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July 2012

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SEA CON® – Precision's Development of Umbilical Distribution

Feature Story – Page 10

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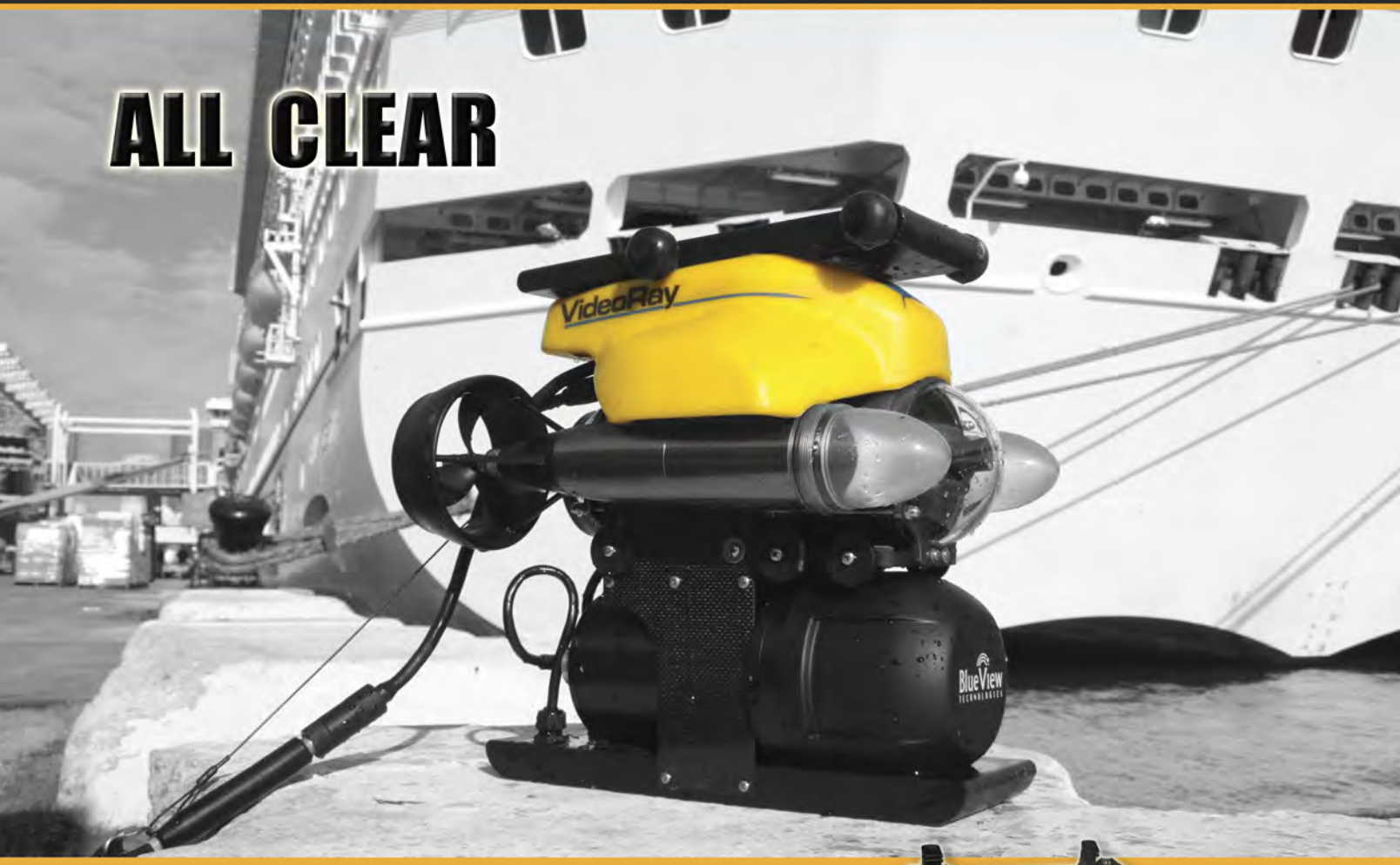

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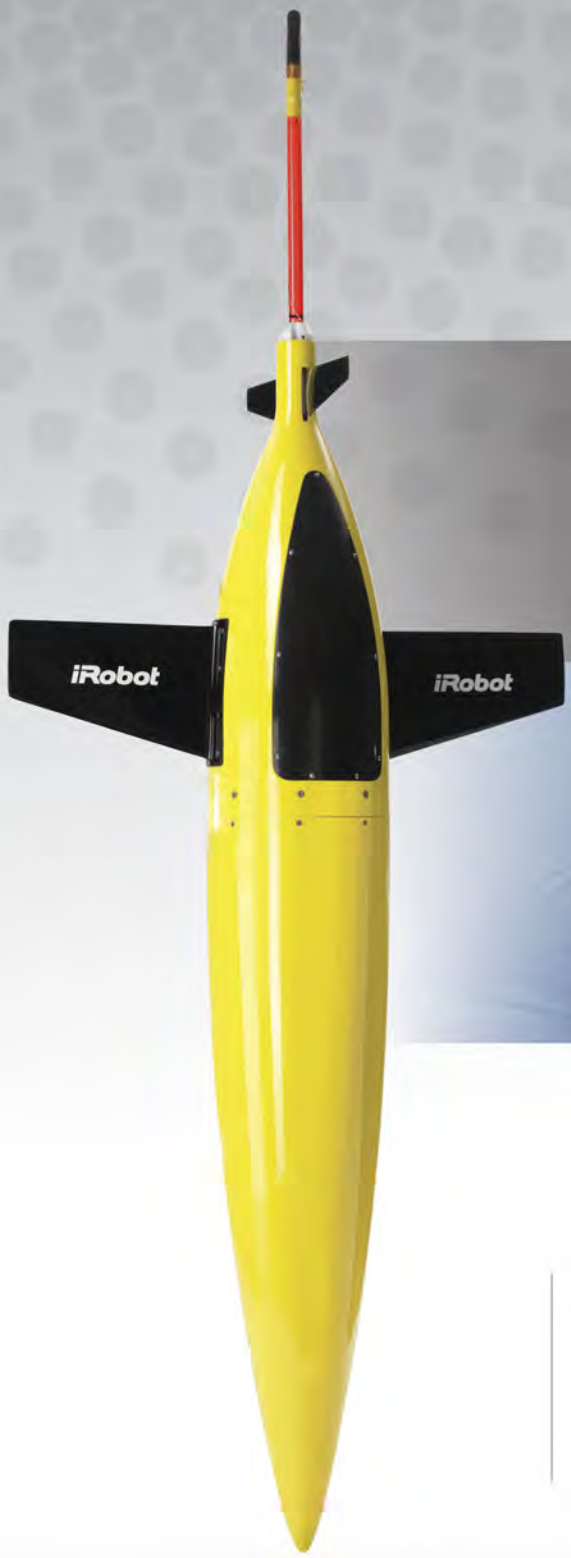

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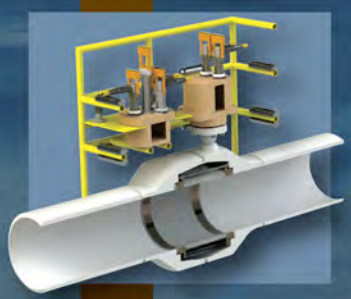

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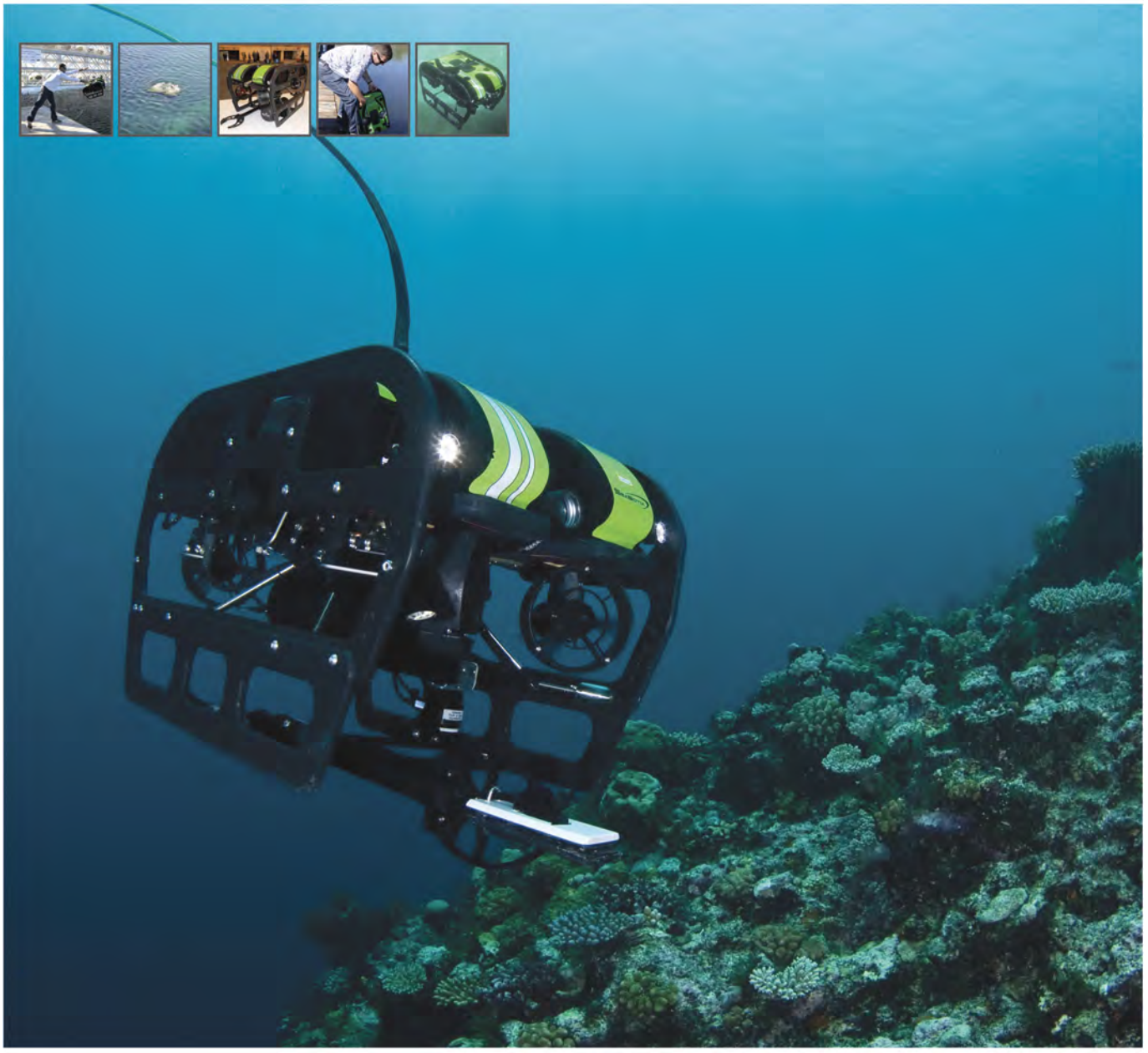

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China's Jialong Deep Submergence Vessel
(Photo Courtesy China Ship Scientific Research Center)

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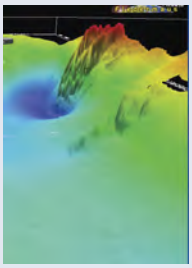

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Ocean News & Technology is published 11 times a year by Technology Systems Corporation, 8502 SW Kansas Avenue, Stuart, FL 34997, telephone 772-221-7720.

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Editorial

By John Manock

Subsea Fiber: Opportunities for Cooperation?

Ocean News & Technology

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To the broader submarine cable industry, subsea oil and gas networks evoke a yawn compared to cables connecting continents, traveling through the Arctic, or making high-speed financial trading possible, where every millisecond is counted in millions of dollars.

While not as exciting, subsea fiber networks serving offshore platforms are growing in importance to the oil and gas industry. There are several very large projects at various stages of development around the world. These networks could involve at least 10,000km of submarine fiber optic cable. This is a significant amount of cable. To put it in perspective, the submarine fiber optic cable industry averages roughly 45,000 to 50,000km of cable contracted annually.

Platforms connected to subsea fiber networks are still in the minority. There are a number of reasons for this, especially the high cost of the initial installation (although after the fiber is installed, the cost of services is much lower than satellite).

There is no set formula for providing services to platforms using subsea fiber networks. Sometimes, the networks are operated by a local telecom carrier or a carrier created for the purpose. In other cases, the oil and gas company operates them as private networks.

The most intriguing are those networks operated by a local carrier. In these cases, the subsea fiber network can be viewed as the extension of the terrestrial network into offshore areas. This provides the carrier with the opportunity to connect other offshore locations, such as islands or coastal areas that otherwise may be difficult to service with fiber. This is particularly of interest in developing countries whose existing telecom infrastructures are not extensive.

Last year, I wrote about the opportunities presented by extending the existing terrestrial fiber optic network offshore. The number of man-made offshore structures connected by fiber optic cable will grow tremendously in the coming years, covering everything from oil and gas platforms and floating production and storage offloading (FPSO) units to wind turbines, wave energy platforms, and tsunami warning systems. The connection of structures by fiber optic cabling has the potential to bring broadband to large amounts of offshore territory.

As offshore oil and gas development grows, covering larger areas and with greater numbers of platforms (sometimes including FPSOs), the potential to combine oil and gas services with commercial telecom services grows. Driving this is the seemingly insatiable demand for affordable Internet bandwidth – something that is as true for an offshore platform as it is for an entire developed country.

One of the obstacles to be overcome before seeing a true convergence between telecom and oil and gas subsea fiber networks is the difference in expectations between the industries. When telecom industry professionals think about a return on investment on a typical subsea project, they think in the 3 to 5 year range. Oil and gas professionals, however, frequently think of a return on investment in terms of decades. Can common ground be reached?

Of course, it is important to keep in mind the ultimate prize in all of this – huge amounts of affordable broadband capacity. The fiber optics industry is experiencing a period of explosive technological change. The standard capacity of 10Gbps (10G) wavelengths that we have been so used to for the past decade has jumped to 40G in the past year and is moving more rapidly than expected to 100G.

How huge are these capacities? When, for convenience, we round the design capacity for a new subsea fiber system down from 8.4Tbps to 8Tbps, we don't even think much about the difference, but in reality it represents the entire international Internet capacity of Argentina and Chile, combined. And even greater capacities such as 400G and 1Tbps wavelengths are right around the corner.

