

days on the TE SubCom Sentinel with a different ROV.

Cable inspection was also undertaken as part of the VISIONS '11 research expedition using ROV ROPOS deployed from the University of Washington's R/V Thomas G. Thompson. Some suspended lengths of cable were discovered around Axial Seamount, and other lengths were found to have been laid through areas of active hydrothermal venting. Remedial measures are being discussed and planned.

For more information, visit www.oceanobservatories.org.

Hitachi Cable to withdraw from submarine business

Hitachi Cable has stated that it will withdraw from the submarine fiber optic cable making business. The company's intention to withdraw was announced in a review of its Plan "BRIDGE" medium-term management plan for fiscal years 2011 through 2013. In the plan, Hitachi Cable said that working toward the reinforcement of its management foundation, the Group will continue business structure reforms with the aim of reducing fixed expenses for fiscal 2013 by \$10.0 billion.

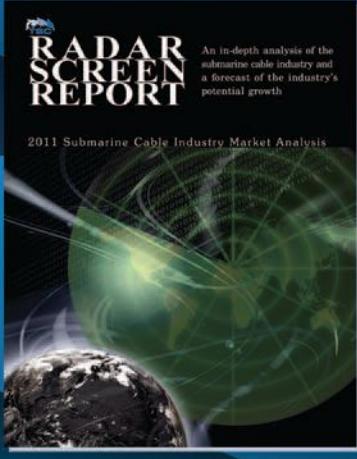
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Nexans wins contract for offshore wind farm

Nexans has been awarded a contract by the project developer Offshore-Windpark RIFFGAT GmbH & Co. KG, which is owned by Enova and EWE ENERGIE, to supply and install the infield submarine power cables and ancillary equipment for the Riffgat offshore wind farm currently under construction 15km northwest of the German island of Borkum.

The Riffgat wind farm, covering an area of 6 square kilometers, will comprise 30 wind turbines providing a peak capacity of 108MW, sufficient to meet the needs of around 100,000 households.

The Nexans facility in Hannover, Germany, will design and manufacture just over 24km of 33kV XLPE submarine infield cables to interconnect the wind turbines and link them to the offshore transformer substation. Nexans in Norway will be responsible for the cable installation,

which includes engineering, laying the cable, and pulling in each cable end to the wind turbines, as well as protection of the cables on the seabed using the specialized Capjet trenching machine.

Final delivery of the Riffgat cables will take place in autumn 2012, and installation is scheduled to commence in July the same year.

For more information, visit www.nexans.com.

Ireland-Wales interconnector construction begins

Cable laying for a submarine power cable between Ireland and Wales started in early September. The new cable would not only interconnect the Irish and Welch power grids, but will provide a new fiber optic cable connection as well.

EirGrid, the Irish electricity system operator and developer that is building the cable, has entered into a license arrangement with Geo Networks, a leading provider of fiber optic networks for heavy data users, to increase Ireland's bandwidth capacity. The deal will see EirGrid and Geo commercializing fiber optic cable laid with the Ireland-UK electricity Interconnector through an exclusive arrangement to significantly increase high-speed international bandwidth for Ireland.

EirGrid intends to license capacity on the cable to Geo, allowing businesses, such as mobile operators and service providers, access to extensive UK and Irish fiber networks and an additional 7 Terabits data capacity.

Geo is also developing a second fiber optic cable from Portmarnock in Dublin to Anglesey in Wales. The combination of two routes from a single supplier will provide a reliable, diverse route that exploits the newest fiber optic technology and a track record of the highest levels of service availability.

The commercial fiber optic installation is being developed in conjunction with the €600 million East West Interconnector, a submarine power cable project being part financed by the European Union and due for completion in September 2012.

For more information, visit www.eirgrid.com or www.geo-uk.net.

Chinese cable maker looking at UK opportunities

Four senior executives from China's ZTT Submarine Cable Company, together with representatives of Nantong Hongbo Windpower Equipment Limited, the Nantong Bureau of Commerce, and the Maritime Union, are visiting Harwich International Port to explore opportunities

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Power Cables

in the United Kingdom for the first time and to understand the East Anglia Energy Coast.

Harwich International Port has already assisted with three of the UK's major wind energy sites at Greater Gabbard, Thanet, and London Array and is becoming internationally renowned for its Green Energy facilities.

ZTT is the largest vertically-integrated cable manufacturer in China and has the biggest R&D capacity in this sector in China. It supplies the China National Offshore Oil Company and is increasingly supplying the China offshore wind industry. ZTT offers the full range of fiber and copper cabling solutions, including submarine cable, electric power systems, RF cable system, FTTH, and premise cabling solution. ZTT is currently operating 15 manufacturing plants and one R&D center in China and employs more than 3,000 people worldwide.

For more information, visit www.harwich.co.uk or www.zttcable.com.









VA500 Altimeter
a new approach to subsea distance measurement

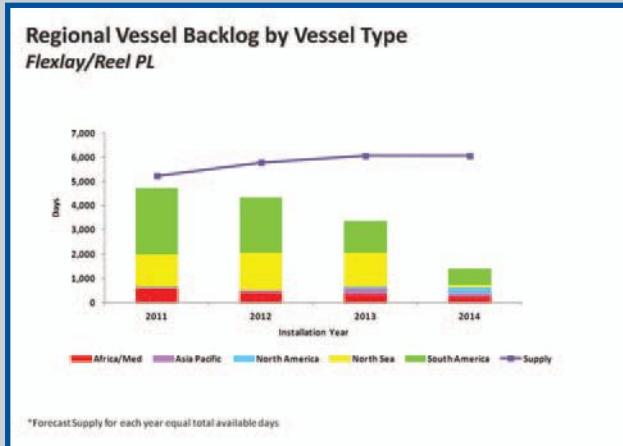
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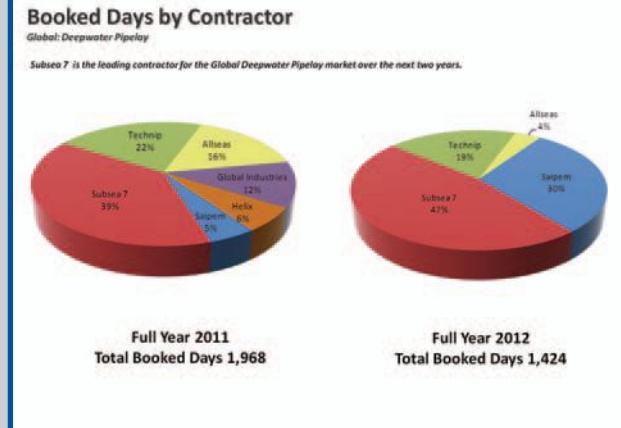
Offshore At-A-Glance

Quest Offshore Activity Report

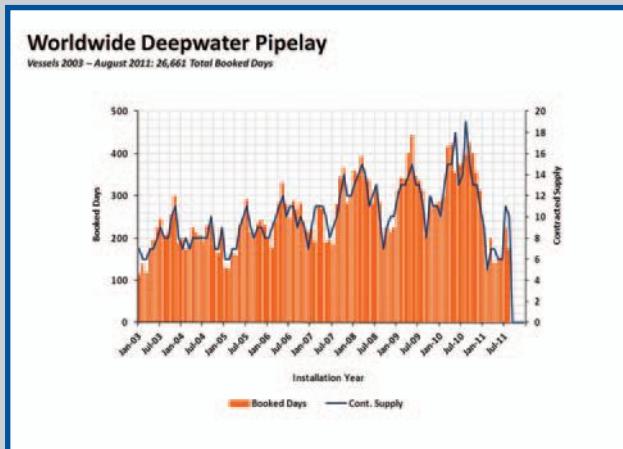
Regional Vessel Backlog by Type



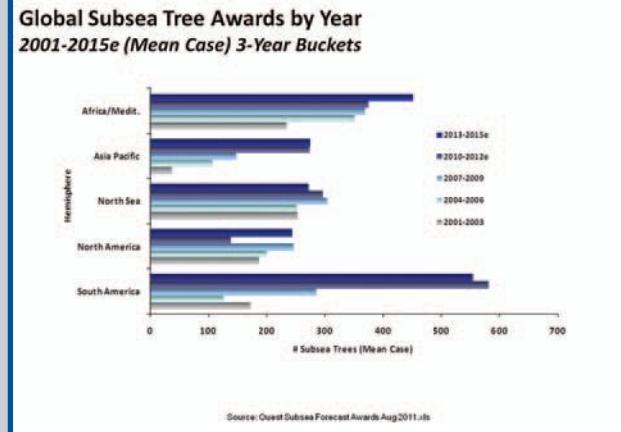
Vessel Bookings by Contractor



Worldwide Deepwater Pipelay



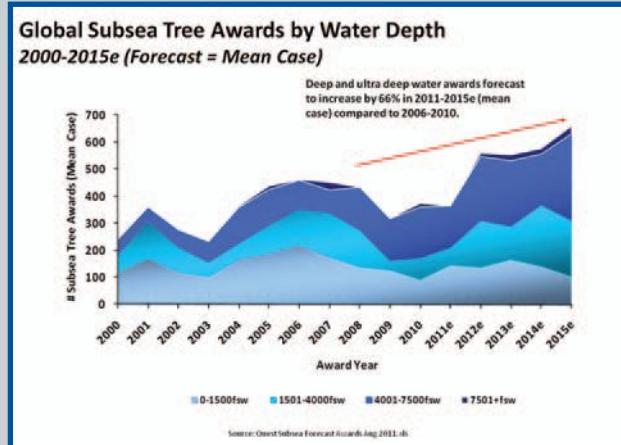
Global Subsea Tree Awards by Year



Subsea Tree, Control & Manifold CAPEX



Subsea Tree Awards by Water Depth

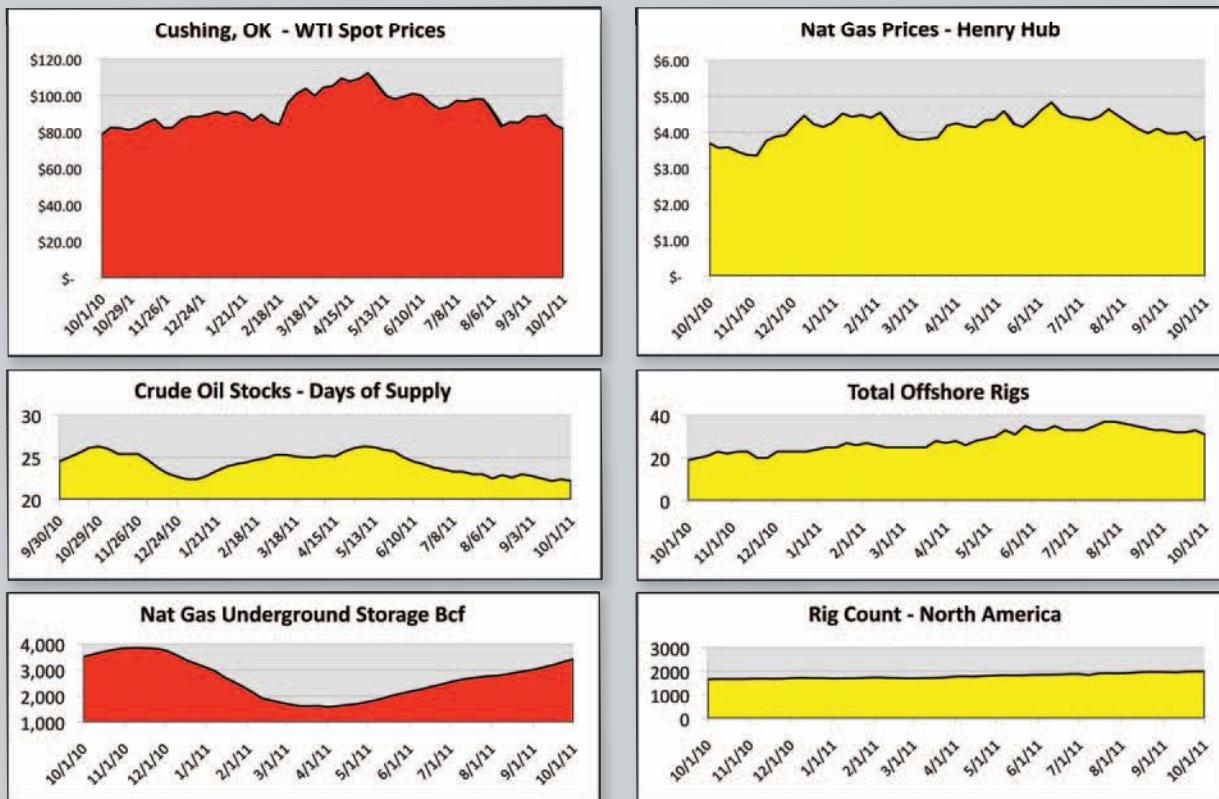


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Oil & Gas Industry Trends

Monitoring the pulse of the US Offshore Oil & Gas Industry

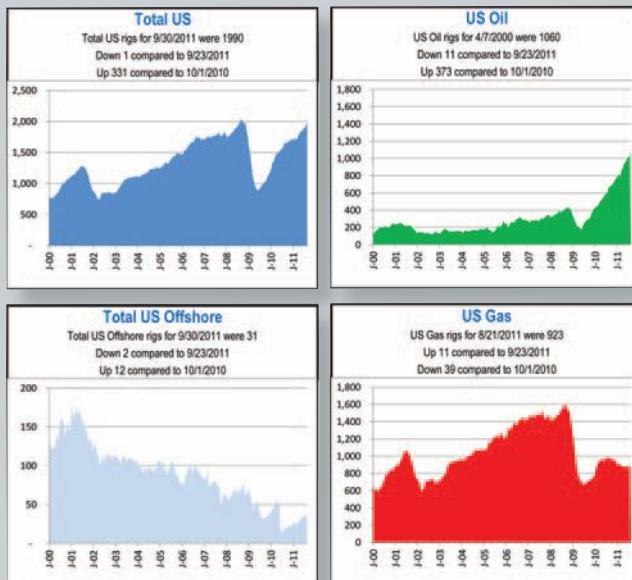


positive trend at least 3 weeks
 changing trend < 3 weeks
 negative trend at least 3 weeks

Baker Hughes Rig Report

North American Rig Report September 30, 2011

Location	Week of 9/30	Week Ago	Year Ago
	+/-	+/-	+/-
Land	1944	5	1939
Inland Waters	15	-4	19
Offshore	31	-2	33
U.S. Total	1990	-1	1991
Gulf of Mexico	30	-1	31
Canada	510	5	505
N. America	2500	4	2496



Gulf of Mexico Data

Current Deepwater Activity

Operator	OCS Area/Block	Lease	Rig Name	Prospect Name	Water Depth(ft)
Shell Offshore Inc.	AC 859	G20871	NOBLE DANNY ADKINS	Tobago	9,627
Petrobras America Inc.	WR 206	G16965	PRIDE DEEP OCEAN MENDOCINO	Cascade	8,143
Shell Offshore Inc.	AC 857	G17561	H&P 205	Great White	7,823
Statoil Gulf of Mexico LLC	WR 969	G26419	T.O. DISCOVERER AMERICAS		7,813
Shell Gulf of Mexico Inc.	MC 348	G19939	T.O. DEEPWATER NAUTILUS	Camden Hills	7,257
Statoil Gulf of Mexico LLC	AC 810	G31199	MAERSK DEVELOPER		7,134
BP Exploration & Production Inc.	GC 743	G15607	T.O. Development Driller II	Atlantis	6,824
Chevron USA Inc.	KC 736	G22367	T.O. DISCOVERER INSPIRATION	Moccasin	6,750
Chevron USA Inc.	KC 785	G25806	T.O. DISCOVERER DEEP SEAS		6,590
Eni US Operating Co. Inc.	MC 728	G16644	T.O. DEEPWATER PATHFINDER	Triton	5,639
BP Exploration & Production inc.	GC 743	G15607	T.O. DEVELOPMENT DRILLER III	Atlantis	5,405
Noble Energy, Inc.	GC 723	G21813	ENSCO 8501	Deep Blue	5,040
BHP Billiton Petroleum (GOM)	GC 738	G16786	T.O. DEVELOPMENT DRILLER I		4,468
Chevron USA Inc.	GC 640	G16770	T.O. DISCOVERER CLEAR LEADER	Tahiti	4,292
BHP Billiton Petroleum (GOM)	GC 653	G20084	GSF C.R. LUIGS	Shenzi	4,232
ATP Oil & Gas Corp.	MC 941	G16661	NABORS 202	Mirage	4,000
Shell Offshore Inc.	MC 935	G07976	NOBLE DRILLER	Europa	3,789
Anadarko Petroleum Corp.	EB 602	G14205	ENSCO 8500	Nansen	3,678
Nexen Petroleum USA Inc.	GC 504	G22968	ENSCO 8502		3,600
Anadarko Petroleum Corp.	EB 558	G17266	CAL DIVE Q-4000	Nansen	3,524
ATP Oil & Gas Corporation	GC 299	G22939	DIAMOND OCEAN VICTORY	Clipper	3,456
Murphy E&P Co.	GC 338	G21790	NABORS MODS 200	Front Runner	3,325
Shell Offshore Inc.	MC 762	G07962	NOBLE JIM DAY	Deimos	3,140
Shell Offshore Inc.	GB 158	G07995	H&P 202	Brutus	2,985
Shell Offshore Inc.	MC 807	G07963	H&P 201	Mars B	2,945
Apache Deepwater LLC	GB 462	G26655	NOBLE AMOS RUNNER	Geauxpher Subsea Pr	2,823
Shell Offshore Inc.	GB 427	G07493	NOBLE JIM THOMPSON	Auger	2,719
Chevron USA Inc.	VK 786	G10944	NABORS 87	Petronius	1,754
Stone Energy Corp.	MC 109	G05825	H&P 206	Amberjack	1,030
Exxon Mobil Corp.	MC 280	G03820	COIL TUBING UNIT (N.O. #2)	Lena	1,001

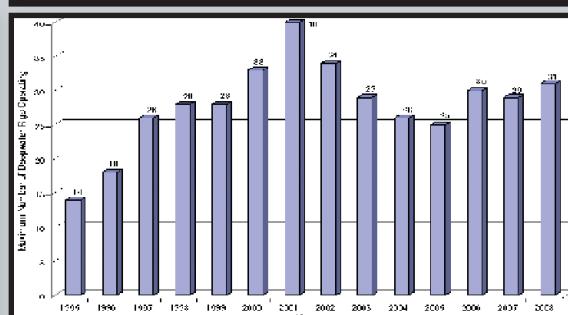
Deepwater prospects with drilling and workover activity: 30

Current Deepwater Activity as of Monday, September 26, 2011

Activity by Water Depth

Water Depth in Meters	Active Leases	Approved Applications	Active
0 to 200	1,892	33,892	3,070
201 to 400	129	1,111	20
401 to 800	288	835	10
801 to 1,000	389	519	7
1,000 & above	3,274	1,664	26

Rig activity by year



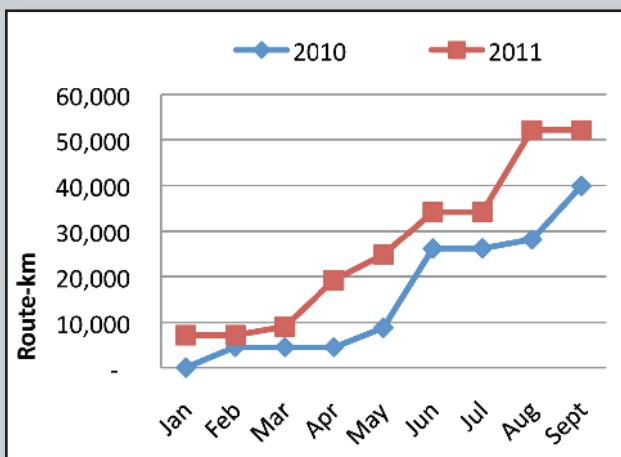
Activity by water depth Information current as of Monday, September 26, 2011

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.