Demands for bandwidth on oil and gas platforms are growing and will continue to do so. So are the demands from small populations on islands or remote coastal communities who are in danger of being denied the same level of access to economic and educational opportunities, health services, and even participation in their government by the absence of reliable, affordable broadband capacity.

There is a place in the market for the convergence of oil and gas and commercial telecom subsea fiber optic networks. Such multipurpose networks are never going to be common, but when the geography and economics provide the right opportunities for both industries, the benefits of cooperation are great. The two industries need to be open to cooperation to take advantage of these opportunities when they present themselves.

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SEA CON®–Precision's Development of Umbilical Distribution

By Fernando Hernandez, SEA CON® Technical Advisor

Umbilicals & Tethering

Umbilicals are a critical link to an ROV's functionality as much as they are to Umbilical Distribution Assemblies (UDA). The more both technologies are creatively expanded, the more technological advancements can go from science fiction to fact. Both technologies share a common feature: they allow for communication between topside facilities (multi-service vessels, rigs, etc.) and subsea architecture (X-mas trees, subsea pumps, etc.), expanding the capabilities for data distribution.

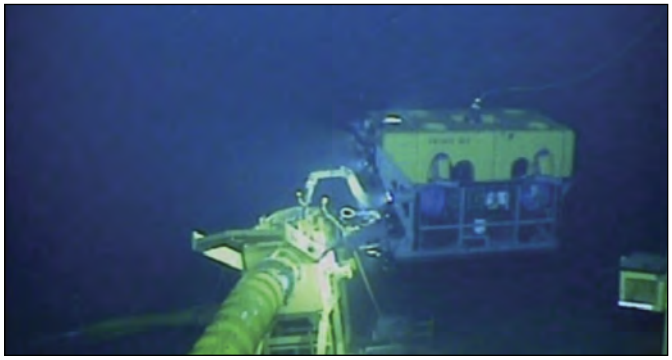

Figure 1: *Visual of UDA with ROV tether*

Unification of Tethering

The work of an Ultra-Deepwater ROV begins when it is "overboarded" via a Launch and Recovery System (LARS). The ROV will be tethered to a Top Hat or Cage Assembly via a Tether Management System (TMS) where the umbilical terminates. Once the ROV reaches operational depth, the ROV can "tether out" to its subsea focal point. The production umbilical is terminated at the UDA and serves as the communication link between mudline and surface. The UDA is similarly overboarded and installed into its designated position on the ocean floor. Upon landing, the UDA can be utilized as a distribution center for data and power (hydraulic capabilities can also be applied). Both data and power are distributed through flying leads with subsea-deployable connectors on both ends and are linked by a "Pressure Balanced Oil Filled" (PBOF) conduit hose. The PBOF hose (typically 13mm or 20mm) with connectors extends the UDA by allowing communication with subsea assets.

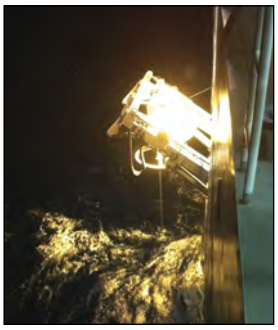

Figure 2: *LARS deployment of ROV*

Figure 3: *Umbilical reel*

Despite apparent similarities between the deployment of ROVs and UDAs, there are many differences. For example, an ROV's TMS is terminated on the surface at the umbilical to enable tethered travel, but UDA terminations do not have a built-in TMS; therefore, flying leads serve as the critical component to connect UDAs to existing subsea assets. Such connections are complex because they are done in open water, but a successful connection ensures operators can maximize the potential of a single umbilical.

Figure 4: *Flying lead with splice box*

Both ROV and production umbilicals extend communication paths, enhancing the capability of subsea equipment and fields. Subsequently, current flying lead connector technology expands a field's capability by eliminating the need to build, manufacture, and deploy additional umbilicals

Optical & Electrical Flying Leads

Before electrical and optical flying leads became a staple for open-water communication, the PBOF conduit hose underwent extensive analysis and development via qualification testing, design, and engineering. John Johansen, Technical Manager for SEA CON®–Precision, was instrumental in the development of PBOF hoses to ensure they met the offshore demands of the early 90s. Today, the PBOF hose assemblies continue to meet operational requirements for deepwater operations.

ROV pilots continue to demonstrate the worth of PBOF hoses, as flying leads have to be engaged and recovered from deployment frames while being handled by an ROV's manipulator to install at destination points. Pilots must manage the tether as it travels on an XYZ axis with a flying lead, increas-

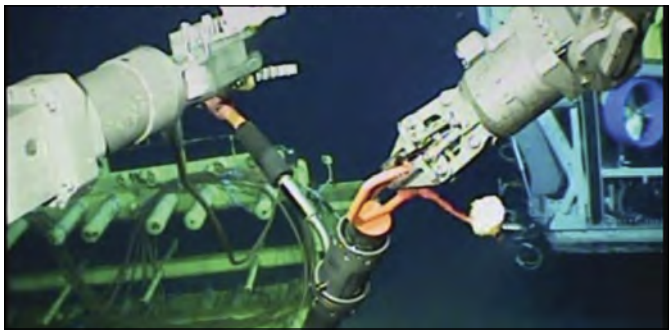

Figure 5: *Handling of PBOF hose with SEA CON® HydraLight*

ing the possibility of tangling the ROV's tether or the flying lead. The flying lead is also at risk of being dropped to the ocean floor or becoming snagged and inadvertently damaged.

To allay these concerns, the outer jacket, inner liner, strain elements, and armor elements of the PBOF hose assembly underwent extensive development. SEA CON®–Precision's PBOF hoses are now designed to handle inadvertent stretching during subsea operations to mitigate potential damage to fiber or copper lines. Extensive stress and pull tests ensure that a 2% stretch of hose is permissible during operations.

MKII Fitting Assembly

The engineering of the MKII fitting assembly was instrumental in ensuring sustainability of the PBOF hose. The MKII assembly is a two-layer design with tension and pressure armor in between and a break-load tension of 10,000 newton meters. Engineered to handle volumetric expansion and elongation, the MKII assembly, coupled with PBOF hoses, decreases the risk of potential downtime during the installation of flying leads in a dynamic application. SEA CON®–Precision would revisit the MKII fitting and associated PBOF assembly to apply such technology to a static application.

Figure 6: *SEA CON®–Precision MKII offerings*

This answer was found in the development of an 8mm MKII fitting with a proprietary hose that resembles clear, flexible tubing for ROV static and limited special applications.

ROV Intervention

The small profile of the 8mm MKII assembly reduces harm to fibers or connection points in constrained areas and allows it to serve as a bridge for the skid and tooling to tap into the power and telemetry of an ROV's umbilical. It also allows for distribution within the constrained area between an ROV intervention skid and tooling.

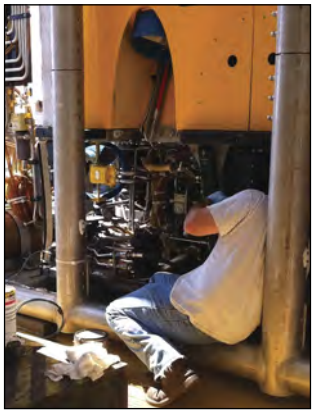

Figure 7: *Work on ROV without skid*

Figure 8 illustrates the spatial constraints when an ROV and skid are mated, caused by the skid being enclosed between the LARS deck and ROV. Skid technology has been influenced by the need for these skids to host additional equipment when ROV tooling and intervention equipment exceeds the space an ROV has for auxiliary components. Hydraulic lines (hard-plumbed/soft-plumbed) and electrical and fiber optic "whips" for equipment on skids are under the same spatial limitations. Should a drymate connector or fiber optic whip be placed under excessive stress in order to fit in a confined area, the stress can severely damage a bulkhead connector or cause the whip to break from the mating area. The potential for further damage increases when equipment must be removed to carry out repairs or maintenance, which requires the removal of components and compact equipment, including fiber optic and electrical whips.

Figure 8: *ROV with mounted skid*

Despite the limitations of using ROV skids, skid technology continues to be a necessary extension for ROVs. Skids have been developed for contingent and non-contingent situations that involve actuation of BOPs, hydrate remediation, dewatering of flowlines, auxiliary functionality to control modules, etc. Therefore, when telemetry and power are essential for these operations, flying lead technology can be applied to this static application to expand the ability of an umbilical.

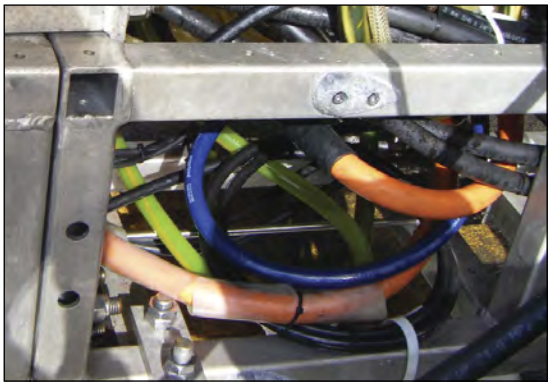

Figure 9: *PBOF hose constraints on intervention skid*

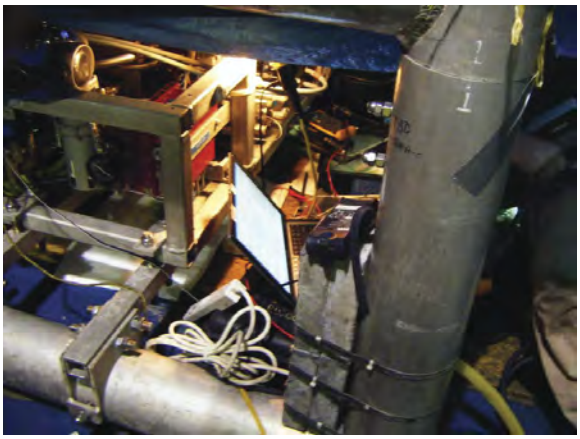

Figure 10: *Troubleshooting of intervention skid*

8mm, 13mm, and 20mm PBOF Assemblies

SEA CON®–Precision's intimate involvement with data distribution led to the development of 8mm, 13mm, and 20mm conduit hoses with MKII technology. These advancements led to the development of another product, the IDA (Inline Distribution Assembly), to creatively distribute data to actual subsea assets such as X-mas trees and Subsea Pumps. This ability is credited to the field-installable IDA's hybridization of the 8mm, 13mm, and 20mm technologies, which can be applied to those assets that need internal, non-open water (drymate) distribution.

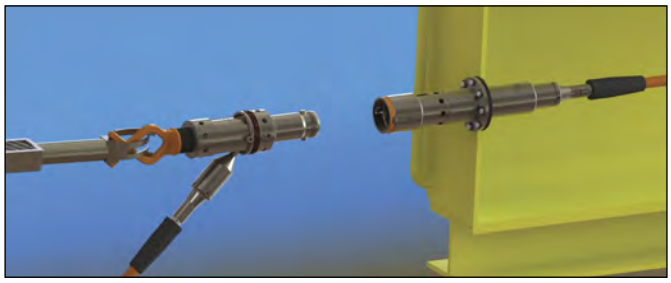

Figure 11: *Cross-section of typical bulkhead mounting*

To achieve this, the IDA is terminated to a bulkhead on an asset that matches the opposite end of a bulkhead on a UDA in order to correspond with the bridging flying lead. When communication is bridged to an independent subsea asset, the IDA can have a single 13mm PBOF that comes from an asset's bulkhead. By terminating the bulkhead on an asset to the IDA assembly, an operator can distribute data and power through two different paths using 8mm, 13mm, or 20mm hoses on either end. Figure 12 illistrates the application of such combination options. The accumulation of these technologies is essential in bridging static and dynamic operational requirements and creates a viable solution for open-water and drymate/surface-terminated communication.

Figure 12: *IDA with 13mm and 8mm PBOF*

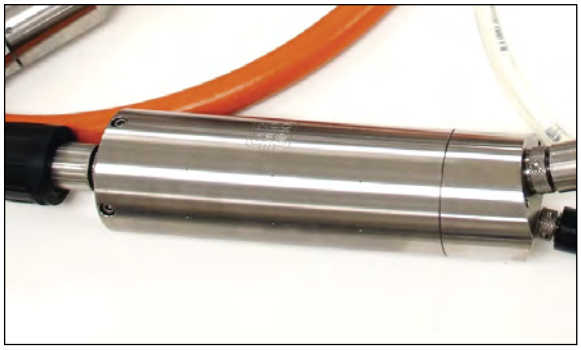

Figure 13: *IDA assembly*

48-Channel HydraLight

Advancement of subsea distribution continues today as demand increases for this technology to do even more. To accomplish this, great energy is focused on connector development. The concept of utilizing a higher-channel capacity for an already proven technology led to the development of the 48-channel HydraLight. The 48-channel connector has already been designed to meet these needs, and a 24-channel version of this design is in its qualification stage. The 48-channel fiber optic connector builds on the proven track record and field-tested technology of its 8-channel predecessor – a connector that is already internationally-recognized and qualified – and will offer a greater degree of confidence and success in the field. What developments this will lead to in the future remain unknown, but promises to be interesting regardless.

For more information, visit www.seaconworldwide.com.