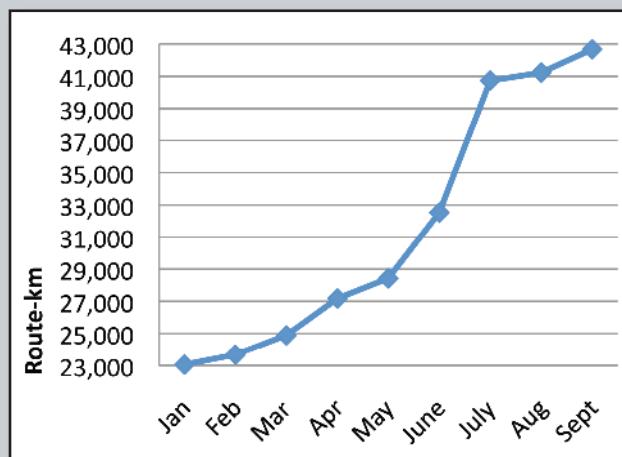
Information provided courtesy of the U.S. Bureau of Ocean Energy Management

Subsea Telcom & Power Cable Data

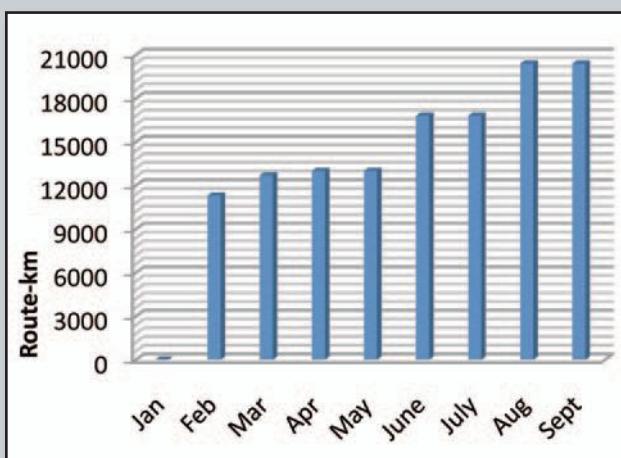
FO Cable Awards by month



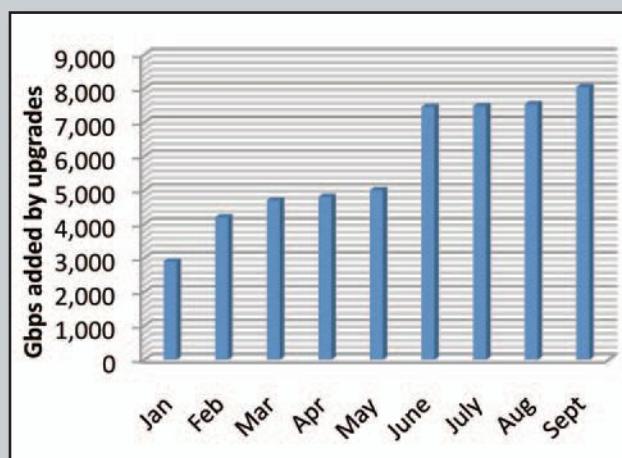
FO Cable Announcements 2011



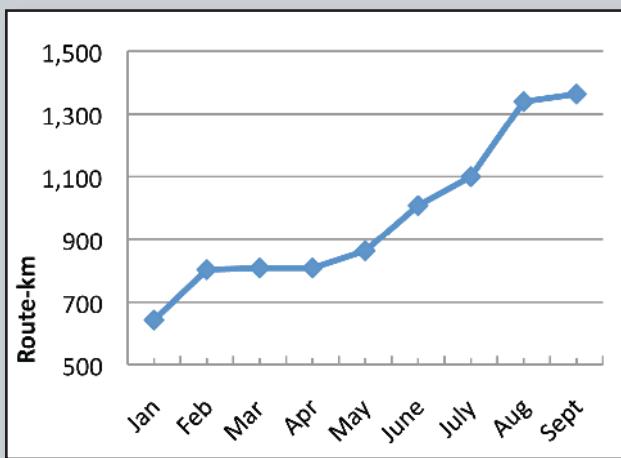
Submarine FO Cables Entering Service 2011 in route-km



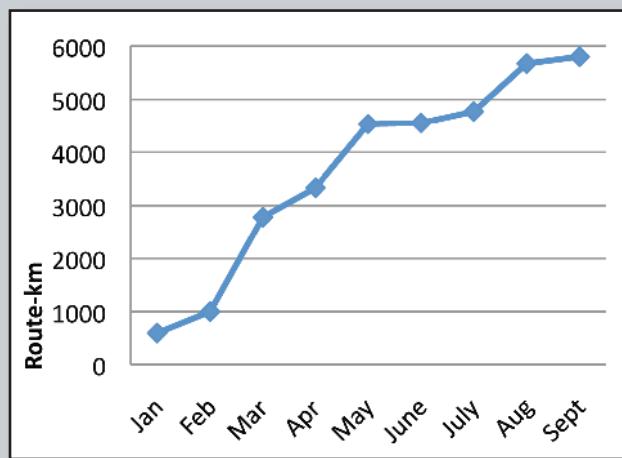
Upgrades of Existing Cable Systems in Gbps



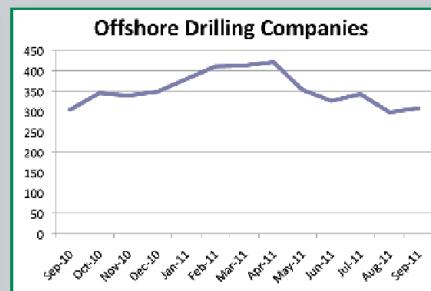
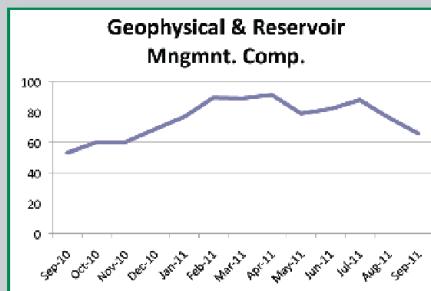
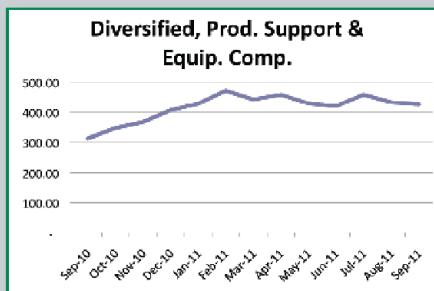
Submarine Power Cable Awards 2011 in route-km



Submarine Power Cable Announcements 2011 in route-km



Monthly Stock Figures & Composite Index

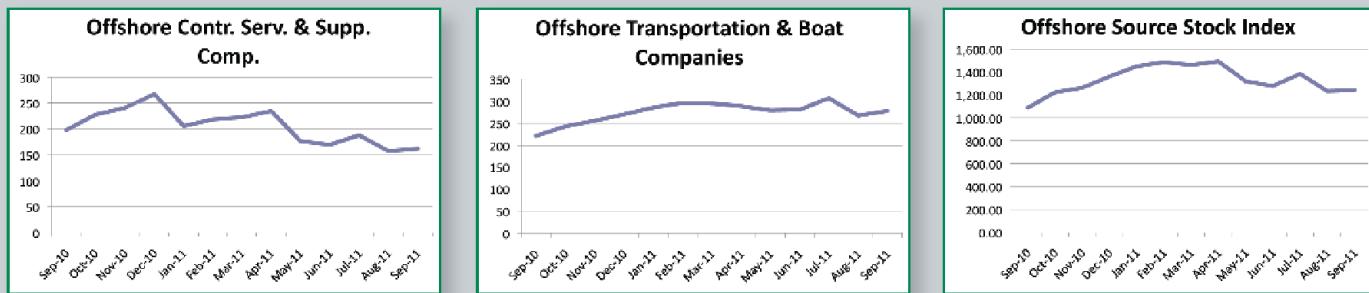


Industry Company Name	Symbol	Close Mid-September	Close Mid-August	Change	Change %	High 52 week	Low
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	59.61	63.06	-3.45	-5.5%	81.00	38.89
Cameron Intl. Corp.	CAM	52.53	48.80	3.73	7.6%	63.16	38.49
Drill-Quip, Inc.	DRQ	64.09	59.56	4.53	7.6%	83.80	47.40
Halliburton Company	HAL	40.19	45.62	-5.43	-11.9%	57.77	28.86
Tenaris SA	TS	31.04	34.25	-3.21	-9.4%	51.07	28.62
Newpark Resources, Inc.	NR	7.96	8.07	-0.11	-1.4%	10.09	5.12
Schlumberger Ltd.	SLB	74.22	79.29	-5.07	-6.4%	95.64	57.70
Superior Energy Services, Inc.	SPN	36.00	35.02	0.98	2.8%	42.87	25.35
Weatherford International, Inc.	WFT	16.57	17.40	-0.83	-4.8%	26.25	14.64
Deep Down, Inc.	DPDW	0.08	0.09	(0.01)	-11.1%	0.29	0.05
FMC Technologies	FTI	44.02	41.10	2.92	7.1%	50.33	32.12
Total Diversified, Production, Support and Equipment.....	426.31	432.26	-5.95	-1.4%	562.27	317.24	
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	30.57	35.05	-4.48	-12.8%	50.81	23.99
Mitcham Industries, Inc.	MIND	13.86	16.72	-2.86	-17.1%	20.00	6.99
Compagnie Gnrale de Gophysique-Veritas	CGV	21.44	24.50	-3.06	-12.5%	38.12	18.26
Total Geophysical / Reservoir Management.....	65.87	76.27	-10.40	-13.6%	108.93	49.24	
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	40.84	42.44	-1.60	-3.8%	48.84	27.33
Diamond Offshore Drilling, Inc.	DO	63.85	62.35	1.50	2.4%	81.19	56.40
ENSCO International, Inc.	ESV	48.68	45.66	3.02	6.6%	60.31	39.51
Nabors Industries, Inc.	NBR	18.50	19.06	-0.56	-2.9%	32.47	16.20
Noble Drilling Corp.	NE	34.95	31.76	3.19	10.0%	46.72	27.68
Parker Drilling Company	PKD	5.41	6.23	-0.82	-13.2%	7.45	3.85
Rowan Companies, Inc.	RDC	37.56	34.47	3.09	9.0%	44.83	29.05
Transocean Offshore, Inc.	RIG	58.59	56.60	1.99	3.5%	85.98	49.05
Total Offshore Drilling.....	308.38	298.57	9.81	3.3%	407.79	249.07	

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-September	Close Mid-August	Change	Change %	High 52 week	Low
Offshore Contractors, Services and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	16.79	16.48	0.31	1.9%	21.65	9.83
Gulf Island Fabrication	GIFI	23.68	26.56	-2.88	-10.8%	36.00	15.72
Global Industries, Ltd.	GLBL	7.87	3.78	4.09	108.2%	10.23	3.09
McDermott International, Inc.	MDR	14.69	14.18	0.51	3.6%	26.14	11.52
Oceaneering International	OII	41.72	38.87	2.85	7.3%	46.19	25.67
Subsea 7 SA	SUBCY.PK	21.95	23.69	-1.74	-7.3%	27.52	17.89
Technip ADS	TKPPY.PK	24.20	23.47	0.73	3.1%	28.35	15.76
Tetra Technologies, Inc.	TTI	10.75	10.21	0.54	5.3%	16.00	8.10
Total Offshore Contractors, Service and Support.....	161.65	157.24	4.41	2.8%	212.08	107.58	
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	89.33	89.33	0.0	0.0%	116.00	76.14
Gulfmark Offshore, Inc.	GLF	39.71	39.74	-0.03	-0.1%	49.95	28.23
Bristow Group	BRS	43.39	41.75	1.64	3.9%	52.89	35.15
PHI, Inc.	PHII	22.50	20.65	1.85	9.0%	26.36	14.54
Tidewater, Inc.	TDW	54.37	52.58	1.79	3.4%	63.55	41.61
Trico Marine Services, Inc.	TRMAQ.PK	0.06	0.09	-0.03	-33.3%	0.25	0.01
Hornbeck Offshore	HOS	29.05	23.66	5.39	22.8%	31.77	15.16
Total Offshore Transportation and Boat	278.41	267.80	10.61	4.0%	340.77	210.84	
Total Diversified, Production, Support and Equipment	426.31	432.26	-5.95	-1.4%	562.27	317.24	
Total Geophysical / Reservoir Management	65.87	76.27	-10.40	-13.6%	108.93	49.24	
Total Offshore Drilling	308.38	298.57	9.81	3.3%	407.79	249.07	
Total Offshore Contractors, Service and Support	161.65	157.24	4.41	2.8%	212.08	107.58	
Total Offshore Transportation and Boat	278.41	267.80	10.61	4.0%	340.77	210.84	
Total Offshore Source Index...	1,240.63	1,232.14	8.49	0.7%	1,631.84	933.97	

Rugged new Birns Aquila™ Articulating Helmet Mount delivers low-profile, high-performance

BIRNS, Inc., ISO 9001:2008-certified global leader in the design and manufacturing of high-performance connectors, penetrators, custom cable assemblies, and lights for the subsea and commercial diving markets, has introduced the most versatile helmet light mount in the diving industry: the new BIRNS Aquila™ Articulating Helmet Mount.

This lightweight, adjustable mount is tailored for one of the company's most popular lighting families—for BIRNS Aquila™, BIRNS Aquila-LED™, and BIRNS Aquila-UV™.

Designed by Jeff Kirby, BIRNS' mechanical design engineer (and eldest son of Bob Kirby, of Kirby Morgan helmets), it's designed with exceptional safety and performance attributes and tailored to fit on the faceplates of the entire line of Kirby Morgan DSI helmets. The innovative design allows for articulated movement of any BIRNS Aquila to swivel in all directions, providing an unmatched level of flexibility in usage.

This revolutionary new BIRNS Aquila Articulating Helmet Mount sets the benchmark for safety as well as utility, engineered to help prevent cables or equipment from

catching on the light or bracket. Crafted from black anodized aluminum, its low profile (a mere 3.5-in. exposed profile above the helmet surface) lends itself to safe and accurate usage in a wide range of diving conditions. The exclusive design features a quick release locking handle for seamless positioning adjustment, and it can be fastened to either side of a helmet in seconds.

For more information, visit www.birns.com.



Tritech RAMS monitors the integrity of risers and mooring lines on the Petrojari Foinaven FPSO

Tritech's Riser & Anchor Chain Monitoring System (RAMS) tool is being used to monitor the integrity of risers and mooring lines on the Teekay Petrojari Foinaven floating production storage and offloading vessel (FPSOs).

Recently launched at Offshore Europe in Aberdeen, RAMS is a 360° riser and anchor chain monitoring system for FPSOs that uses Tritech's proprietary multibeam technology. RAMS is deployed beneath the vessel and monitors the presence, integrity, and position of mooring lines and risers 24/7 from a single sonar head.

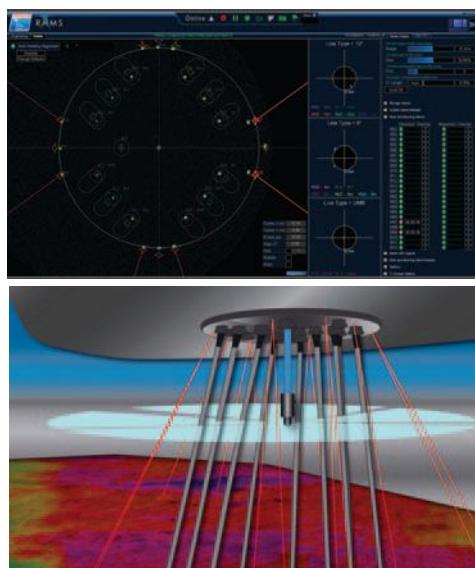
RAMS has been developed in conjunction with one of the world's leading international oil and gas companies, BP, who had a requirement for an automated system able to monitor the series of bend stiffeners, umbilicals and risers on an FPSO, providing a warning system should the movement fall outside the design specification.

Tritech modified their proprietary multibeam sonar technology to a system that could provide a 360° field of view with the ability to detect multiple targets within close proximity of each other. RAMS has been installed on Teekay's Petrojari Foinaven FPSO since 2009, where it continues to be in operation today.

Angus Lugsdin, business development manager, Tritech comments, "RAMS provides extremely accurate and robust real-time measurement and detection of riser or mooring line targets. All data are recorded and exported to allow for analysis; providing BP with the potential to conduct trend analysis, that may assist with fatigue analysis studies."

A BP Representative commented, "RAMS has been installed on the Foinaven FPSO since 2009 and shown to be 100% effective. We are confident of the system and its ability to monitor the integrity of risers and umbilicals and its capability for data export in order to analyse riser/bend stiffener movement, which is very important, not only to maintain the asset but to identify the need for corrective action."

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



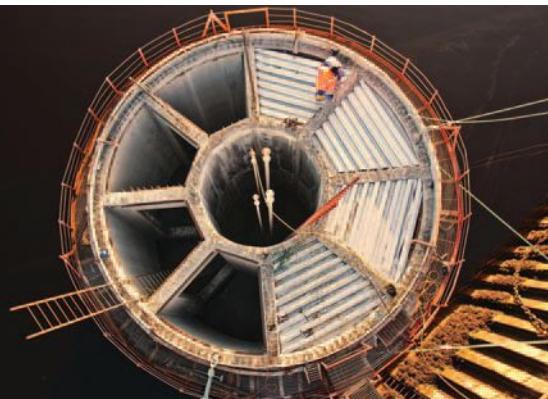
Graphic showing a simulated data screen shot as viewed in the RAMS software (top). Graphic showing a representation of RAMS head deployment; real-time 360° riser and anchor chain monitoring for FPSOs (bottom).



Gael Force launches SeaLimpet mooring device with first contract

Specialist in marine engineering, equipment and aquaculture, Gael Force Group has launched its innovative SeaLimpet floating gravity-based mooring device for the subsea and renewables sectors and announces the completion of its first contract.

The SeaLimpet is a cylindrical concrete structure with specially configured in-built chambers that can be flooded with water or evacuated using compressed air, allowing it to be towed, floated to position and then flooded to sink under controlled conditions.



The SeaLimpet secures wind, wave, and subsea installations to the seabed with pinpoint accuracy and, because it can be floated into position using non-specialist vessels, avoids the need for heavy transportation ships and cranes, significantly lowering deployment costs while reducing operational risk.

The first contract for Gael Force was secured with New Jersey-based renewable energy company Ocean Power Technologies (OPT), which commissioned an initial three 460-tonne SeaLimpets for the deployment of its PowerBuoy® wave energy device. The SeaLimpets have been delivered ready for use by OPT off the coast of Oregon. The value of the contract was £900,000 (\$1.48 million).

Gael Force is based in Inverness in the Highlands of Scotland. The initial concept for the SeaLimpet came from feasibility work completed for an in-house marine renewable energy project and drew on the company's experience in mooring heavy displacement marine structures in the aquaculture industry.

However, Gael Force soon realized the potential that existed for the device in more general marine and oil and gas subsea sectors and is currently engaged in developing

adaptations of the SeaLimpet for a variety of offshore engineering projects.

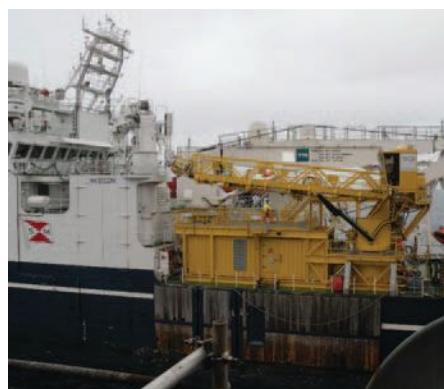
Gael Force managing director David Guthrie said, "The versatility and adaptability of the SeaLimpet mean that it has vast potential for both subsea and renewable applications where low cost of deployment, accuracy, and safety are key drivers. It is not a concept, but a designed and delivered solution, and we are currently busy on adaptive design and engineering work, which will result in the SeaLimpet being deployed in some interesting mooring applications."

For more information, visit www.gaelforcegroup.com.

World's first vessel-to-FPSO personnel transfer

Offshore Solutions BV (OSBV) is delighted to announce the successful completion of the world's first vessel-to-FPSO personnel transfers using a heave-compensated marine walk-to-work system.

During July and August, OSBV's patented Offshore Access System (OAS), mounted on the MS Stril Explorer (chartered by SeaHold GEO-SHIPS Limited), successfully transferred personnel to and from Shell Expro's Anasuria FPSO (located approximately 175km east of Aberdeen), with no safety incidents.