Figure 14: *24 channel HydraLight during testing*

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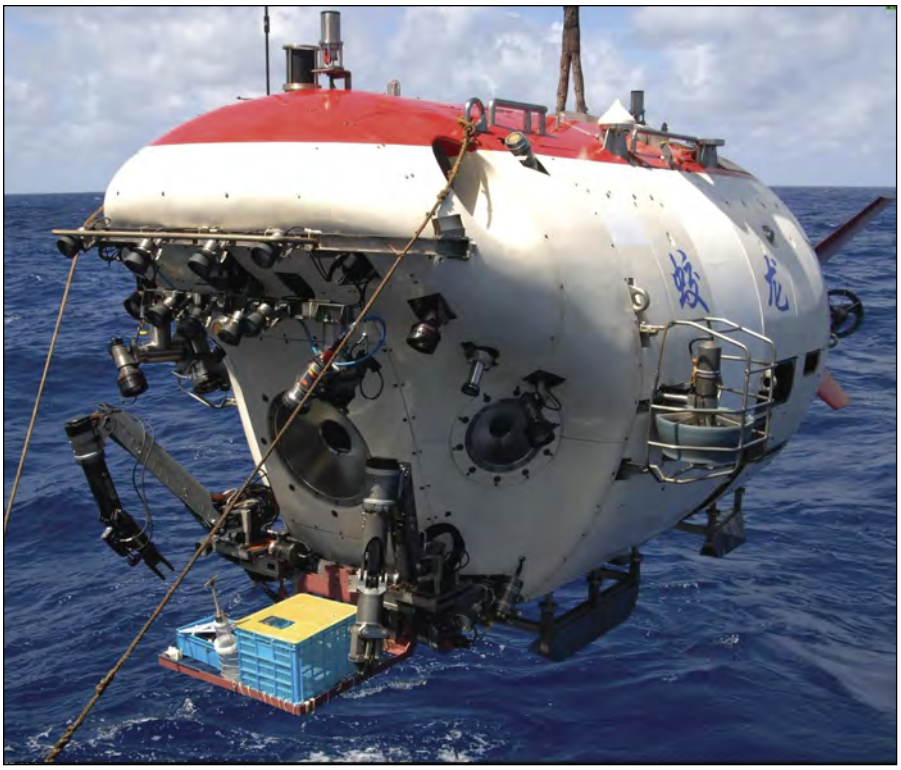
China's manned deep-sea submersible makes record dive to over 7000 meters



China's manned sub Jiaolong dove to a national record depth of 7,020m in the Mariana Trench in the western Pacific Ocean on 24 June 2012, according to news reports from China Daily.

The dive is one of six that Jiaolong is scheduled to make during the current expedition. During the 11hr dive, scientists conducted geological surveys and collected samples from the seafloor.

Jiaolong, which is named after a mythical sea dragon, is 8.2m long, 3.4m high, and weighs nearly 22tons. It was designed to reach a maximum depth of 7,000m, making it the deepest diving state owned craft in the world. It had its first test in South China Sea between 31 May and 18 July, 2010, reaching a depth of 3,759 m (12,333ft) with three crew.

In comparison, the Japanese submersible Shinkai 6500 has a depth rating of 6,500m and the U.S. is currently refirbishing the Alvin to dive up to 6,500m.

However, the 7,000m dive follows on the heels of James Cameron's record-setting dive to the Challenger Deep, the deepest part of the Mariana Trench. The filmmaker and explorer made his descent in a submersible of his own design in late March, reaching a depth of 10,890m (nearly 7mi) beneath the surface of the sea, in 2hrs and 36min.

Jiaolong will be used in the exploration and development of marine resources, according to the State Oceanic Administration.

In 2011, China became the first country approved by the International Seabed Authority to look for polymetallic sulphide deposits, a recently discovered mineral source, in the Southwest Indian Ridge, a tectonic plate boundary on the floor of the Indian Ocean.

BOEM hears from scientific advisory committee

Bureau of Ocean Energy Management leaders concluded their briefings for members of the Outer Continental Shelf (OCS) Scientific Committee, the Federal advisory committee for BOEM, in Santa Barbara, California. The discussions focused on specific research plans for Fiscal Years 2013 and 2014 as part of the committee's mandate to advise the Secretary of the Interior, through the BOEM Director, on the feasibility, appropriateness, and scientific value of the OCS Environmental Studies Program. At the conclusion, committee members identified emerging issues and topics of interest. The committee meetings play a key role in the development of BOEM's research agenda and provide a setting for non-Federal scientific leaders to critique and evaluate study proposals for coming years, all for the purpose of helping BOEM make informed energy and mineral development decisions.

MTS announces winners of its 2012 annual scholarships

Brian Grau, Mathew Jordan, Grace Young, and Joseph Griffin have been selected as recipients of the Marine Technology Society's 2012 ROV Committee Scholarships. In addition, Stephen Estrin, Ian Spaans, Adam Simko, and Kip Hacking received MTS ROV Committee MATE Center Scholarships. Since 1994, the MTS ROV Committee has awarded over $300,000 to deserving students who have an interest in ROVs.

Teledyne Technologies to acquire BlueView Technologies

Teledyne Technologies Inc. announced that its subsidiary, Teledyne RD Instruments, Inc. has entered into an agreement to acquire BlueView Technologies, Inc. BlueView, located in Seattle, Washington., provides compact high-resolution acoustic imaging and measurement solutions. Terms of the transaction were not disclosed. The closing of the transaction, which is subject to various conditions including the approval of Blueview's shareholders, is anticipated to sometime in July, 2012. BlueView delivers instrumentation for underwater vision, monitoring, survey, detection and navigation. Since its founding in 2005, BlueView has pioneered new technologies in compact forward-looking imaging sonar, microbathymetry systems and 3D scanning sonar. BlueView's advanced sonar systems are currently deployed on autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), surface vessels, and fixed and portable platforms, and have been adopted by leading manufacturers and service providers to support mission critical marine operations.

Seaorbiter expected to begin construction this year

SeaOrbiter is the concept of French architect Jacques Rougerie and was the centerpeice of Franc's EXPO 2012 pavillion in Yeosu, South Korea where a 1:20 scale model was presented.

Part ship and part submarine, it is a unique live-aboard, ocean-going vessel that will give scientists continuous underwater observations.

Seaorbiter has been a concept for over 12 years, and the design is now complete. Construction is set to begin in October of 2012. Several are hoped to be built for operations in each of the world's major bodies of water. Expected to cost $43 million, when complete, it will house a crew of 18 and stand 58m high with roughly half of that height below the water line.

For more information, visit www.seaorbiter.com.

ION launches Calypso seabed seismic system

ION Geophysical Corporation announced the launch of Calypso , its next generation redeployable seabed acquisition system. Leveraging ION's industry-leading VectorSeis digital sensors to deliver the same unrivaled broadband imaging, Calypso is designed to operate at twice the depth and deliver twice the operational efficiency of its predecessor system, VectorSeis Ocean (VSO).

The seabed seismic market has grown over 250% in the last 5 years, with over $300 million in contracts awarded in the first quarter of 2012 alone. Despite its increasing popularity, seabed seismic still represents a relatively small percentage of total marine seismic projects, largely due to historically high costs and long cycle times relative to towed streamer acquisition. ION's new Calypso system has the potential to mitigate both barriers to wider adoption by doubling cable lengths and productivity while significantly expanding operating depths.

For more information, visit iongeo.com/calypso.

China will become world's largest producer of shale gas by 2030

China has the potential to overtake North America and become the world's leading producer of shale gas by 2030, a poll conducted at the World Gas Conference in Kuala Lumpur has revealed. Roughly 81% of participants thought that China will become the largest shale gas producer in the next 18 years, while 19% thought that it will not.

The Industry Snapshot Poll was conducted by global independent technical advisor GL Noble Denton on the second full day of the World Gas Conference. The poll was also completed online by senior professionals from across the industry.

Richard Bailey, GL Noble Denton's Executive Vice President for Asia Pacific, said, "The Chinese Ministry of Land and Resources has estimated that the country may have 25tcm of potentially recoverable shale gas. The impact of those reserves could be even greater than in North America, which has turned from a gas importer to a potential exporter in less than a decade."

For more information, visit www.gl-nobledenton.com.

Reducing ship strikes and effects of vessel noise on whales

A joint Gulf of the Farallones and Cordell Bank national marine sanctuary advisory council working group has developed recommendations on how to reduce ship strikes and the effects of vessel noise on whales and other marine mammals off the northern California coast.

The recommendations were presented to the advisory councils for Gulf of the Farallones (GFNMS) and Cordell Bank (CBNMS) national marine sanctuaries during the public meeting held in Pt. Reyes, California.

Both advisory councils voted unanimously to support the recommendations. These were then referred to the sanctuary superintendents for their review and consideration for future implementation.

Based on the suggestions from the working group, the council recommended the following:

- GFNMS and CBNMS work with the U.S. Coast Guard to change shipping lanes to avoid areas where endangered blue and humpback whales are frequently seen, including extending the vessel approach lane to San Francisco westward by at least 3nmi off the continental shelf.
- GFNMS and CBNMS, its partners, and appropriate agencies create Dynamic Management Areas (DMAs) at the entrance to San Francisco Bay to be activated when many whales are congregating. Vessels operating in an active DMA zone would be encouraged to choose alternate routes or slow down.
- GFNMS and CBNMS, working with other partners and appropriate agencies, implement a real-time whale sighting and monitoring network.

For more information, visit http://farallones.noaa.gov.

Crowley moves USS Iowa to final home berth

The USS Iowa, one of the most powerful battleships of all time, made her final journey through the main channel of the Port of Los Angeles to her permanent home, Berth 87, near the World Cruise Center in San Pedro, California. Crowley Maritime Corporation used four of its Harbor class tugs to tow the 887ft long ship, which was escorted by fire boats.

After departing Berth 51-52, where it was docked, the tugs and ship headed bow first up the main channel, bypassing Berth 87 and then transiting under the Vincent Thomas Bridge. After pivoting in the turning basin and crossing under the bridge again, it traveled down the main channel and docked on its starboard side at Berth 87. The ship's final voyage covered 3.4nmi in an estimated 1.25hrs.

Crowley's 7,200HP tugboat Warrior recently completed the safe tow of the historic USS Iowa to Los Angeles from San Francisco after passing under the historic Golden Gate Bridge amid a festive celebration of the bridge's 75th birthday. The Pacific Battleship Center, which owns the ship, celebrated its public grand opening as an interactive naval museum on Saturday, July 7.

For more information, visit www.pacificbattleship.com.

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Austal awards Alu Design major contract for new Australian Customs fleet

Alu Design & Services (Alu Design) has secured a substantial contract with Austal, a world leader in the manufacture of fast ferries and naval vessels, to provide advanced pilot chairs for a new series of eight patrol boats for the Commonwealth of Australia's Customs and Border Protection fleet. Alu Design will provide a total of 40 chairs for Austal's cutting-edge patrol boats, equipping the ships with its lightweight and ergonomically designed Alutech 200 and Alutech 500 products. The chairs will offer the upmost in comfort, strength, and usability, with integrated tiller holder and trackball functions. Austal's decision marks a continuation of a growing relationship with Alu Design, which has already provided chairs for a range of the firm's vessels in the international market.

Caley winch and A-frame systems for Hyundai Heavy Industries oceanographic research vessel

Offshore handling systems specialist, Caley Ocean Systems has been awarded a contract to supply oceanographic winches and A-frame systems to Hyundai Heavy Industries (HHI) for a new oceanographic research vessel. The state-of-the-art, ocean-going vessel is capable of surveying to the full ocean depth (10,000m), using advanced exploration capabilities. Caley is providing bespoke oceanographic winches designed to handle high tension, heavy loads, featuring "SMART" control systems for fully active heave compensation, and variable frequency drives. Also included is a Conductivity, Temperature, and Depth (CTD) Rosette handling system with in-built motion compensation to cancel out the roll and pitch of the ship, significantly reducing the swaying of the CTD system. The vessel will feature high-performance, stern and side Caley A-Frame systems for seabed drilling and coring equipment. Given the tight project timescale, Caley is working in partnership with its long-term Korean agent and subcontractor on the manufacture of the A-frame systems. The handling systems will comply with the new DNV rules on Lifting Appliances.

Damen Shipyards unveils new type of ASD Tug at ITS

Damen Shipyards has launched its newly designed ASD Tug 3212 at the International Tug and Salvage Convention (ITS) in Barcelona. This innovative and powerful tug in the 85t BP range is the result of 3 years of research and represents a completely new Damen ship type and a milestone in ASD tug design. The new Damen ASD Tug 3212 has been designed to operate in all circumstances and features hundreds of big and small innovations, including a completely revised hull form and a higher bow, resulting in better speed and a dry foredeck. It has a maximum bollard pull of 85tons, sails with 14.5kts, and it is tested to operate in 3m wave height. Other features are, for example, super-absorbent fenders and a new Render/Recovery winch. Four of the new 3212s have been delivered to clients in Australia, Colombia, and The Netherlands, and 10 are currently under construction. Mr Coen Boudesteijn, Damen Product Director Tugs, comments, "Damen has developed this completely new tug generation within the 85ton bollard pull range to fit in with market developments. Many projects for tug operators are now in more open and challenging waters, such as those off Northern Australia, so there is a need to be able to cope with higher wave heights and for more powerful tugs, given the increasing size of tankers and container vessels."

Tonsberg – world's largest RO/RO ship awarded "ship of the year"

Tonsberg, the world's largest roll-on/roll-off (RO/RO) ship, built by Mitsubishi Heavy Industries, Ltd. (MHI), has been awarded the "Ship of the Year 2011" by the Japan Society of Naval Architects and Ocean Engineers (JASNAOE). Every year JASNAOE selects what it considers to be the most technologically, artistically, and socially superior ships and marine structures built that year, and the Tonsberg was chosen for its highly evaluated transport efficiency and environmental compatibility.

The Tonsberg is the first in a series of four ships ordered by the Wilh. Wilhelmsen group and Wallenius group: the former a Norway-based group of maritime industrial firms having global scope, and the latter a Swedish shipping group. The ship was completed in March 2011 at MHI's Nagasaki Shipyard & Machinery Works and delivered to the Wilh. Wilhelmsen group. The 74,622ton gross ship measures 265m in length overall (LOA), 32.26m in breadth, and 33.22m in height (ship bottom to upper deck).

The Tonsberg features capability to transport high and heavy (H&H) cargo such as large-size construction machinery and machine tools, plant components, railway cars, and pleasure boats. To enable flexible loading of such cargo, three of the ship's nine decks are electrically hoistable. To reduce environmental burdens and save energy, the ship is equipped with a ballast water treatment system, waste heat recovery system, electronically controlled engine, etc.

The Ship of the Year awards were established in 1990, hosted by JASNAOE and sponsored by the Japanese Ministry of Land, Infrastructure, Transport and Tourism, to promote construction of superior ships and marine structures and induce greater sea-mindedness among the general public. Award contenders apply in one of six categories: large passenger ships; small passenger ships; large cargo ships; small cargo ships; fishing and work vessels; and special vessels, marine structures and marine equipment. Earlier, MHI received JASNAOE's first "Ship of the Year" for the Crystal Harmony (present name: Asuka II), the cruise ship built in 1990. The award given to the Tonsberg marks the 6th won by MHI from JASNAOE.