Allan Syme, project manager for the Anasuria Support Vessel Project, said, "Offshore Solutions worked with us over a very short timescale to provide a gangway for the first trial of a walk-to-work solution between a DP vessel and a turret-moored FPSO to support an air diving campaign and shutdown."

Some 24 operational connections were made, facilitating 294 individual crossings. The transfers were achieved while the MS Stril Explorer carried out diving activities during the same period.

For more information, visit www.offshoresolutions.nl.

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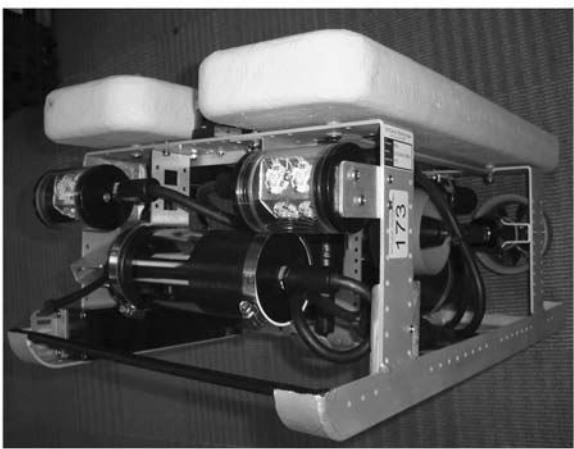


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Product News

Viper Subsea unveils new line of insulation monitors

Viper Subsea has unveiled its latest innovative subsea products – the V-SLIM™ Subsea Deployed Line Insulation Monitor and V-LIM™ Line Insulation Monitor.

V-SLIM™ provides a simple and convenient diver/ROV deployable method of fault finding and locating electrical problems within the subsea electrical distribution network where faults cannot typically be identified from topsides. V-SLIM™ immediately detects the presence of an earth leakage fault and provides a measurement of insulation integrity and loop resistance of any connected circuit, and can identify whether any earth leakage is "upstream" or "downstream" of the unit, helping to pinpoint the location of the problem.

Compatible with existing subsea control systems, V-SLIM™ helps to avoid unplanned interventions by monitoring and trending electrical system integrity.

Designed for use on AC floating systems, the V-LIM™ is a self-contained, panel-mounted, micro-processor controlled precision device that is specifically optimized to monitor the integrity of electrical umbilical cables. The device has been designed to allow integration into topsides equipment either as part of a new development or it can be retrofitted into existing installations.

The V-LIM™ accurately monitors insulation resistance, voltage, current, loop resistance, and polarization index of the umbilical and connected subsea equipment with high accuracies. The data gathered by the V-LIM™ can be used to analyze the rate of deterioration of system electrical insulation and when this is likely to result in a system failure. It can also help identify the probable type of system failure.

Neil Douglas, managing director of Viper Subsea said: "The most common failure arising from the subsea environment is the failure of insulation as a result of water ingress. Failures may result in short circuits and can eventually lead to total loss of subsea electrical control and unplanned shutdown of production from one or more wells."

For more information, visit www.vipersubsea.com.

New TSS motion sensor

Dynamic positioning (DP) system manufacturers have been quick to welcome the new DMS-500RP series of sensors.

The DMS-500 range has been developed specifically to meet the needs of users who require a top-quality motion sensor with Ethernet connectivity, but do not require the subsea-rated housings that typify Teledyne TSS products. The first phase of the product's launch has introduced the Roll Pitch range of sensors, including the DMS-525RP, the DMS-535RP, and the DMS-550RP. When the sensor range is complete, it will include conservatively priced instruments that incorporate advanced and innovative features for applications, such as DP, wave-height monitoring, and structural stress monitoring.

For more information, visit www.tss-international.com.



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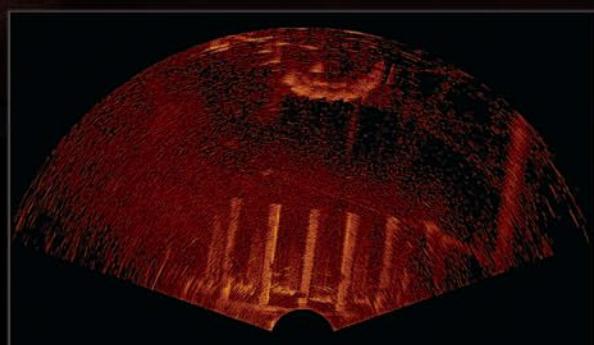


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iRobot continues to develop and expand mission capabilities of long-duration, low-logistics Unmanned Underwater Vehicles (UUVs)

The iRobot 1KA Seaglider, a long-range, high endurance UUV, performs an increasing array of missions that last many months and cover thousands of miles. Originally designed by the University of Washington and further developed by iRobot, Seaglider autonomously performs physical, chemical and biological oceanography, persistent surveillance, marine environmental monitoring and a variety of other missions for a fraction of the costs of traditional manned research vessels and moored instruments, which run as high as \$50,000 per day.

Seaglider's available buoyancy engines enable efficient and long-term missions while operating between 20 m and 1,000 m. Able to perform and gather data throughout shallow and deep dives in a single mission, Seaglider receives commands and transmits collected data on a programmable schedule to allow for continual monitoring and analysis and to guard against data loss.

Seaglider Development

iRobot has introduced new Seaglider fairings that significantly increases payload capacity while reducing total drag on the vehicle. The rounded and tapered or "ogive" aft fairings increase the Seaglider's payload volume by 650% to more than 21,000 cm³ and doubles the payload mass carrying capacity to 4 kg. This development effort has led to the integration of more advanced sensors and opens the door to future integration efforts and additional markets.

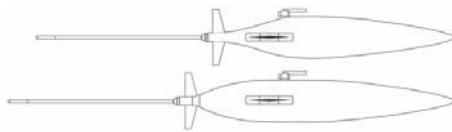


Figure 1. This comparison between the old and new fairing design shows the additional payload space added to the profile.

Seaglider Sensor Integration

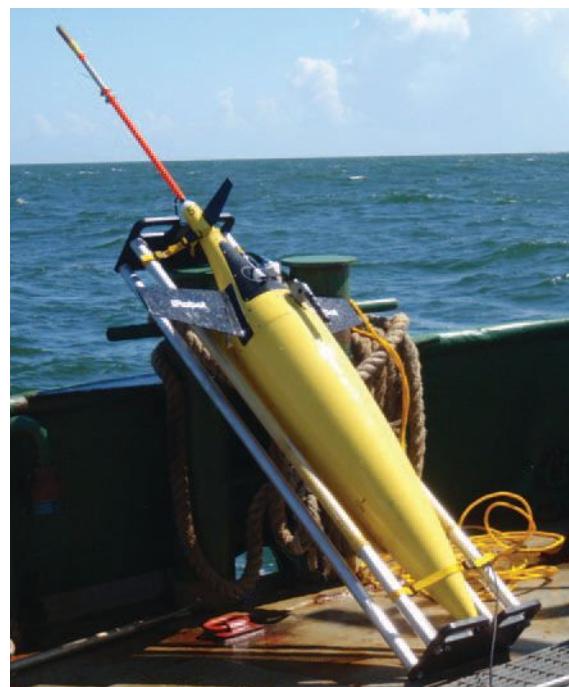
Seaglider has six payload ports that accommodate a wide range of sensors. The greater overall payload capacity of the new ogive fairing enables the integration of more numerous and larger payloads including the Nortek Current Profiler, Imanex Echo Sounder, and pumped versions of the Sea-Bird CTD and Dissolved oxygen sensors.

NortekUSA and iRobot collaborated to develop and integrate a small, light weight and low-power consuming Current Profiler (CP) with the Seaglider. This capability is attractive to oceanographers and marine biologists investigating ocean dynamics, including mixing and turbulence, and how these variables effect the distribution of zooplankton and the presence of other biologic life or introduced substances.

Seaglider supports a modified, compact echo sounder developed by Imanex. This successful integration of the Imanex

Model 853 enables the Seaglider to perform long-term measurements of biomass in the world's oceans to better understand the food chain. The echo sounder is able to store up to 200 days of raw data for download upon recover. The small size and lower power consumption is ideal for long-range, high endurance missions supported by the Seaglider.

More than 135 Seaglider UUVs have been delivered to customers worldwide, including the U.S. Navy, government agencies and research organizations. Seaglider has been deployed in a range of environments around the world, performing missions in the tropics and under polar ice, in freshwater and saltwater. In the future, Seagliders will be deployed on missions that last a year or more and cover more than 6,000 miles.



Industry Leadership

As a pioneer in the robot industry, iRobot's goal is to drive innovation, serve as an industry catalyst and change the world by fueling the era of robots.

With 20 years of leadership in the robot industry, iRobot remains committed to providing platforms for invention and discovery, developing key partnerships to foster technological exploration and building robots that improve the quality of life and safety standards worldwide.

For more information about iRobot, Seaglider and other UUVs, visit irobot.com.

iRobot Corporation/Maritime Systems
4625 Industry Lane, Durham, NC 27713
T: 919-405-3993 F: 919-405-3994
E: maritimessales@irobot.com

iRobot is a registered trademark of iRobot Corporation. Ranger is a trademark of iRobot Corporation. Seaglider is a trademark of the University of Washington.

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OceanServer Technology, Inc. is a leading provider of man-portable Autonomous Underwater Vehicles

(AUVs), three axis Digital Compasses and high efficiency lithium Ion battery-based power solutions for embedded OEM application. The Iver2 AUV is an affordable, commercial vehicle used by customers around the globe for bathymetric and water quality surveys, sub-surface security, sensor development and general research. OceanServer's Digital Compasses and Battery Power Systems provide fully engineered and cost effective solutions for OEM integration, reducing time-to-market product introductions in real-world applications.



IVER2 AUTONOMOUS UNDERWATER VEHICLE (AUV)

The Iver2 is a simple to operate AUV system that incorporates a Windows-based open software architecture and a well-defined hardware interface that enable researchers and OEMs to quickly adapt the Iver2 for a variety of applications. The vehicle comes standard with OceanServer's VectorMap Mission Planning and Data



Presentation tool to simplify survey operations. Common payloads included Side Scan Sonar (SSS), Doppler Velocity Log (DVL), Acoustic Doppler Current Profiler (ADCP), Conductivity, Temperature and Depth (CTD) sensor, and Multi-beam Imaging sonar. Researchers and developers can choose one of the three Iver2 Expandable Payload (EP) models that offer a dedicated second CPU and an intuitive API for customizing software, creating remote helm commands or sensor development.