For more information, visit www.mhi.co.jp.

Voith water tractor "Ilan" in the Port of Haifa

In April, the new Voith Water Tractor (VWT) "Ilan" underwent its official sea trial achieving a speed of 13.5kts and a bollard pull of 73.5tons: much to the satisfaction of the operator, the Haifa port authority, which decided in favor of the VWT due to its precise maneuvering capabilities.

Each of the two diesel engines supplies the Voith Schneider Propellers with an input power of 2,640kW. And what's more, Voith not only delivered the complete propulsion system, but also provided the basic design of the tug in cooperation with the shipyard.

Four other VWTs equipped with Voith Schneider Propellers already operate successfully in the port of Haifa, one of the largest ports in Israel.

The "Ilan" has been designed for a bollard pull of 70tons whereas those of the other VWTs range between 30 and 55tons. In recent years, the amount of goods to be handled and, thus, the shipping traffic in the port of Haifa have been on the increase. The port authority has, therefore, been enlarging its fleet of tugs and ordered another VWT in November 2009. At present, work is being carried out on the new Carmel Terminal, which will expand the port as of 2014.

Voith sets standards in the markets energy, oil & gas, paper, raw materials, and transportation & automotive. Founded in 1867, Voith employs more than 40,000 people, generates €5.6 billion in sales, operates in over 50 countries around the world, and is today one of the biggest family-owned companies in Europe.

For more information, visit www.voith.com.

SES supplies world's first hybrid ferries

Ships Electronic Services (SES), a leading supplier of marine electronics equipment, has announced that the company has been awarded a £375,000 contract to supply all the navigation and communications equipment for two new Hybrid Ferries building at Ferguson Shipbuilders, Port Glasgow for Caledonian Marine Assets.

These will be the world's first hybrid diesel electric Ro Ro vehicle and passenger ferries to enter service and will be operating the Clyde and Hebrides Ferry Service from spring 2013. The green technology will be incorporated throughout the ships, supplying a minimum of 20% of the energy consumed on board.

SES will be fitting a full specification of electronics on the hybrid ferries, including Furuno Radars and Transas ECDIS. A complex, double-ended heading system from Raytheon Anschuetz will be installed, enabling all the headings to the AIS, ECDIS, and Autopilot to be changed 180°, along with all the navigation lights, at the touch of a single switch. They will also be supplying the autopilot system, which utilizes their extensive interfacing knowledge with the Voith Schneider drive units.

For more information, visit www.ses-marine.com.

Hallin Marine launches first-in-class compact semi-submersible CSS Derwent

Floated for final fit out at Drydocks World (Nanindah, Indonesia), CSS Derwent is a compact semi-submersible designed and equipped to meet current and anticipated subsea industry

demand. She will be ready for operation in Q1 2013.

Responding to the huge challenges of deepwater operations, the innovative CSS design delivers exceptionally stable sea-keeping characteristics. A very large Zone 1-rated deck (1,300sq.m) and long lay down area ensure good project load carrying capacity and meet the requirements of potential hydrocarbon management.

Classed by ABS as a DP Class 3 Mobile Offshore Drilling Unit (MODU), the CSS Derwent incorporates technology from industry-leading providers such as MacGregor (lifting systems), Rolls Royce (engines and thrusters), Kongsberg (dynamic positioning) and ABB (power management), maximizing safety in operations and minimizing cost through fuel-efficient diesel electric propulsion.

CSS Derwent carries two dedicated Quantum XP 225hp deepwater construction class ROVs cabable of working at 3,000m water depth. Designed to undertake the most demanding and power intensive subsea tasks in very deep water, the ROVs are housed below deck together, co-located with built-in control rooms and workshops. They can be deployed through a dedicated centerline moonpool or from a starboard side launch position. The ROVs feature the latest technical advancements, including dynamic positioning (ROVDP), advanced diagnostics, and the ability to plug and play standard instrumentation and tooling.

For more information, visit www.hallinmarine.com.

Damen cutter suction dredger built in Egypt

A Damen Cutter Suction Dredger, type CSD500, has been built under license by Canal Naval Construction for the Egyptian General Authority for Fish Resource Development. The customer, a long-term Damen customer, requested local construction, which was supervised by Damen Technical Cooperation (DTC). Damen delivered a complete dredging package so that the customer could start the dredging job without delay.

The CSD500, named "25 January" after the day of the beginning of the Egyptian revolution, has been built by Canal Naval Constructions Co (CNC) of Port Fouad, Egypt. Damen Dredging Equipment sent over all vital components, such as the dredge pump, the control cabin, etc. in containers. Together with all required drawings and the DTC assistance, CNC built a perfect CSD500. The CSD500 is fitted out with a large number of optionals as well as the auxiliary equipment required for the jobsite.

The CSD500 has a max dredging depth of 14m, and a max installed power of 1.293kW. The cutter power is 180kW. The CSD500 has a mixture capacity of some 4.000cu.m/h. The standard dredger has been customized by adding a large number of optionals, such as a jib crane, navigation lights, a communication package, air conditioning, a bilge pump, heavier fenders, a fire fighting installation, and a 500L fresh water tank with tap and sink. The dredger received Bureau Veritas class approval as it will be working near the Mediterranean coast.

For more information, visit www.damendredging.com.

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Floating dock from Japan carries potential invasive species

When debris from the 2011 earthquake and tsunami in Japan began making its way toward the West Coast of the U.S., there were fears of possible radiation and chemical contamination as well as costly cleanup. But, a floating dock that unexpectedly washed ashore in Newport this week and has been traced back to the Japanese disaster has brought with it a completely different threat – invasive species. Scientists at Oregon State University's Hatfield Marine Science Center said the cement float contains about 13 pounds of organisms per square foot. Already they have gathered samples of four to six species of barnacles, starfish, urchins, anemones, amphipods, worms, mussels, limpets, snails, solitary tunicates, and algae – and there are dozens of species overall.

NASA discovers unprecedented blooms of ocean plant life

Scientists have made a biological discovery in Arctic Ocean waters as dramatic and unexpected as finding a rainforest in the middle of a desert. A NASA-sponsored expedition punched through 3ft thick sea ice to find waters richer in microscopic marine plants, essential to all sea life, than any other ocean region on Earth. The finding reveals a new consequence of the Arctic's warming climate and provides an important clue to understanding the impacts of a changing climate and environment on the Arctic Ocean and its ecology. The discovery was made during a NASA oceanographic expedition in the summers of 2010 and 2011. The microscopic plants, called phytoplankton, are the base of the marine food chain. Phytoplankton were thought to grow in the Arctic Ocean only after sea ice had retreated for the summer. Scientists now think that the thinning Arctic ice is allowing sunlight to reach the waters under the sea ice, catalyzing the plant blooms where they had never been observed.

Research shows humans are primary cause of global ocean warming over past 50 years

The oceans have warmed in the past 50 years, but not by natural events alone. New research by a team of Lawrence Livermore National Laboratory scientists and international collaborators shows that the observed ocean warming over the last 50 years is consistent with climate models only if the models include the impacts of observed increases in greenhouse gas during the 20th century. Though the new research is not the first study to identify a human influence on observed ocean warming, it is the first to provide an in-depth examination of how observational and modeling uncertainties impact the conclusion that humans are primarily responsible. The group looked at the average temperature (or heat content) in the upper layers of the ocean. The observed global average ocean warming (from the surface to 700m) is approximately 0.025°C per decade, or slightly more than 1/10th of a degree Celsius over 50 years. The sub-surface ocean warming is noticeably less than the observed Earth surface warming, primarily because of the relatively slow transfer of ocean surface warming to lower depths. Nevertheless, because of the ocean's enormous heat capacity, the oceans likely account for more than 90% of the heat accumulated over the past 50 years as the Earth has warmed.

Stanford researchers help predict the oceans of the future with a mini-lab

Photo credit: David I. Kline

Scientists from Stanford and elsewhere joined to create a mini-lab in Australia's Great Barrier Reef. The device can simulate predicted future ocean conditions – such as rising carbon dioxide levels – and their effects on ecosystems such as coral.

Working with an international team, the scientists – including Stanford Woods Institute for the Environment Senior Fellows Jeff Koseff, Rob Dunbar, and Steve Monismith – found a way to create future ocean conditions in a small lab-in-a-box in Australia's Great Barrier Reef. The water inside the device can mimic the composition of the future ocean as climate change continues to alter Earth.

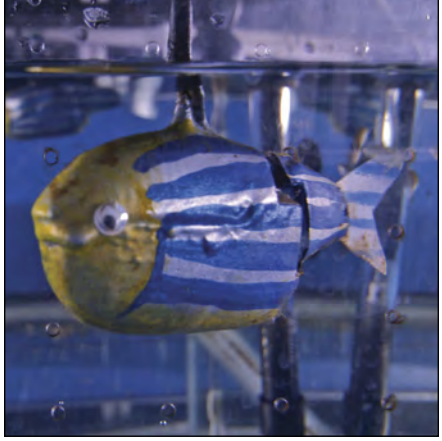
Inside the mini-lab, set in shallow water 2 to 6ft deep, elevated levels of water acidity were created to test the reaction of a few local corals. (Other corals in the vicinity were not adversely affected.)

It was the first controlled ocean acidification experiment in shallow coastal waters. The scientists' study, published in Scientific Reports, describes how they simulated predicted future ocean conditions off Heron Island in Australia's Great Barrier Reef, representing a new paradigm for analyzing how reefs respond to ocean acidification. David Kline and Ove Hoegh-Guldberg at the University of Queensland led the project.

Standard *in situ* studies of ocean acidification have multiple drawbacks, including a lack of control over treatment conditions and a tendency to expose organisms to more extreme and variable pH levels than those predicted in the next century. So, in 2007, the Monterey Bay Aquarium Research Institute developed a system that allows for highly controlled semi-enclosed experiments in the deep sea. For their recent study, Stanford researchers modified the system for use in coral reefs.

The complex device, the Coral Proto – Free Ocean Carbon Enrichment (CP-FOCE) system, uses a network of sensors to monitor water conditions and maintain experimental pH levels as offsets from environmental pH. It avoids many of the problems associated with standard *in situ* ocean acidification studies, and – unlike lab and aquarium experiments – makes it possible to study amid natural conditions such as seasonal environmental changes and ambient seawater chemistry.

For more information, visit pangea.stanford.edu.



Zebrafish like their robots striped, female and fertile

A team of scientists and engineers at Polytechnic Institute of New York University (NYU-Poly) reports significant progress in devising methods for leading live fish away from oil spills and other aquatic dangers using a species-specific robotic fish. The researchers say they now also see the possibility of extending their results into the world of biomedical research.

The team's latest research centered the visual response of zebrafish to a robotic fish that was designed and animated to attract their attention. The results were reporte in IPO Publishing's academic journal Bioinspiration and Biomimetics. This study followed one on another species, golden shiners that investigated fish response to hydrodynamic cues generated by a robot. In keeping with the differences between the two species, the new study's findings also were quite distinctive, said Maurizio Porfiri, associate professor in the NYU-Poly Department of Mechanical and Aerospace Engineering.

The interdisciplinary team also includes NYU-Poly research scholar Giovanni Polverino, doctoral candidates Nicole Abaid and Vladislav Kopman, and scientist Dr. Simone Macrì of the Istituto Superiore di Sanità in Rome.

In the prior study, golden shiners swam behind the robotic fish according to the wake created by the robot's undulating tail; the hydrodynamics of the wake offered the fish an energy-saving advantage, Porfiri explained.

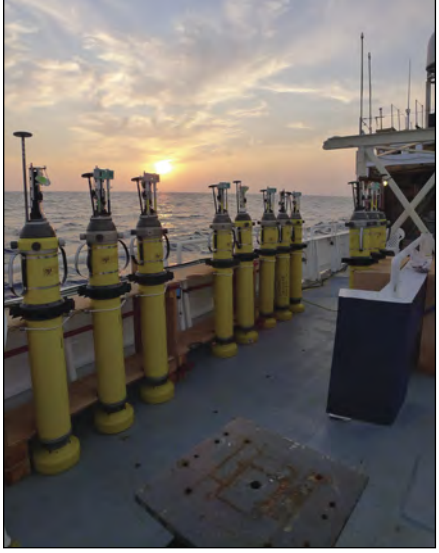
In the current study, which was conducted in an enclosed tank, the robotic fish remained in place and was separated from the zebrafish by transparent barriers. Although the robot moved its tail, the zebrafish swam in a placid environment and experienced no such swimming advantage from the robot. Yet the zebrafish did congregate at the barrier near the robot, proving that the appearance of the robotic fish was itself a factor in the attraction, Porfiri said.

For more information, visit www.poly.edu.

Unique new tool points out lack of ocean parks

La Jolla-based Waitt Foundation and the Marine Conservation Institute announced the launch of a new online tool at www.MPAtlas.org, dedicated to bringing the importance of ocean parks into the public eye.

The world's oceans are facing enormous adversity from environmental degradation, overfishing, and pollution. Science has shown that the establishment of ocean parks, or Marine Protected Areas (MPA), can mitigate these harms, thereby restoring and revitalizing fragile marine ecosystems. www.MPAtlas.org is the foremost database of global MPAs. It is an online digital map that assembles key information on marine protected areas around the world and is geared towards providing a comprehensive scope of data for conservation advocates, scientists, policy makers, and the interested public.



Synchronized probes explore Bermuda Triangle's vortices

Some might say that University of Washington oceanographers did well to only lose 1 of 21 underwater probes, given that they were deployed near the notorious Bermuda Triangle, where boats and airplanes have been known to disappear without a trace.

The scientists chose the location to research its swirling whirlpools via a pioneering experiment that repeatedly sent the probes deep into the ocean and back to the surface in unison.

"Nothing like this has ever been done," said Tom Sanford, an oceanographer at the UW's Applied Physics Laboratory. "It will be the paradigm for future experiments."

Typically, oceanographers may deploy an instrument in one place and then travel by boat to another spot to launch it again.

His group invented the velocity sensors that were added to commercial autonomous profilers. They also changed the software to synchronize the path of the profilers, which were programmed to dive to a specific depth and rise to the surface at scheduled intervals. When they reached the surface, they communicated their GPS positions and a small set of other data via satellites.

The new velocity sensor on the profilers picked up electric current in the ocean to track the velocity of moving water. The sensors measure electric current generated when ocean water flows through the Earth's magnetic field. The higher the voltage, the faster the water is moving.