The VectorMap program can input virtually any geo-referenced chart, map or photo image, allowing the operator to intuitively develop missions using simple point-and-click navigation. The base vehicle, with a starting price at just over US \$50,000, gives university, government and commercial users an affordable base-platform for survey applications in water quality, hydrography, security and general research. OceanServer Technology is a privately held company headquartered in Fall River, Massachusetts.



International Submarine Engineering Ltd. Group of Companies

ISE formed in 1974 to design and build underwater vehicles for the subsea industry. During the last 35 years ISE has built remotely operated vehicles (ROVs), manned submersibles, semi-submersibles, robotic manipulators and AUVs. ISE also designs and builds unique solutions for subsea and robotic tasks, and has a customer base spanning the globe. Other notable product achievements include large and small robotic and control systems. Examples of other engineering projects include the

Shell SmartPump Refueling robot, and the STM crew training robot for the Canadian Space Agency.

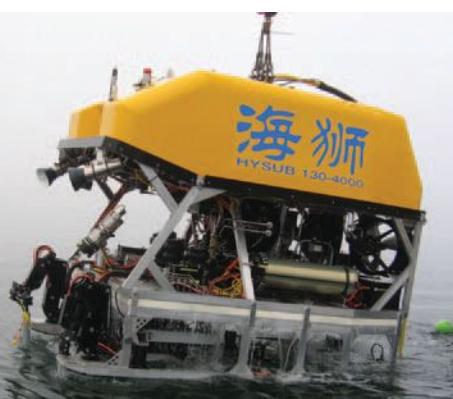
ISE's specialty lies in the design and integration of complex systems for the sub-sea industry with a focus on working to provide clients with solutions that address their specific needs. This experience is represented by the over 210 underwater vehicles and over 400 ROV manipulators ISE has built and delivered to clients in



20 countries. Of these vehicles, over 25 are AUV's. These range from a 25 kg suitcase size vehicle known as Sea Squirt, to the longest-range AUV that currently exists in the world.

Systems are designed to meet the needs of the mission requirements. Complementing design and manufacture, ISE has built a framework for control systems that span a wide range of remotely controlled applications. A unified control system design is used across all unmanned vehicles based on common core software for command and control.

ISE's expertise and equipment is found in all sectors of underwater activity including offshore, cable maintenance, marine science and oceanography and naval mine countermeasures. Based in Port Coquitlam, BC, ISE's facilities are conveniently located 10km from the Vancouver harbour where the company maintains and operates a 25 meter research vessel. Local sheltered water depths are from 20 to 240 meters and provide an ideal undersea vehicle testing site.



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Founded in 2000 by a group of leading international scientists and experts in maritime engineering, EvoLogics develops innovative key technologies for the aerospace, maritime and offshore industries. The company's approach combines the best from nature with leading edge engineering. The integrated Information and Communication Technologies (ICT) for deep water and harsh environments enable a higher degree of freedom, increased reliability, flexibility and ease of use. EvoLogics' systems have become enabling technologies for deep water exploration and production with fully integrated solutions that reduce costs and risks. The development of extendable networks opens new frontiers for underwater communication, positioning, navigation and monitoring applications.



EvoLogics' solution is based on the most reliable acoustic telemetry available for offshore applications. The modular design of our systems makes them ideal for a wide range of applications. From quickly and cost efficiently enabling temporary installation of initial offshore equipment before the cables are laid out for full working infrastructure to providing an independent bidirectional data link along with

acoustic positioning, broadcasting and complete networking capabilities once in production. Simultaneously it facilitates optimal operation and sensible navigation of sub-sea robots (UUVs) in the given environment.

This enables very flexible acquisition of additional information from various sensors and other subsystems, allows for the control of complex processes since it combines communication with high accuracy positioning and multiple monitoring options. Finally, in case of emergency it can serve as an independent control link that will work even when all cables connections are shut down by unforeseen reasons.

The S2C systems have been developed specifically for harsh underwater environments with special algorithms for signal processing and data management. The platform is therefore resilient to common sources of interference and multipath propagation. At the same time a great energetic efficiency has been achieved, with modules conceived for long and very long term deployments. Recently the S2C R Modems have been selected by Ifremer for long term observation of the European Seas at the ESONET project, after very extensive testing and comparison against solutions from other providers.

Extensive experience with sensor integration gives the customers turn-key solutions from data-acquisition, positioning and up to the point of equipment recovery. Even equipment that is not well suited for acoustic telemetry because of their protocols and interfaces has been fully integrated with the S2C R Modems. New features allow for example full control and data retrieval of ADCP files, including options to select individual files and recover partial transmissions, which the original sensors did not allow by themselves. Multiple sensors can be accessed using one single modem, as is the case of the deployment in the West Pacific where the Institute of Oceanology, Chinese Academy of Sciences studies the dynamics of the Northwest Pacific current and its role in moderating regional and global climate systems.

With underwater networking features, multiple data channel options and interoperability with other connection alternatives, new doors are opening under the ocean. Today, all operations can be followed remotely, with the capability to link any point of the ocean with your desk.

To learn more, please visit us at <http://www.evologics.de>



Corporate Showcase



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With almost 45 years in the subsea industry, the SEA CON® Group has become a worldwide leader in underwater connector technology and provides an extensive and diverse range of electrical, optical and hybrid connector assemblies, submersible switches and cable system solutions for many applications within the Oil and Gas, Defense, Oceanographic, Renewable Energy and many other harsh environmental markets.

Since the start with the manufacture of the Marsh & Marine connector range, SEA CON® has always taken on the challenge of not only providing what markets require today, but also tomorrow. A prime example of this is SEA CON®'s commitment to supporting the use of fiber optics within the Oil & Gas industry with the development of dry-mate optical products, including the MINI-CON and OPTI-CON connector series, the highly successful underwater mateable HYDRA-LIGHT connector and the down-hole multi-channel G3 fiber optic connector.



To achieve this broad spectrum of product supply and service, the group has six globally located manufacturing facilities each staffed with highly experienced design and development teams. In addition SEA CON® maintains multiple in-house CNC machining departments which routinely manufacture electrical contacts from 28 AWG to components weighing hundreds of pounds. SEA CON® also has several molding departments with a wide variety of composites/elastomers and an in-house glass to metal sealing facility. To complement our design and manufacturing capabilities, we also have extensive in-house testing capabilities which include electrical, optical, dimensional, pressure, shock, vibration, axial pull equipment all with experienced staff. In addition SEA CON® provides a 24/7 in-service support for its products with highly qualified trained engineers and technicians available to provide an immediate and professional response to any service requirement in any location.

SEA CON® has been supplying products and services to many harsh environmental markets over the years and has been proud to provide some of the most leading edge solu-

tions available in the market. This focus on technology can be traced back many years through products like the ALL-WET connector series. This connector range not only provided the market with the ability to mate electrical connectors 'wet', but gave the flexibility of connecting multiple individual instruments, lights etc. into a single interface connection point on a control pod with the further development of the 'Split' ALL-WET connector range.

As markets change, SEA CON® has been able to adapt existing products to meet market needs. The Metal Shell Series (MSS) has been one of our main product lines providing high contact density and a variety of power and signal configurations. This series has also provided SEA CON®

with the ability to meet the requirements of API-16D standards with the inclusion of 'test ports' at seal interfaces, critical in today's offshore drilling industry. SEA CON® understands the importance of not only developing technology but also ensuring that the technology is qualified in accordance with the appropriate specification for the applicable markets. This understanding and experience has been gained through many Technology Qualification Programs (TQP's) conducted by SEA CON® for products including, but not limited to the MINI-CON and the HYDRA-LIGHT connectors as well as the SEA CON® Precision Hose system to name a few.

For more details please visit our website at www.seaconworldwide.com



Corporate Showcase



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Bowtech Products was started approximately 22 years ago representing various overseas manufacturers selling and supporting their products in the United Kingdom. In support of these products, Bowtech also manufactured a range of underwater tooling cameras, controllers and relocation strobes.

4 years ago, Bowtech made the decision to part company with one of their overseas suppliers and entered the market as a major manufacturer of deep underwater professional cameras and lamps. In this short time Bowtech have designed and built over 50 new products which are being used by major ROV Operators, Drilling Rig Contractors, Oceanographic Institutions, Nuclear Power Generators and the Military all over the World.

These products include a complete range of underwater video cameras including High Definition Colour Zoom Cameras, Stereo High Definition cameras, Extremely Low light Cameras and large series of underwater LED Lamps. Bowtech are now a preferred supplier to major ROV operators for cameras and lights.

Apart from delivering individual products Bowtech have also delivered complete visual inspection systems for riser and

anchor monitoring on FPSO's and semi submersible drilling rigs, complete diver video systems and multi camera High Definition video systems including transmission of multiple signals to the surface over a single fibre optic conductor.



Bowtech's innovative Underwater LED Lamps provide unprecedented levels of light output and efficacy and operate at up to 6000m ocean depth



The Bowtech camera range consists of Colour and Monochrome Tooling Cameras, Low- and Ultra-Low Light Cameras, Standard Definition, High Definition and Stereoscopic (3D) High Definition Cameras



RBR design and manufacture high precision data loggers, submersible to 10,500m. These loggers feature high accuracy with low power consumption and flexible channel choices in small lightweight packages.

RBR instrumentation can incorporate sensors for CTD (conductivity, temperature, depth) and many other physical, biological and chemical parameters. In turn, indirect derivation of salinity, speed of sound and total suspended solids can be made.

New single and dual channel loggers are released. The RBRduo series measure a combination of two of the following: temperature, pressure (depth), or dissolved oxygen and are available for measuring tides and waves. These loggers are designed to allow for longer deployments, over 30 million measurements and USB download speeds. The single channel 1060 series are small and efficient loggers that measure temperature, or pressure (depth) or dissolved oxygen.