For more information, visit www.washington.edu.

Deep-sea expedition to install tsunami antenna

The first NEPTUNE Canada ocean expedition of 2012 has cast off from Esquimalt aboard the 274ft. research vessel, Thomas G. Thompson. A major highlight of the month-long operations cruise is the installation of a deep-sea tsunami "antenna"—the first of its kind in the world. The star-shaped array of four ultra-sensitive bottom-pressure recorders will be positioned at the ends of new 25km arms of powered fiber optic cable, and will provide real-time data to Canadian scientists and the Pacific Tsunami Warning Network. "By allowing researchers to refine models of how tsunami waves approach our coast, this new technology will provide early warning information that will potentially protect lives and property," says Dr. Kate Moran, director of NEPTUNE Canada.

NEPTUNE Canada is managed by Ocean Networks Canada for a consortium led by the University of Victoria.

For more information, visit www.neptunecanada.ca.

Improved long-range sonar delivered and tested

Scientists in the Habitat Research Group (HRG) are conducting studies to identify the essential habitats of eastern Bering Sea species. This includes work to identify suitable predictor variables for quantitative habitat models and to develop tools to map these variables over very large areas.

Abundance estimates from annual bottom trawl surveys are being combined with synoptic environmental data to produce basin-scale continuous-value habitat models that are objective and have quantifiable uncertainty. The resulting quantitative relationships not only satisfy the Congressional mandate to identify and describe essential fish habitat (EFH), they may also be used to gauge the effects of fishing-gear disturbances, to enhance fish-stock assessments, and to predict the redistribution of species as a result of environmental change.

The broad geographic scope of EFH studies requires a very efficient process for acquiring high-quality environmental data. Previous research by the HRG indicates that seafloor sediments affect the distribution and abundance of eastern Bering Sea groundfish, but also reveals that synoptic sampling with bottom grabs is impractical. Subsequent research has shown that acoustic characterization of the seafloor provides useful data for our habitat models, but conventional sonars may still require an inordinate amount of time to sample large areas.

The Klein 7180 long-range side scan sonar (LRSSS) is new technology that was purpose-built for our fish-habitat research. It is distinguished from all other sonar systems by its ability to collect fully adjusted quantitative information about seafloor characteristics and is thus ideally suited for modeling applications. The very large swath coverage (to 1.0km) and high maximum tow speed (12kts) of the LRSSS greatly increase the efficiency of survey operations, thereby reducing costs and the time required to complete missions. The broad swath coverage of the integrated bathymetric subsystem may also improve the efficiency of hydrographic reconnaissance in the Arctic.

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

Optech successfully completes trials of CZMIL bathymetric system

Optech announced the successful completion of field trials for the new airborne Optech CZMIL Coastal Zone Mapping and Imaging Lidar system.

The CZMIL system underwent field trials and validation in coastal Mississippi and Fort Lauderdale, Florida. The system flew over five sites ranging from urban areas to barrier island habitat. GPS-based ground control, Lynx vehicle-based lidar data and sonar data were collected for comparison to CZMIL data, in partnership with the University of Southern Mississippi. In Fort Lauderdale CZMIL flew offshore over the Navy's South Florida Ocean Measurement Center (SFOMC). In addition to data acquisition over known targets, Optech collected sonar data over the project area for comparison to CZMIL. Over each site were collected Optech CZMIL lidar data, CASI-1500 hyperspectral data and Optech T-4800 metric frame camera imagery.

For more information, visit www.optech.com.

BOEM identifies wind energy area off Massachusetts for potential commercial leasing

As part of Secretary of the Interior's Smart from the Start Atlantic Offshore Wind Initiative, the Bureau of Ocean Energy Management (BOEM) announced that it is moving forward with the next step to consider commercial wind energy development on the Outer Continental Shelf (OCS) offshore Massachusetts. Together with the commonwealth of Massachusetts, BOEM has completed definition of a Wind Energy Area (WEA) with high wind potential for possible commercial leasing. The WEA defined begins approximately 12nmi south of Martha's Vineyard and 13nmi southwest of Nantucket. From its northern boundary, the area extends 33nmi southward to the 60m depth contour and has an east/west extent of approximately 47nmi. The WEA is approximately 742,974acres and contains 117 whole OCS lease blocks as well as 20 partial blocks.

ABS supports technology development for wind energy

ABS, the leading provider of classification services to the global offshore industry, has concluded a study on the technical feasibility of floating wind turbines for the Bureau of Safety and Environmental Enforcement (BSEE). The goal of the study was to determine how floating structures and moorings would be affected by the strong interactions among the wind turbine rotor, control system, floating platform, and mooring/cable system and how different loading events could impact these systems. ABS was awarded this study in December 2010 through the BSEE's Technology Assessment and Research (TA&R) Program. The project included a technical feasibility study of existing floating wind turbines. Study results served as a basis for identifying the critical technical challenges to deploying floating wind turbines on the U.S. Outer Continental Shelf (OCS). The final step of the project was the proposal of a draft design guideline for permitting floating wind turbine deployment on the U.S. OCS.

UK-Korea ocean energy technology co-operation

The British Embassy in Seoul has awarded a contract to the Korea Maritime University (KMU) and IT Power (ITP) to establish the UK-Korea Ocean Energy Technology Co-operation Project. This follows closely after the accord between Renewable UK and the Korean Wind Energy Industry Association (KWEIA). The new FCO project will facilitate collaboration between industry and academia in offshore wind as well as tidal and wave technologies. The UK has the world's largest installed capacity of offshore wind power, with 1,858MW online; 2,359MW under construction; 1,266MW consented; and 42,114MW planned. South Korea has 2,500 MW under development. With the completion of the Siwha tidal barrage last year (254MW), Korea has the largest installed tidal energy capacity in the world. Korea has been active in developing UK relations in offshore wind turbines and now marine energy technologies, having established relationships with large UK industrials.

Bowtech Products Ltd. supply vision system for Scotland's first tidal energy project

Bowtech Products Ltd. (Bowtech), a market-leading manufacturer and supplier of cameras, LED lighting, connectors, fiber optic multiplexers, and slip rings for use in underwater or hazardous area applications to any ocean depth, has announced that they have supplied a vision system to assist the installation of Scotland's first tidal energy project.

The 1MW HS1000 tidal turbine, a device developed by ANDRITZ HYDRO Hammerfest (www.hammerfeststrom.com), was installed for Scottish Power Renewables in the tidal waters around Orkney in December 2011 and has since been undergoing tests. The new device is providing electricity for homes and businesses on the northern Orkney island of Eday.

Bowtech supplied their Divecam acrylic, miniature, high-resolution, monochrome CCD cameras to the project along with their latest LED G 1600 lights and a surface controller. The vision system provided quality imaging and light when installing the device during atrocious weather conditions, to operate in fast flowing tidal waters.

The Bowtech DIVECAM-700M, miniature high-resolution monochrome CCD camera provides a low-cost solution to shallow underwater viewing and observation.

The cameras are manufactured with a high-quality acrylic housing (patent pending), rated to 100m/300m operating depth as standard. The camera is fitted with a fixed focus wide angled lens, giving a diagonal field of view of 65° in water, through the unique integral acrylic window. The miniature, high quality 1/3" CCD sensor offers high-resolution and low-light level sensitivity. It is the ideal camera for low-light shallow viewing tasks.

The LED-G-Series are available with either 800, 1,000 or 1,600lumens output and various colour temperature options. The 800lumen model is designed to operate in wet and dry conditions.

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

Eco Wave Power successfully installs its first operational wave energy power plant

Eco Wave Power (EWP) has successfully installed a medium-scale wave energy power plant in the Black Sea during the month of April 2012. The installation of EWP's system took place during that month in recognition of international Mother Earth Day, celebrated in more than 175 countries every year.

The Black Sea provided Eco Wave Power with real-life conditions necessary for testing EWP's wave energy devices under uncontrolled wave heights and wave periods.

Among the different tests, Eco Wave Power examined the characteristics of two different floaters shapes, the "Wave Clapper" and the "Power Wing," and also measured the KW output in different wave heights and periods. Other tests included measuring the influence of side waves on the floaters and the connections, connecting the floaters to electric devices and showing an electricity supply (with and without an accumulator), examining the influence of floaters in proximity to each other, examining the option to unite both floaters to one electric grid and charge a common accumulator, and examining the floaters' storm-protection mechanisms.

On 18 and 19 April, the Black Sea experienced stormy conditions, during which Eco Wave Power decided to stress-test its floaters. Consequently, Eco Wave Power operated its floaters at a wave height of up to 5m; the float survived the storm without damage.

For more information, visit www.ecowavepower.com.

Energy Department announces funding to test a wave energy device in Hawaii

As part of President Obama's commitment to an all-out, all-of-the-above strategy for American-made energy, the U.S. Energy Department announced that $500,000 is available this year to test the technical readiness of technologies that can harness energy from waves to supply renewable power to highly-populated coastal regions. The funding will support one project to deploy and test a wave energy conversion device for 1 year at the Department of Navy's Wave Energy Test Site off of Marine Corps Base Hawaii in Kaneohe Bay on the island of Oahu. This funding will demonstrate and accelerate wave power technologies that could further develop the country's significant ocean energy resources, create new industries and new jobs in America, and secure U.S. leadership in the global race for renewable energy technologies.

These efforts complement an ongoing collaboration with the Navy, underscoring how increased cooperation between the U.S. Department of Defense (DOD) and the Energy Department – as embodied in the DOD-DOE Energy Security Memorandum of Understanding – can further the nation's objectives toward renewable energy development. Through the funding opportunity announced, the Energy Department will provide technical support to test and evaluate the best wave energy options to provide power to DOD facilities.

The Energy Department estimates that there are over 1,170TWh/y of elec-

tric generation available from wave energy off U.S. coasts, although not all of this resource potential can realistically be developed. For comparison, the U.S. uses 4,000TWh of electricity each year. The Navy has supported wave energy conversion research with the expectation that this technology can be used to assist DOD in reaching its agency goal of producing or procuring 25% of its electricity from renewable sources by 2025.

The Energy Department expects to select a proposed wave energy device that is substantially complete and ready for testing and data collection without significant modification. The testing will include a comprehensive performance assessment – as well as a review of all pre- and post-deployment activities, operations and maintenance activities, and related analysis – to advance our understanding of these innovative technologies and identify areas of performance improvement that will benefit this emerging industry as a whole.

For more information, visit www.eere.energy.gov.

EMEC collaborate with Oregon Wave Energy Trust

The European Marine Energy Centre (EMEC), Scotland's world-leading marine and tidal energy development facility, announced a major collaboration with Oregon Wave Energy Trust and its partner, Northwest National Marine Renewable Energy Centre (NNMREC).

EMEC will deliver advice and support on the design, set up, and operation for the NNMREC Pacific Marine Energy Centre (PMEC), a grid-connected marine energy test center proposed for development off the Pacific Northwest coast.

The new center is targeted to harness the significant wave energy resource available along the west coast and will remove a major barrier to the development of the marine energy technology industry in the U.S. by providing the region's first standardized testing facilities in real-world conditions.

Experts from EMEC are uniquely placed to advise their American colleagues, having successfully supported the deployment of more grid-connected devices at full-scale wave and tidal testing facilities than at any other single site in the world from their base in Orkney, Scotland.

PMEC will demonstrate the viability of wave energy by delivering a fully functional ocean test facility for prototype and commercial-scale devices. When complete, the center will offer up to four test berths connected to the regional grid, each with capacity for testing devices up to 1MW in size.

The center's testing facilities will support devices with grid simulation capability as well as testing berths capable of hosting single or multiple devices in small arrays with a combined output of between 1 to 2MW.

For more information, visit www.emec.org.uk.

FoundOcean is awarded monopile grouting contract for Gwynt y Môr offshore wind farm

Scottish-based FoundOcean Ltd is pleased to announce it has been awarded the contract for the foundation grouting for Gwynt y Môr Offshore Wind Farm Limited, UK.

Gwynt y Môr is being built with an installed capacity of 576MW in Liverpool Bay, 13km off the North Wales coast; it is one of Europe's largest offshore wind farms currently in construction. The wind farm consists of 160 monopile foundations, each housing a 3.6MW turbine; the monopile transition pieces will be grouted using BASF's Exagrout Masterflow® 9500 cementitious grout.

Masterflow® 9500 exhibits many pioneering properties, including zero autogenous shrinkage, which provides long-term volume stability and durability, the ability to be pumped at temperatures down to 0ºC (thus lengthening the available OWF installation season), and a rapid strength build-up to support increased installation rate and 28day compressive strengths of 140MPa.

For more information, visit www.foundocean.com.

Principle Power and Partners inaugurate the first Portuguese offshore wind turbine

Principle Power; Energias de Portugal; Repsol, A. Silva Matos (ASM); Vestas Wind Systems A/S; and InovCapital are pleased to announce the inauguration of Portugal's first offshore wind turbine. The turbine is installed on an innovative floating foundation called the WindFloat. In addition to being the first offshore wind turbine in Portugal, this is the first offshore wind turbine to be installed without the use of any heavy lift vessels or piling equipment at sea. All final assembly, installation, and pre-commissioning of the turbine and substructure took place on land in a controlled environment. The complete system was then wet-towed offshore using simple tug vessels.

The WindFloat is equipped with a Vestas v80 2.0MW turbine capable of producing enough electricity for 1,300 households. The system is located 5km off the coast of Aguçadoura, Portugal and has already produced in excess of 1.7GWh. The WindFloat ushers in a new era in the offshore wind industry, permitting utilities to target the highest quality wind resources, independent of water depth. In addition, projects can realize significant cost and risk reductions as a result of the onshore fabrication and commissioning scheme.

The successful installation and ongoing operations of the WindFloat in Portugal is the result of hard work and foresight on part of the WindPlus joint venture, comprising EDP, Repsol, Principle Power, ASM, Vestas Wind Systems A/S, and InovCapital, including a subsidy from the Innovation Support Fund (Fundo de Apoio à Inovação – FAI). Additionally, over 60 other European suppliers, 40 of them Portuguese, supplied key components to the project. Repsol has recently joined the Windplus JV as a significant shareholder, bringing additional offshore experience and operational capabilities to the project team.

The WindFloat has already endured a harsh winter environment in the open Atlantic, having withstood waves of up to 15m at the close of 2011.