RBR

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Our bench top portable salinometer, the MS-310e is based on a new concept where the salinity of a sample is derived from the ratio of the conductance of the sample simultaneously compared with the conductance of a reference. Every sample is therefore standardized, and the standard itself is enclosed in glass to preserve the integrity of measurement for weeks.

The inductive mooring line modem communication system, the MLM-1000, is designed to provide fast communication with XR(X) series and OEM loggers deployed up to a kilometre in depth. The modem uses an underwater transformer to transmit information through a jacketed mooring line without requiring cables or connectors.

RBR Applications include Oceanography, Limnology, Cryosphere, Hydrography, Aquaculture and Environmental monitoring.

info@rbr-global.com www.rbr-global.com

Corporate Showcase



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Since 1978, the SubConn® range of underwater connectors has become the industry standard for reliable, affordable and innovative design. Designed for use in shallow water to full ocean depth applications, the product line has been continually expanded and improved to meet the needs of the industry.

Featuring 1 pin to 26 pin configurations, SubConn® connectors have been used in a wide range of applications. New design and manufacturing methods now allow for direct molding of the SubConn® connectors on polyurethane cables. This has opened up new applications and support for their customer base. A full stock of specialty cables with shielded cables and special multi size conductors is maintained for customer use.

New requirements for underwater power distribution have expanded the power connector series for SubConn®. They now include 1pin, 2 pin, 3 pin and 4 pin connectors with up to 250 amps per pin capability.

SubConn Inc. has recently introduced a fully qualified

Ethernet data series connecotrs. These systems offer 1 Gbps data transfer at distances up to 100 meters in shallow or full ocean depth applications. The series is available as Ethernet data only or Ethernet data and power configurations.

The recent acquisition of a new facility in Ord, NE has expanded their ability to make special molding including "Y mold breakouts, connector blocks and bulkhead adaptations. This has also improved delivery as SubConn Inc. now has internal machining capacity for all of their needs.

In partnership with MacArtney A/S, the globally trusted range of SubConn® connectors is continually tested and extended to meet the highest quality standards and the individual requirements of today's and the future's industry requirements.

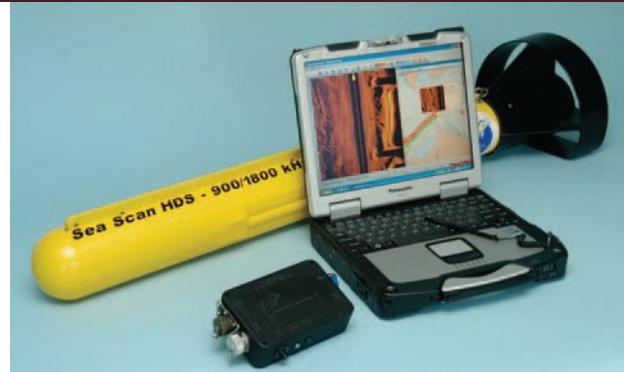


Marine Sonic Technology

Marine Sonic Technology, Ltd. was established as a Virginia corporation in 1990 to design, manufacture and market underwater imaging and positioning systems using wide-band, short-pulse technology that was originally developed by the company's founder for use in medical ultrasound imaging systems. This technology greatly improves across-track resolution and reduced power consumption for side-scan sonar systems

MSTL sells its sonar products worldwide to military, the ocean technology industry, government agencies, the search and rescue community, universities and private individuals.

MSTL is deeply committed to providing in-depth training and technical support to all of its customers, from engineers building sophisticated autonomous underwater vehicles to search and rescue workers locating drowning victims. By



being available whenever it is needed, MSTL has established an enviable reputation for helping its customers succeed.

MSTL is located in southern tidewater Virginia close to the Chesapeake Bay, the many rivers and several military bases in the Hampton Roads area. This area provides many diversified training areas and a supply of potential employees trained in sonar applications.

MSTL owns a 6500 square foot facility situated on seven acres in Gloucester County. In addition MSTL has a 36 foot twin-diesel workboat, the "Sonic Boom" which is used for product testing and customer training. All engineering, manufacturing, testing, marketing and sales is done at this facility in White Marsh, Virginia. Currently MSTL has eighteen employees who bring nearly 80 years of experience in sonar imaging and ocean technology to the corporation.
Sales Manager: John DeMille: jdemille@marinesonic.com
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People & Company News

Robin Watson, previously managing director of Wood Group (North Sea) Ltd., was appointed UK managing director of the recently formed Wood Group PSN business. Watson has overseen the expansion of Wood Group's UK asset operations business since 2010. He was previously responsible for duty holder contracts with clients including Centrica, Ithaca and Premier Oil and significant North Sea contracts with Hess, Talisman and TAQA. He brings to the role more than 20 years of industry experience in production and energy development. In his new role, Watson will be responsible for the delivery of the combined UK legacy businesses of Wood Group's Engineering North Sea and PSN. This portfolio includes large integrated service contracts with TAQA, Talisman, Shell and BP.

Husky Energy Inc. said that **John C.S. Lau**, president and chief executive officer of Husky Asia Pacific, has decided to retire. Lau has been with Husky since 1993. He stepped down from his



Watson

role as president and chief executive officer at Husky Energy last year and relocated back to Hong Kong to assume responsibility for leading the development of Husky's businesses in the Asia Pacific region, including existing businesses in Indonesia and the South China Sea. Having established the framework for Husky's business development in the Asia Pacific region, Lau decided to step down and retirement.

Baker Hughes said that **Darrell C. Howard** joined the company as president of the Integrated Operations organization. Howard joins Baker Hughes from VICO Indonesia, where he served as vice president, technical support for the BP-Eni joint venture. In this role, Howard will apply his in-depth knowledge of the entire oil and gas asset lifecycle to expand Baker Hughes' position in the fast-growing integrated project management market.

Inspection and non-destructive testing specialist Applus RTD appointed **Bengt Eide** as offshore projects operations director for the UKCS and Norwegian North Sea, as part of the ongoing merger of its UK, Irish and Scandinavian operations. Eide, 49, who is based between

Aberdeen and Stavanger, steps up to become offshore projects director alongside his role as business unit manager for Applus RTD in Scandinavia, as the firm increases its focus on supporting operations on maturing assets in the region. He leads the company's offshore projects team covering inspection, maintenance and repair operations in the upstream and downstream oil and gas exploration and production sector in the UK and Norwegian continental shelf areas.

Tiffany Soileau was named account executive at Foster Marketing. Based in the Lafayette, La., office, Soileau will be responsible for developing strategic marketing communications plans, building client relationships and servicing accounts. She joins Foster Marketing from KATC-TV3 where she



Eide



Soileau

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was responsible for placing and negotiating programming plans. She has eight years of extensive public relations experience specializing in regional governmental issues and statewide information campaigns. In addition, her experience includes event planning, media relations and speech writing.

Wireless Seismic hired **Travis Bird** and **Scott Williams** to the recently created positions of chief financial officer and sales director-Americas respectively and the relocation of its corporate headquarters to Sugar Land, Texas, located just outside of Houston. Wireless Seismic is the developer of a wireless seismic data acquisition system with real-time data return.

Devin International promoted **Craig Latch** to deepwater projects coordinator, Gulf of Mexico. Latch will coordinate the initiation and execution of equipment orders for customers' projects from Devin International's Lafayette, La. office. He previously served as international projects coordinator for the company.

Oilfield Instrumentation (OI), a provider of real-time drilling instrumentation and hazardous environment labs, recently promoted **Peyton Reddick**, a 14-year veteran of the company, from vice president of operations to president. The move coincides with a shift of focus for OI, from offshore to more land-based operations, a transition required for survival and growth during the U.S Gulf of Mexico drilling moratorium. Under Reddick's leadership, Oilfield Instrumentation recently introduced new technology called Rig Vision Mobile, which allows users to monitor critical well data via their smart phones or mobile devices. Reddick's advance also comes with the 2011 opening of two new service centers in California and Oklahoma, bringing its total number of locations to 10.

Completions and sand management specialist Darcy appointed a Business Development Manager **Mark Presslie** in its latest move to support the introduction of a new technology-led solution to optimize oil and gas reservoir inflow. Presslie joined the Darcy team to meet the customer service requirements in the company's growth



Latch



Presslie

following the launch of its Critical Matrix Management technology. The solution, which provides a low-risk and high-value sand management completions method, has recently successfully undergone several operator-sponsored projects to provide independent verification of its performance characteristics.

Market leading subsea asset rental company, Ashtead Technology announces the appointment of **Martyn Conroy** as Sales Director of the Offshore Division.

Martyn has over 15 years of experience in the subsea industry. Starting in the early 90's as a design engineer for Expro Group Martyn has subsequently held subsea leadership roles with FirstSubsea, Hydratight and most recently as Specialist Services Business Leader with RBG Group. Conroy will be based in the Aberdeen office but will be providing support to all of the Ashtead's offshore regions and will be responsible for developing and implementing the company's sales strategy.

Responding to sustained growth at Fugro GEOS, four new management appointments have been announced in Wallingford, UK; Houston, USA; and Singapore. **Alastair Stagg** has been appointed as Regional Manager of the company's Metocean Measurement business line. In the new role of Commercial Manager at Wallingford, **Richard Davies** is responsible for co-ordinating the sales teams involved in the growing number of multi-disciplinary opportunities within Fugro GEOS. In Houston **Ben Williams**, appointed as Operations Manager, is now responsible for all Houston-based measurement and offshore systems operations.

Terresolve Technologies, an industry leader in producing environmentally safe lubricants and functional fluids, announced that **Kenneth Shelley** has joined the company as sales manager.

Oscar Lopez joins T&T Bisso as an Assistant Project Manager and On-Site Coordinator, bringing more than 10 years of experience in Salvage Logistics support and Project Management.

Juha Heikinheimo has been appointed to the position of President of Napa Group (Napa Ltd), a world leading provider of software solutions for the maritime industry. Heikinheimo assumes the position from **Matti Salo**, who successfully served as President of Napa Group for eleven years.

Expanding its national sales force, Seakeeper named **Brook Streit** as regional sales manager for North America. He will be responsible for generating business in the recreational market.

October 4-6, 2011:

OTC Brazil

Rio de Janeiro, Brazil

www.octnet.org

October 11-12, 2011:

MTS Dynamic Positioning

Houston, TX

www.mtsociety.org

October 11-13, 2011:

AWEA Offshore Windpower 2011

Baltimore, MD

www.offshorewindexpo.org

October 18-21, 2011:

Ocean Innovation 2011

Iqaluit, Nunavut

www.oceaninnovation.ca

October 25-27, 2011:

LAGCOE

Lafayette, LA

www.lagcoe.com

November 7-8, 2011:

MREC Technical Conference

Cambridge, MA

www.mrec.umassd.edu

November 8-10, 2011:

Offshore Communications

Houston, TX

www.offshorecoms.com

November 14-16, 2011:

MAST Americas

Washington D.C.

www.mastamericas.com

Nov. 30 - Dec 1, 2011:

Clean Gulf

San Antonio, TX

www.cleangulf.org

Nov. 30 - Dec. 2, 2011:

International Workboat

New Orleans, LA

www.workboatshow.com

December 6-8, 2011:

Wind Turbine Blade Manufacture 2011

Cologne, Germany

www2.amiplastics.com/Events/Event.aspx?code=C420&sec=1786

December 13-15, 2011:

Subsea Survey IRM

Houston, TX

www.subseasurvey.com

January 24-26, 2012:

UI 2012

New Orleans, LA

www.underwaterintervention.org

March 13-15, 2012:

Oceanology 2012

London, UK

www.oceanologyinternational.com

Ocean News & Technology

2011 EDITORIAL CALENDAR

January/February

Editorial: Inspection & Light Work Class ROVs, Offshore IRM
Distribution: Underwater Intervention
Deadline: January 14th
Product Focus: Diving Equipment & Buoyancy Materials

March

Editorial: Defense & Naval Systems, Oceanography & Meteorology
Distribution: NACE • Future Naval Forces • Ocean Business • Offshore Survey
Deadline: February 18th
Product Focus: Navigation, Mapping & Signal Processing; U/W Batteries

April

Editorial: Offshore Technology, Maritime Security
Distribution: U.S. Hydro • OTC • Maritime Security Expo-EJ Kraus
Deadline: March 11th
Product Focus: Connectors, Cables & Umbilicals

May

Editorial: AUVs & Gliders, U/W Imaging & Processing
Distribution: Oceans '11 IEEE Spain • UDT Europe
Deadline: April 15
Product Focus: Cameras, Lights & Imaging Sonars

June

Editorial: Ocean Renewables, Ocean Observing Systems
Distribution: EnergyOcean11 • Sea Work Int'l • MAST France
Deadline: May 13th
Product Focus: Tracking & Positioning Systems

July

Editorial: Work Class ROVs, Subsea Fiber Optic Networks
Distribution: AUVS1
Deadline: June 17th
Product Focus: Subsea Tools & Manipulators, Seismic Monitoring

August

Editorial: Coastal Engineering, Aquaculture & Marine Resources, Offshore Mooring Systems
Distribution: Offshore Europe • OCEANS'11 MTS/IEEE Kona
Deadline: July 15th
Product Focus: Buoys & Monitoring Instrumentation

September

Editorial: Offshore Wind, Subsea Telecom, Deepwater Pipeline Repair & Maintenance
Distribution: OTC Brasil • AWEA/Offshore Wind • MTS Dynamic Positioning
Deadline: August 19th
Product Focus: Multibeam & Side Scan Sonars

October

Editorial: Offshore Communications, Environmental Assessment & Monitoring, OTEC
Distribution: LAGCOE • MAST Americas • Clean Gulf
• Offshore Communications
Deadline: September 16th
Product Focus: Acoustic Modems, Releases & Transponders

November/December

Editorial: Ocean Mapping & Survey, Commercial Diving, Decommissioning, Plug & Abandonment
Distribution: International Workboat • Subsea Survey/IRM
• Underwater Intervention
Deadline: October 28th
Product Focus: Workboats & Special Purpose Subsea Vehicles

For more than 25 years, Ocean News & Technology has been reporting the latest news, trends and technology developments in a global marketplace.

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TSC Publishing announces a fresh and expanded editorial approach for Ocean News & Technology, creating a dynamic, exciting and invaluable source of information for all industry professionals in the ocean and offshore markets.

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E-mail: gavinwilloughby@appliedacoustics.com
Website: www.appliedacoustics.com
Contact: Gavin Willoughby

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Contact: Terry Slater and Rob Nunn

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Teledyne TSS Ltd.

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Website: www.teledyne-tss.com
Contact: Carolyn Jones

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PMI Industries, Inc.

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E-mail: sales@pmiind.com
Website: www.pmiind.com

Underwater engineering service company specializing in highly reliable custom cable systems & hardware for the marine environment. EVERGRIP™ Termination: provides a full-strength field installable termination providing a high quality strength termination for use on electro-mechanical, optical cables and wire rope. EVERFLEX™ Bending Strain Relief: used & applied at terminations where off-axis tension may occur. The unique split hardware design of the DYNA-HANGER™ Suspension System offers mid-span bend protection & superior high strength holding that can be applied at any point along the cable. Our dynamic cable testing facility simulates at-sea mechanical environmental conditions.

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E-mail: sales@ak-ind.com
Website: www.ak-ind.com
Contact: Allan Kidd

AK Industries is an agile high tech manufacturer of rugged low cost underwater electrical connectors. The HydroVolt line of connectors is the most rugged and reliable low cost connector available. AK Industries is also ideally suited to provide unique solutions engineered to customer requirements.



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Fax: +1-805-487-0427
E-mail: service@birns.com
Website: www.birns.com
Contact: Eric Birns

BIRNS, Inc. is a fully-integrated ISO:9001:2008-certified designer and manufacturer of high-performance underwater solutions—LED and tungsten-halogen chamber and commercial diving lights; MPI-NDT equipment; electrical, coaxial, optical, electro-opto-mechanical connectors, penetrators and custom cable assemblies. Specializing in high-end connector products—BIRNS Millennium™; miniature metal shell (high-density, high-voltage, coaxial, fiber-optic, hybrid); Metal Shell: rugged, high power use; Penetrators: ABS/DNV-approved pressure boundary penetration; along with Aquamate, Rubber and Polymeric lines.



BIRNS Aquamate LLC

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Pawtucket, RI 02860 USA
Tel: 1 401-723-4242, Fax: 1 401-723-4243
E-mail: sales@birnsaquamate.com
Website: www.birnsaquamate.com
Contact: Eli Bar-Hai, Operations Director

Part of the BIRNS Group, Birns Aquamate LLC design and manufacture underwater electrical connectors, cable assemblies, and cable terminations. The company produces a wide range of standard industry connectors such as the 5500 Series, SC, MC, LP, FAWL/FAWM, Rubber Molded, etc. fully compatible with other manufacturers. Birns also specializes in fast turn-around for custom design of special connector solutions. Stocking dealers in the UK (Scorpion Oceanics) South Africa (Marine Solutions) Holland (Nautikaris and Seascapes) and Brazil (MAKO).



SEA CON®

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El Cajon, California 92020 USA
Tel: (619) 562-7071, Fax: (619) 562-9706
E-mail: seacon@seacon-usa.com
Website: www.seaconworldwide.com

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 North Pembroke, MA 02358
 Tel: 781 829 4440, Fax: 781 829 4442
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 Website: www.subconn.com
 Contact: Mike Stewart

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E-mail: sales@geometrics.com
Website: www.geometrics.com
Contact: Ross Johnson

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Stuart, FL 34997
Tel: 772 219-3000, Fax: 772-219-3010
E-mail: rmulcahy@conshelf.com
Website: www.csaintl.com
Contact: Bob Mulcahy



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OCEANOGRAPHIC INSTRUMENTS



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Sea-Bird Electronics, Inc.

13431 NE 20th St., Bellevue, WA 98005
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E-mail: seabird@seabird.com
Website: www.seabird.com
Contact: Calvin Lwin, Applications Engineering

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Vatnargardar 14, 104 Reykjavik, Iceland
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E-mail: baldur@star-oddi.com
Website: <http://www.star-oddi.com>
Contact: Baldur Sigurgeirsson

A manufacturer of miniature data loggers with sensors as temperature, depth/pressure, salinity, compass, magnetometer, acoustic receiver, tilt in 3-D, pitch and roll. The small loggers are used for various researches, including oceanography, fisheries research, fishing gear studies, equipment behavioral monitoring and fish tagging. Data is presented in graphs and tables in the application software along with time and date of each measurement.

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PIEZOELECTRIC CERAMICS

Channel Industries

A Division of Channel Technologies Group (CTG)
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E-mail: ciisales@channeltech.com;
Website: www.channelindustries.com
K.Ruelas, pres.; E. Medina, vice-pres.; E. Bickel, technical sales;
J. Sharon, sales/marketing

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E-mail: sales@deepsea.com
Website: www.deepsea.com
Contact: Pedram Pebdani, Oceanographic Sales Manager

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Fax: (772) 219-3010
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Website: www.oceanspecialists.com
Contact: Jim Byous



Ocean Specialists, Inc (OSI) provides a broad range of capabilities and services to the Offshore Oil & Gas, Submarine Telecom, Government and Scientific markets, including: Market analysis, project consulting, submarine fiber cable systems, subsea technology development, & corporate services.

PROPERTY SERVICES



Morris Southeast Group

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Email: kenmorris@morrisgroup.com
Website: www.morrisgroup.com
BLOG: www.morristsrends.com
Contact: Ken Morris, SIOR

CORFAC
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Morris Southeast Group/CORFAC International is a leading provider of commercial real estate services specializing in owner and tenant representation, corporate services and investment sales in the office, industrial and retail sectors. Based in South Florida, the firm serves corporations throughout the Americas in affiliation with CORFAC International and worldwide with FIABCI, the International Real Estate Federation.

ROV BROKERS



MaRE Trans. Ltd.

MaRE Trans. Ltd.
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Email: michael@m-are.com
Website: www.m-are.com
Contact: Mike Kernaghan

MaRE provides an International Brokerage and Equipment Sourcing service to the underwater industry. We are the world's leading source of used ROV systems and components. "DeepSearch", a free-issue database, is distributed monthly highlighting used ROVs and associated equipment for sale worldwide. Our Procurement department offers an equipment and spares sourcing service which complements the brokerage side of the business. MaRE also provides Consultancy on all aspects of remote underwater technology.

SONAR SYSTEMS

Imagenex Technology Corp.

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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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