For more information, visit www.principlepowerinc.com.

World's largest offshore windfarm now fully operational

Walney Offshore Windfarms Ltd announced that the world's largest wind farm is now fully operational. The Walney wind farm, off the coast of Cumbria, entered full commissioning, with all 102 turbines delivering clean electricity into the UK's grid.

The wind farm, which combines the Walney 1 and 2 projects, is a joint venture between DONG Energy (50.1%), SSE (25.1%), and OPW (24.8%). With a total capacity of 367MW, Walney can supply up to 320,000 households with renewable power and has created around 60 jobs at its new operations centre in Barrow-in-Furness.

Walney 2 was built in the fastest time ever for a large offshore wind project, with all turbines and cables installed in just 5 months and 13 days, setting a record in the sector. Its completion in February this year marked an important step forward for the industry and demonstrates DONG Energy's strong drive towards further building the offshore wind industry and driving down costs.

Walney is also ground-breaking in its financing, being the first ever UK offshore wind farm to receive investment from a pension fund service provider and an equity fund before it had been built. OPW, a consortium of the Dutch pension fund service provider PGGM and the Ampere Equity Fund, took a 24.8% stake in the project in December 2010.

For more information, visit www.dongenergy.com.

Kongsberg Maritime opens wind energy division

The Kongsberg Group has chosen the Kongsberg Maritime facility at Lade in Trondheim, Norway as the home of its new "Centre for Optimum Wind Park Operation."

The new wind power division is a joint venture between global marine technology developer Kongsberg Maritime and parent company Kongsberg Group and has been implemented to develop solutions for wind park management and operations that will ultimately lower the cost of wind power generation.

Wind park management and monitoring are the two main focuses of the new division. There is a clear case for transferring Kongsberg Maritime's proven maritime and offshore systems to benefit the production of wind power and to meet the challenges this sector faces.

For more information, visit www.kongsberg.com.

OPT completes testing of next generation power take-off

Ocean Power Technologies, Inc. (OPT) announced the successful completion of factory acceptance testing of the first of its next generation power take-off (PTO) units for the company's utility-scale PowerBuoy®. The PTO has now been shipped from OPT's facility in Pennington, New Jersey to Oregon Iron Works, where it is being integrated into the spar of the buoy in preparation for deployment off the coast of Reedsport, Oregon.

During testing, the PTO was subjected to varying simulated wave conditions to measure overall functioning and reliability, and it performed as expected in each area studied. The new direct drive system is a much larger version of that which was recently utilized in the Company's PowerBuoy® deployed off Oahu, Hawaii, for 2 years in a project with the U.S. Navy.

For more information, visit www.oceanpowertechnologies.com.

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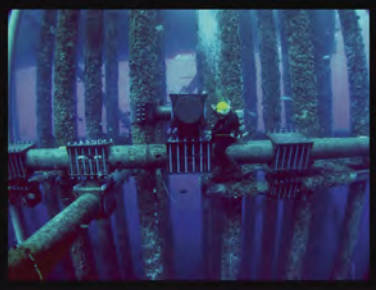

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Rolls-Royce secures £1billion contract for UK's future submarine program

Rolls-Royce, the global power systems company, has signed a contract worth in excess of £1billion with the UK Ministry of Defence (MoD) to deliver reactor cores for the UK's nuclear-powered submarine fleet.

This contract includes regeneration of the current Rolls-Royce submarine reactor core manufacturing facility in Derby. The Group will introduce the latest technology and manufacturing techniques to deliver increased efficiencies committed by the MoD and industry as part of the Strategic Defence and Security Review. Under this contract, Rolls-Royce will continue to maintain and operate its existing reactor core manufacturing facility in Derby, UK. In parallel, the Group will complete a phased rebuild to provide a leading-edge manufacturing facility with the highest standards of safety to support future MoD program needs.

Non-lethal measures are long-term key to combating sea crime

The current focus on armed support for vessels transiting high risk areas should not become the norm, GAC Solutions' Christer Sjödoff has told delegates from the shipping and offshore industries who gathered in London to debate long-term, effective ways to tackle the threat of sea crime. Speaking at the "Lunch and Learn" event hosted by GAC Protective Solutions, Sjödoff said that sole reliance on private maritime security companies is not a long-term solution to maritime security threats around the world. GAC Protective Solutions – a strategic partnership between global shipping, logistics, and marine services provider GAC and maritime intelligence agency AKE – detailed recent developments in sea crime across East and West Africa. Law firm Stronachs LLP, which provides legal diligence services to banks and equity providers in the oil and gas industry, also delivered an insight into the legal responsibilities and threats of operating in high-risk areas.

Navy orders Erapsco sonobuoys

Erapsco Inc. has been awarded a $25.4 million contract to make 4,628 sonobuoys for the U.S. Navy. Sonobuoys are sensors that can search for and detect submerged submarines. Erapsco is a 50-50 partnership between Undersea Sensor Systems Inc. of Columbia City and Sparton Electronics Inc. of DeLeon Springs, Fla. The contract calls for 47% of the work to be done in Columbia City and the rest in DeLeon Springs.

Successful sea trials of Royal Moroccan Navy rigate

The 98m long SIGMA class frigate, the third frigate built by Damen Schelde Naval Shipbuilding for the Royal Moroccan Navy, left Vlissingen for her sea acceptance trials (SAT) in the North Sea. During the SAT, an intensive program was carried out in which the platform as well as the sensor weapons and communications suite were extensively tested to the full satisfaction of the Royal Moroccan Navy. The tests were performed by representatives of the yard in close cooperation with representatives of the subcontractors, the Royal Moroccan Navy, and the Royal Netherlands Navy. The first SIGMA frigate was transferred to the Royal Moroccan Navy on 10 September 2011 and the second on 10 March 2012. The third frigate is scheduled to be transferred in September 2012.

USS Mississippi commissioned

The U.S. Navy has commissioned the USS Mississippi (SSN 782), the ninth Virginia-class attack submarine, during a ceremony in Pascagoula, Mississippi.

Mississippi, built under a unique teaming agreement between General Dynamics Electric Boat and Huntington Ingalls Industries - Newport News, delivered to the Navy in just over 62 months - the fastest delivery yet for a Virginia class submarine. All Virginia class submarines currently under construction are on track to deliver early to the Navy.

"Mississippi's commissioning is the culmination of a very successful construction process for our Navy/industry shipbuilding team," said Rear Adm. (sel.) Michael Jabaley, Virginia-class program manager and vice commander, Naval Sea Systems Command. "Mississippi was delivered to the fleet a year ahead of her contracted date, and was the most combat ready Virginia class submarine to date as determined by the Navy's Board of Inspection and Survey."

In time-honored tradition, the ship's sponsor Allison Stiller, deputy assistant secretary of the Navy (ships), issued the order to, "Man our ship and bring her to life!" With the order, Mississippi's crew ran aboard and placed the submarine in commission.

"The Submarine Force and the fleet have eagerly anticipated this day," said Rear Adm. David Johnson, program executive officer for submarines. "USS Mississippi provides the Navy with unique and unparalleled capabilities and joins the fleet at a time when submarines are being called upon to perform vital national security tasking around the globe."

Other upcoming major submarine acquisition milestones in 2012 include Pre-Commissioning Unit (PCU) Indiana's (SSN 789) construction start Sept. 2 and PCU Minnesota's (SSN 783) christening planned for this fall.

Virginia-class submarines are designed to dominate the world's littoral and deep waters, while conducting anti-submarine; anti-surface ship; strike; special operation forces; intelligence, surveillance, and reconnaissance; irregular warfare; and mine warfare missions. Their inherent stealth, endurance, firepower, and sensor suite directly enable them to support five of the six maritime strategy core capabilities – sea control, power projection, forward presence, maritime security, and deterrence.

For more information, visit www.navy.mil.

Tritech to supply sonar systems for U.S. Naval order

Tritech has been awarded a contract to supply German-based Atlas Elektronik GmbH, a leading systems supplier for naval electronics, with suites of sonar equipment for an urgent U.S. Navy requirement.

Tritech sonars will be installed on SeaFoxTM mine neutralization systems, supplied through ATLAS North America (ATLAS NA) in support of the U.S. Navy requirement for a more effective mine countermeasures (MCM) system.

The SeaFoxTM system is a fibre-optic guided, one-shot, mine disposal vehicle used for semi-autonomous disposal of naval mines and other ordnance found at sea. It is able to automatically relocate previously acquired positions of underwater objects within minutes using the integrated homing sonar equipment.

Mike Broadbent, Tritech's business development manager comments, "Tritech is a respected industry leader in the provision of sensors and tools for ROV and AUV markets. We are delighted to be working with Atlas Elektronik on this contract and proud to be playing our part in supporting the U.S. Navy in this very important activity."

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

Former Presidents George H.W. Bush And George W. Bush Visit CVN 77

USS George H.W. Bush (CVN 77) hosted the ship's namesake, former President George H.W. Bush, and his son, former President George W. Bush, for a promotion and reenlistment ceremony off the coast of Kennebunkport, Maine, 10 June.

"It's a great honor to be out here," said George H.W. Bush. "I'm thrilled to be on this vessel that bears my name, and I'm very proud of all of those that re-up'd for service to our great country."

The ship's sponsor, Doro Bush Koch, former Florida Gov. Jeb Bush, and other members of the Bush family accompanied the Navy's newest aircraft carrier during a regularly scheduled training evolution to encourage the crew and raise morale.

While onboard CVN 77, the former presidents presided over a mass re-enlistment, enlisted advancements, and officer promotions.

Ingalls Shipbuilding awarded $2.38 billion contract for detail design and construction of LHA 7

The U.S. Navy awarded Huntington Ingalls Industries a $2.38 billion fixed-price-incentive contract for the detail design and construction of the multipurpose amphibious assault ship Tripoli (LHA 7).

LHA 7 and LHA 6 are the first two ships in the new America class of amphibious assault ships. Tripoli will be 844 feet long and 106ft wide and will displace 44,971tons (long). The fuel-efficient gas turbine propulsion system will drive the ships in excess of 20kts. She will accommodate 1,059 crew (65 officers) and 1,687 troops. She will be capable of carrying a Marine Expeditionary Unit, including Marine helicopters, MV–22 Osprey tiltrotor aircraft, and F–35B Joint Strike Fighter (JSF) aircraft.

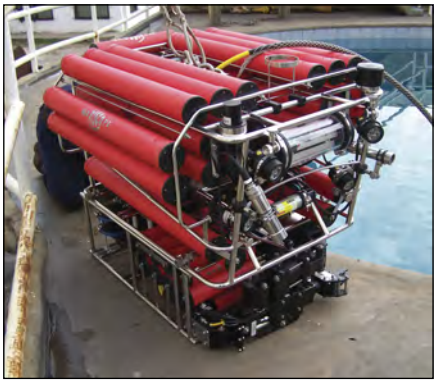
Like the future USS America (LHA 6), LHA 7 has an increased aviation capacity to include an enlarged hangar deck, realignment and expansion of the aviation maintenance facilities, a significant increase in available stowage for parts and support equipment, and increased aviation fuel capacity. Similar to its predecessors, the ship will be able to operate as the flagship for an Expeditionary Strike Group. Ingalls has built five Tarawa (LHA 1) class ships as well as eight Wasp (LHD 1) class ships.

For more information, visit www.huntingtoningalls.com.

Comander MKII, special delivery from Mariscope to the Prefectura Naval Argentina

The Prefectura Naval Argentina (PNA) purchased the second ROV from the German manufacturer Mariscope Meersetechnik. This time the vehicle is a light work class system called Comander MKII. The vehicle is equipped with one hydraulic multi-function manipulator and a special wire cutting arm developed and produced by Hydrolek. The ROV has been specially adapted to PNAs requirements in order to carry out different types of operations related to incidents in navigation and complementing diving operations.

Apart from the manipulators, the ROV has also been equipped with special EOD lighting, recently developed by Mariscope. With this lighting, it is possible to change the color of the illumination from the surface during the dives. In relation to mine counter measurements, this illumination can be the difference between a success and the loss of the instrument. Modern mines have photo cells that react to white light.



Additionally, the instrument is equipped with a series of sensors for special inspection tasks and leak detections.

During July 2012, Mariscope will carry out the pilot training for PNA under real conditions from the PNA ships based in Puerto Madryn, Patagonia.

For more information, visit www.mariscope.de.

Lockheed Martin delivers 3rd LCS

The Lockheed Martin-led industry team delivered the nation's third Littoral Combat Ship, Fort Worth (LCS 3), to the U.S. Navy 2 months ahead of schedule.

"By delivering Fort Worth early and performing so successfully at acceptance trials, this team has reached milestones rarely seen this early in a new ship class," said U.S. Navy LCS Program Manager Rear Admiral (Select) John Neagley.

"Going forward, we intend to remain on schedule and on cost, while we continue incorporating lessons learned and drive down costs," said Joe North, vice president of Littoral Ship Systems at Lockheed Martin's Mission Systems & Sensors business.

The ship will remain at the Marinette Marine Corporation shipyard in Marinette, Wisconsin, until later this summer as the Navy crew moves aboard in preparation for transiting down the East Coast on its way to commissioning in Galveston, Texas in September.

The Lockheed Martin-led LCS team includes ship builder Marinette Marine Corporation, a Fincantieri company, naval architect Gibbs & Cox, and domestic and international teammates.

For more information, visit www.lockheedmartin.com.

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Cape class patrol boat keel layed

Demonstrating the rapid progress of the Cape Class Patrol Boat Program, Austal hosted a keel-laying ceremony for the first of eight high performance patrol boats it is building for the Australian Customs and Border Protection Service.

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

Although Austal's design and manufacturing approach is thoroughly modern, the ceremony retained long-held shipbuilding traditions. This included placing specially minted coins under a keel block as a symbol of good fortune and to bless the ship. These coins will be removed just prior to the patrol boat's launch, which is scheduled for later this year.

The Cape Class Patrol Boats will play a significant role in protecting Australia's borders from multiple maritime threats and have been designed to have greater range, endurance, and flexibility as well as enhanced capability to operate in more severe sea conditions than the current Customs and Border Protection fleet. The aluminium monohulls can operate at 25kts and have a range in excess of 4,000nmi. Each can undertake simultaneous operations with two embarked 7.3m rigid hulled response vessels.

For more information, visit www.austal.com.

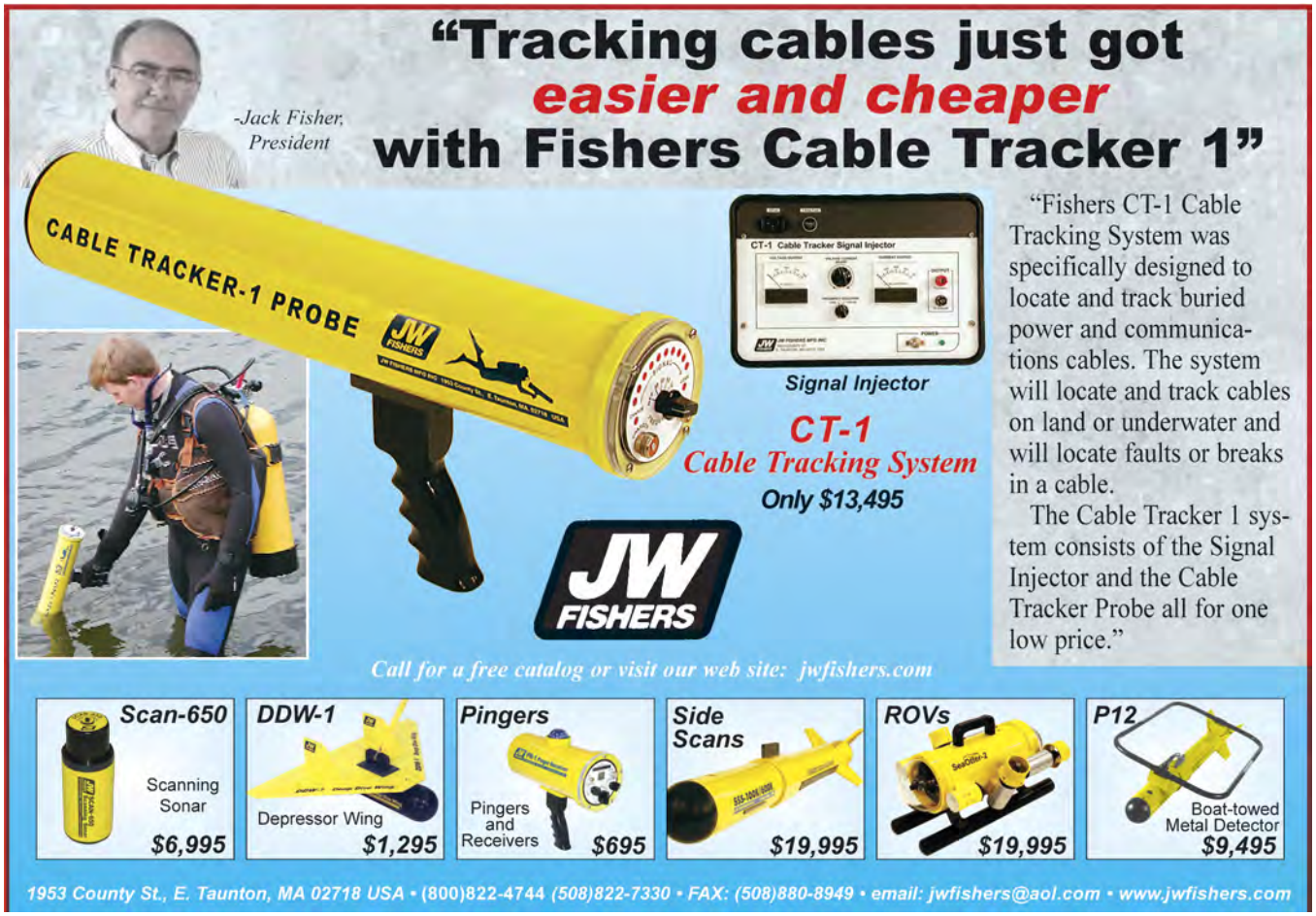
U.S. shifts focus to Asia-Pacific

The U.S. is a Pacific power and will remain engaged in the region, Defense Secretary Leon E. Panetta said during a speech delivered at the 11th Annual Shangri-La Dialogue in Singapore.

Panetta explained what America's enduring shift toward the Asia-Pacific means to the region. After the fall of the Soviet Union, there were those in the U.S. government who urged a refocusing of U.S. strategy toward the Pacific. China and India are two of the fastest-growing economies and the nations of Southeast Asia also grew behind the shield of U.S. presence in the region.

The U.S. also has deep, lasting alliances with nations in the region, including Japan, South Korea, the Philippines, Thailand, Australia, and New Zealand.

Marine ground and aviation units have begun rotational deployments to Australia. The U.S. and the Philippines are looking at a similar arrangement. American littoral combat ships will be berthing in Singapore and the number of Navy assets deployed will shift, too. "By 2020, the Navy will reposture its forces from today's roughly 50/50 split between the Atlantic and Pacific to about a 60/40 split between those oceans – including six aircraft carriers, a majority of our cruisers, destroyers, littoral combat ships and submarines," Panetta said.



First bilateral maritime excercise between India and Japan

The first bilateral maritime exercise between India and Japan 'JIMEX 12' (Japan India Maritime Exercise) commenced on 09 June, off the coast of Tokyo. Units of the Japanese Maritime Self Defence Force (JMSDF) participating are two destroyers; one maritime patrol aircraft and a helicopter. Indian Naval units participating are INS Rana, INS Shivalik, INS Karmukh and INS Shakti. The four ships entered Tokyo on 05 Jun 2012 after visiting Singapore, Vietnam, Philippines and Republic of Korea enroute. The three day stay in Tokyo coincides with commemoration of 60 years of diplomatic relations between India and Japan.

The four ships of the Eastern Fleet of the Indian Navy, under the command of Rear Admiral P Ajit Kumar, Flag Officer Commanding Eastern Fleet are on a sustained operational deployment to the South China Sea and North West Pacific. The two month long deployment which commenced at the end of May 2012 enables Navy-to-Navy cooperation with the numerous navies across the region as well as demonstrates the Indian Navy's operational reach.

During the deployment the ships will participate in passage exercises with the respective navies of countries visited. The focus of 'Passage Exercises' is primarily in the sphere of Maritime Security Cooperation. These include Humanitarian Aid & Disaster Relief (HADR) operations and Visit, Board, Search and Seizure (VBSS) drills, which form a part of Anti-Piracy operations.

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

Future USS Anchorage completes acceptance trials

The future USS Anchorage (LPD 23) successfully completed acceptance trials 22 June, sailing from and returning to Huntington Ingalls Industries' (HII) shipyard in Avondale, Louisiana.

Anchorage is the seventh ship of the San Antonio class of amphibious transport dock ships to be presented to the Navy's Board of Inspection and Survey (INSURV) for acceptance.

During the trials, the ship demonstrated a variety of systems including main propulsion engineering and ship control systems, combat and communications systems, damage control, various mission systems, food service and crew support and the shipboard wide area network - the electronic backbone of the ship.

Among the highlights of the at sea trial portion, Anchorage completed a four-hour, full-power run, self defense detect-to-engage exercises, steering checks, a quick reversal, boat handling and anchoring. The at-sea rapid ballast and deballast demonstration is unique to amphibious ships and consists of rapidly flooding the ship's well deck as if landing craft were to be launched or recovered. The ship is then deballasted to return to the normal operating draft. In the case of this acceptance trial, the results of the rapid ballast event beat the 15-minute time standard by almost 2min, a significant achievement.

The future Anchorage is scheduled to be commissioned in 2013 in the ship's namesake city of Anchorage, Alaska. This is the second ship to be named Anchorage after Alaska's largest city and home to more than 40 percent of the state's population.

For more information, visit www.navy.mil.

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OFFSHORE INDUSTRY

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U.S. oil production highest in 14 years, Texas still top producer

Driven by output in North Dakota, Texas, and the Gulf of Mexico, domestic crude oil production hit its highest mark in 14 years during the first quarter of 2012, according to information from the U.S. Energy Information Agency.

Total U.S. production for the quarter topped 6MMbbl/d. After steady production between 5.5 and 5.6MMbbl/d during the first three quarters of 2011, average oil production shot up to 5.9MMbbl/d during the fourth quarter and ultimately surpassed 6MMbbl/d during the first part of this year, the EIA said in its May Petroleum Supply Monthly Report.

Although Texas remains the No. 1 state for production in the U.S., after passing California in December 2011 to become the third-largest oil producing state, North Dakota then jumped ahead of Alaska in March 2012 as the state with the second-largest oil output.

Infield Systems says it expects strong FPS market through 2016

The world floating production systems (FPS) market will be one of the strongest offshore sectors going forward to 2016, said Infield Systems. In its recently released "Floating Production Systems Market Report to 2016," Infield sees increasing investment in FPS installations being made away from the traditional areas of Latin America and West Africa.

Since 2000, the trend for floating platform installations in water depths of 1,640ft. or more has been driven primarily by Latin America. The region has consistently held a 35% market share of capex at this depth and is expected to maintain this throughout the forecast period.

Going forwards, the ultra-deepwater market, where water depths are of 4,921ft. and more, is expected to dominate FPS demand, with installations over these depths holding a 31% share of floating platform capex over the 2012-2016 timeframe. This compares to 22% over the historical 2007-2011 period. Of these ultra-deepwater developments, Latin America continues to hold the dominant share at 58% of capex spend, with key FPS projects offshore Brazil.

Bluewater's FPSO Glas Dowr

However, as a result of major growth from previously more marginal areas of floating production development, in particular Australasia, the proportion of total global capital expenditure across all water depths attributable to Latin American developments is expected to decrease from 30% across the historical period to 27% going forward to 2016.

Indeed, during the forecast period, the Australasian region is expected to witness its market share of capex increase by 10% over the prior period, 2007-2011, the largest regional increase across the globe.

4.5 million barrels of oil likely to be shut in U.S. Gulf due to storms: EIA

About 4.5MMbbl of crude oil and 9.5bcf of natural gas production in the Federal waters of the U.S. Gulf of Mexico are likely to be shut in due to hurricane season, which started in June and goes until the end of November, the U.S. Energy Information Administration (EIA) reported.

That estimate means that about 24,590bbl/d and 51.9MMcf of natural gas per day could be offline due to storms, a small portion of the Gulf total oil and gas production. As of March, Federal offshore production from the Gulf was 1.4MMbbl/d and 4.4bcf/d.

A recent forecast by the National Oceanic and Atmospheric Administration (NOAA) calls for a 50% chance of near-normal hurricane activity this season, a 25% chance of above-normal activity, and a 25% chance of below-normal activity.

Integrated oil companies evolve to ensure future profits: GlobalData

Integrated oil companies (IOCs) are turning toward more challenging opportunities for oil production, such as conventional resources in deepwater areas and onshore unconventional reserves, according to research conducted by GlobalData.

The new report shows that several IOCs decided to restructure business segments in 2011, directing their focus on upstream activities for the next 5 years. This follows a steady decrease in oil and gas discoveries since 2010 and a global depletion of conventional reserves, which has made the use of advanced technologies to drill in deepwater regions far more appealing.

A large number of deepwater reserves have been successfully detected, increasing the need for high capital expenditure in the upstream sector.

IOCs are being prompted to increase capital expenditure in their upstream businesses to enable expansion of their E&P activities in conventional as well as unconventional resources.

GlobalData analysis indicates that increased capital expenditure is required for IOCs to remain competitive with their pure-play E&P counterparts. IOCs have, on average, seen relatively lower Reserve Replacement Ratios (RRRs) than those of upstream pure-play companies during the 2007-2011 period, suggesting that pure-play companies have been more competitive in increasing new reserves and further highlighting the need for IOCs to step up their focus on upstream activities in order to survive competition in the future.

Many IOCs also have restructured their downstream operations due to the various environmental regulations on refining units utilized in certain developed countries.

Joint study differentiates between natural seepage and produced oils

Resource managers now have a scientific method to determine the source of oil found in the waters off southern California and differentiate between naturally seeped oils and those produced by offshore oil and gas production. This method is detailed in a new joint report from the U.S. Geological Survey, the Bureau of Ocean Energy Management, and academic and industry collaboration.

The report, covering a joint USGS and BOEM 10-year series of studies of natural oil seeps, mainly from the Santa Barbara Channel west of Los Angeles, California., is titled "Biomarker Chemistry and Flux Quantification Methods for Natural Petroleum Seeps and Produced Oils, Offshore Southern California," with references to earlier reports and peer-reviewed articles.

"The results will have far-reaching implications for understanding the energetics of coastal marine biological communities and the long-term effects of industrial activities on their health," explained USGS director Marcia McNutt.

The analysis found that oil from platforms north of Point Conception (Irene, Hidalgo, Harvest, and Hermosa) is chemically different than seep oil and can be unequivocally distinguished. Other platform oils need to go through a more extensive biomarker analysis to distinguish them from natural seepage.

During the course of study, oil samples were taken from offshore natural seeps and Federal offshore oil and gas production platforms to develop a rigorous chemical fingerprinting method that will allow scientists to determine the origin of individual tar balls within the first month or two of seepage or spill deposition.

Shell near ready to begin exploratory drilling in Beaufort, Chukchi seas

After numerous delays, Shell hopes to be drilling for oil offshore northern Alaska in July, chief executive Peter Voser said in mid-June. Meanwhile, Shell has upgraded the 1980s-era drilling rig Kulluk, docked in Seattle, to prepare it for the difficult conditions off Alaska's north coast.

"We are very encouraged with the progress in the Beaufort and Chukchi seas. All the permits are coming into place, and we are looking forward to drilling, most probably in July and then later on in August and the early part of September," Voser told Dow Jones Newswires.

"From a permitting, from a preparation point of view, it is all going according to plan, but there is always a risk of challenges in the courts. That is the unknown in the whole process," he added.

Kulluk under tow to Seattle for upgrades

However, Shell must still complete more tests of its safety equipment before the Federal government lets the company drill, a regulator said 14 June.

The examinations, which will verify whether Shell is able to stop the flow of oil in case of a blowout, was to take place in coming weeks, James Watson, director of the Interior Department's Bureau of Safety and Environmental Enforcement, said during a conference call.

"These tests must be successful before we approve any drilling activities, because safety is a must and it's our No.1 priority," Watson said in Portland, Oregon after looking over equipment to be used when a well fails. "There are still a number of inspections by BSEE and the U.S. Coast Guard" to be done on Shell's equipment.

Shell's aspirations to drill up to three Chukchi and two Beaufort wells this summer might still be overly optimistic, even if the company gets all of its federal authorizations and withstands any last-minute legal scrutiny. Steve Phelps, Shell Alaska manager for exploration and appraisal, told reporters 12 June that thick ice had formed in the region and would delay the start of any drilling by about 2 weeks.

Noble Energy agrees to sell North Sea assets to Maersk for $127M

Noble Energy, Inc. has entered into a definitive agreement with Maersk Oil North Sea Ltd. for the sale of assets located in the North Sea of the UK. The sale includes the company's 30% non-operated working interest in the Dumbarton and Lochranza properties, which produced approximately 4,400boe per day net to Noble Energy in the first quarter of 2012. At the end of 2011, net proved reserves at Dumbarton and Lochranza were 5.6MMboe. Noble Energy will receive $127 million, subject to customary adjustments. Separate from this transaction, the company is considering the sale of its other North Sea assets and will continue ongoing efforts to divest its non-core U.S. onshore properties.

"The sale of these non-strategic properties allows us to focus our resources on our five core business units and also strengthens our balance sheet," said David L. Stover, Noble Energy's president and chief operating officer.

Republicans, Democrats at odds on energy issues: AP-NORC poll

Republicans overwhelmingly favor more oil drilling, while Democrats back conservation and new energy sources such as wind and solar power.

A recent survey by The Associated Press-NORC Center for Public Affairs Research shows that the polarized positions on energy that have divided Congress and emerged in the presidential campaign also run deep among the public.

While majorities in both parties say energy is an important issue, the poll shows that partisan identification is closely tied to people's perceptions of the causes of the country's energy problems and possible solutions. No other demographic factor — not race, age, gender, or income level — is as consistently associated with opinions on energy as political party identification.

For example:

Three of four Democrats surveyed report that a major reason for the county's energy problems is that industry does not do enough to support clean energy. By comparison, 43% of the Republicans questioned believe that.

Moreover, three of four Republicans in the poll cite government limits on drilling as a major reason for energy problems, compared with 34% of Democrats.

Also, 85% say it is a serious problem that the U.S. needs to buy energy from other countries, but there's disagreement about why. Among Republicans in the poll, 65% say the U.S. does not produce enough domestic energy to meet demand. Yet just over half the Democrats say people use too much energy.

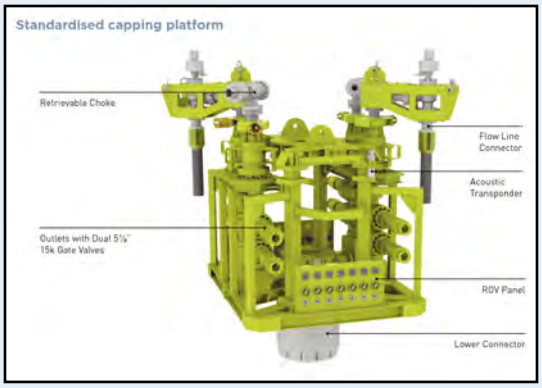
The AP-NORC Center poll was conducted 29 March to 25 April.

Subsea well capping equipment available to oil and gas industry

The oil and gas industry is set to benefit from internationally deployable well capping equipment, following collaboration between Oil Spill Response Limited (OSRL) and the Subsea Well Response Project (SWRP).

Working closely with SWRP, OSRL is making an integrated intervention system available to the industry to enhance international capabilities to respond to a subsea well incident. SWRP planned the intervention system, which includes newly designed subsea capping and dispersant application equipment, and will provide project management support to OSRL during the construction phase. OSRL will procure, own and maintain the equipment and make it available to subscribers.

OSRL has contracted Trendsetter Engineering to manufacture four capping stack toolboxes capable of handling a variety of scenarios. OSRL has also contracted Oceaneering AS to develop two hardware kits for the subsea application of dispersant at the wellhead.



The first equipment is due to be completed by the end of 2012 and will be ready for deployment by sea and air in the event of a subsea well-control incident. During 2013, the equipment will be moved to four strategic storage locations – in Northern Europe, South America, Africa, and the Asia-Pacific – to further enhance international deployment and response readiness.

"Increasing the availability of capping and subsea dispersant equipment is an important step forward for improving incident response capabilities across the industry and around the world," said Keith Lewis, project manager at SWRP. "SWRP sought input from industry experts and regulators of the offshore oil and gas industry while planning the intervention system. While we hope that this equipment will never be needed, it is critical for the industry to be prepared."

"Our collaboration with SWRP further enhances the expertise and specialized equipment we can offer to the industry, and we look forward to contact from interested parties," added Archie Smith, chief executive officer of OSRL. "In the event of an oil spill, subscribers to this new service will have immediate access to a wide range of industry-leading resources. We have, and are committed to continuing to develop, strategic relationships that can help to achieve a highly effective global response capability."

Norway's FORCE to assist Chinese companies with jacket deliveries

The Norwegian engineering company, FORCE Technology Norway AS, is set to assist Chinese companies working in Norwegian oil and gas, after signing an important contract with a large Chinese yard.

According to the cooperation contract, FORCE will assist the Chinese yard in its efforts to deliver jackets for offshore oil and gas platforms. FORCE, as the responsible engineering partner, will secure fulfillment of the strict quality demands set by the Norwegian and European oil and gas industry.

"The contract we have finalized with the Chiwan yard in Shenzhen shall prove that with the appropriate knowhow and technology and that it is feasible and possible to transport jacket structures from Far East to Europe at competitive quality and price," said FORCE Technologys AS sales manager, Bjarne T. Jensen.

The Chiwan yard is working to gain access to the Norwegian and European shelf with their jackets and steel structures. It is already a large supplier to the Asian oil industry and is under pre-qualification by several Norwegian and European oil and gas companies.

"There are large investments coming up on the Norwegian shelf, and the capacity for the European production yards and sites are close to the maximum limits. The cooperation between our companies shall secure Europe access to production capacity, still meeting the very strict quality demands," Jensen said.

Pipeline Services International LLC is awarded their 400th project

Pipeline Services International LLC (PSI) was founded in 2007 to service the offshore pipeline pre-commissioning and decommissioning markets. After becoming established in the offshore markets, in 2009, the company expanded its services capabilities to include onshore pre-commissioning and testing services throughout the Continental U.S.

On 16 May, 2012, the company was awarded its 400th project, which was an onshore clean, fill, test, dewater, dry, and caliper pig run job in Louisiana.

Schlumberger unveils breakthrough IsoMetrix marine seismic technology

Schlumberger has launched its IsoMetrix marine isometric seismic technology and the IsoMetrix family of marine seismic products. This breakthrough technology outputs isometrically sampled point-receiver data in both crossline and inline directions, capturing the returning wavefield in three dimensions and providing what's said to be the most accurate images of the subsurface ever recorded.

"The step change in imaging is as profound as was the move from X-rays to full 3D scans in the world of medicine," said Carel Hooykaas, president of WesternGeco, a business segment of Schlumberger.

The IsoMetrix system uses calibrated, multisensor MEMS technology that forms part of the new WesternGeco Nessie-6 point-receiver seismic streamer. The sensors measure acoustic pressure as well as vertical and crossline acceleration throughout the frequency range, and these measurements are provided as customer deliverables.

"Through an extensive 10-year research and engineering program, we have developed a new category of seismic that not only includes the acquisition technology, but also the algorithms and workflows needed to manage such an unprecedented amount of data," Hooykaas said.

IsoMetrix technology enables efficient exploration, high-resolution near-surface characterization, well integrity planning, and unmatched 4D repeatability. The technology is compatible with other WesternGeco services.

Contract awarded for first-ever floating LNG unit
Wison Offshore & Marine Ltd. won a contract from Exmar to engineer, procure, construct, install, and commission the first-ever floating LNG liquefaction, regasification, and storage unit. The FLRSU will be used by Exmar under a contract with Rubiales Energy Corp. for operations offshore Colombia in the Caribbean Sea starting fourth quarter 2014. The FLRSU will be a non-propelled barge equipped to convert 69.5MMcf/d of natural gas into LNG and store it for offloading to a permanently moored storage unit or shuttle tanker. The jetty moored barge will receive gas from the La Creciente field onshore. Wison Offshore & Marine will do the design and engineering from its Shanghai operational center with construction at Wison's fabrication facility in Nantong, China. Added support will come from the company's subsidiary in Houston, Texas. Black & Veatch will execute the engineering and procurement of the topside liquefaction equipment and packages using its patented PRICO technology, and providing onsite commissioning and startup.

ATP resumes production at Telemark Hub
ATP Oil & Gas Corp. said it resumed production at the ATP Titan platform, which services the company's Telemark Hub in the U.S. Gulf of Mexico. Production from the ATP Titan, shut-in since 14 May, resumed after the operator of the Mars pipeline temporarily shut in the pipeline to allow for the tie-in of a new offsetting platform that has now been completed. Production at the ATP Titan was proceeding as expected and was ramping up. ATP also announced that it has completed perforation at the lower B sand at the Mississippi Canyon (MC) 941 A-2 well, part of the Telemark Hub, and operations to frac-pac have commenced. Work on the MC 941 A-2 well was expected to be completed before the end of June, and the well was to be placed on production immediately. The MC 941 Block produces through the ATP Titan floating drilling and production platform. ATP operates the ATP Titan and Telemark Hub, which is in approximately 4,000ft of water with a 100% working interest and holds a 100% ownership in ATP Titan LLC, which owns the ATP Titan and associated pipelines and infrastructure.

Cameron wins supply contract for offshore China
Cameron signed an agreement with CNOOC for the supply of subsea production systems in support of the Panyu 35-1/2 deepwater gas field developments in the South China Sea. The contract is valued at approximately $100 million and the scope of supply includes six subsea production trees, production controls, one manifold, associated subsea equipment, rental tooling, and service support. Deliveries are scheduled to commence in 2013. This is Cameron's second award in the China region, Liwan 3-1 being the first.

Handful of companies turn lease sale into moneymaker for Feds

Nearly 75% or $1.260 billion of the $1.704 billion in apparent high bids received in last month's Central Gulf of Mexico Lease Sale 216/222 were submitted by just five companies that participated in the sale, indicating that the majors, in particular, were willing to cough up big bucks for selective acreage.

In fact, Statoil's $157.1 million for Mississippi Canyon Block 718 was not only the highest single bid submitted in Sale 216/222, but the highest received in any previous Central Gulf sale, according to regulators.

Central Gulf of Mexico Lease Sale 216/222
Top five companies based on total number of high bids

Company	Total High Bids	Sum of High Bids
Shell Offshore	24	$406,594,560
Statoil Gulf of Mexico	26	$333,259,056
BP E&P	43	$239,502,916
Chevron USA	29	$189,578,618
Exxon Mobil	22	$91,102,100

In total, Norway's Statoil picked up 26 leases for a total of $333.3 million, the second highest amount based on the sum of high bids submitted by any of the sale participants.

"When you see a $157 million bid for one tract, that is a great metric that tells the story about the huge amount of interest that we currently have with respect to oil and gas production in the Gulf," U.S. Interior Secretary Ken Salazar said.

However, analysts noted that fewer companies participated in Sale 216/222 than the last sale in the Central Gulf in March 2010, about a month before the Macondo blowout. This year, 56 companies submitted bids, compared to 77 companies 2 years ago. Also, Simmons & Company International said in a note that 454, or 6%, of available tracts received bids, down from 7% of 468 tracts in 2010.

"The data depicts a less than robust sale with period-over-period comparisons down across the board," Simmons said.

Top honors, also based on the sum of high bids submitted, went to Shell Offshore, which coughed up a staggering $406.6 million for 24 leases.

Companies submitted 593 bids on 454 tracts, with 193 or 42.5% of the 454 tracts receiving bids situated in below 200m of water, and 146 or 32.2% of them located in water depths greater than 1,600m. Seventy-five tracts or 16.5% of the total are located in water depths of 800 to 1,600m, and 33 tracts or 7.3% in water depths of 400 to 800m. Just seven of the tracts receiving bids are located in water depths of 200 to 400m.

Also, a hefty 364 or just over 80% of the 454 tracts receiving bids attracted single bids, meaning there was no competition for these parcels. Fifty-nine tracts received two bids, 21 tracts three bids, five tracts four bids, three tracts five bids, one tract six bids, and one tract seven bids.

BP launches Galapagos field development in Gulf of Mexico

BP has begun the initial start-up of the Galapagos development in the deepwater U.S. Gulf of Mexico, one of a series of new major upstream projects that the company expects to bring into production this year.

"The start-up of this project in the Gulf of Mexico is one of BP's key operational milestones for 2012, one of six high-margin projects we expect to come on stream this year," said Bob Dudley, BP group chief executive. "I expect that the operational progress we are now making will deliver increasing financial momentum for BP as we move into 2013 and 2014."

The Galapagos development includes three deepwater fields and increases the capability of a key offshore production hub for BP. The fields – Isabela, Santiago and Santa Cruz – are being produced using subsea equipment on the floor of the Gulf. A new production flowline loop has been added to carry output to the nearby Na Kika host facility, a BP-operated platform located roughly 140mi southeast of New Orleans in 6,500ft. of water.

The Na Kika facility, with a production capacity of 130,000boe/d, has been modified to handle output from the three fields. Full ramp-up of the project is expected around the end of June.

"The Galapagos development marks another significant step forward for BP in the Gulf of Mexico and reflects the potential we continue to see in this world-class basin, now and in the future," said James Dupree, regional president of BP's U.S. Gulf of Mexico business.

BP's overall interest in the three-block area that includes the fields comprising the Galapagos project is about 56%. Noble Energy, Inc.; Red Willow Offshore, LLC; and Houston Energy, L.P. are co-owners. BP is the operator of the Isabela field, while Noble Energy operates the Santiago and Santa Cruz fields.

The Galapagos development required the installation of new subsea infrastructure, production risers, and topsides as well as other modifications.

BP expects to invest at least $4 billion a year on oil and gas development in the Gulf of Mexico over the next 10 years, following its strategy of focusing investment and future growth around the company's strengths, including deepwater exploration and development.

"BP's continuing investment in the Gulf of Mexico is yet another example of our commitment to the U.S. economy and

energy security," Dudley added. "This investment, along with our ongoing commitment to the Gulf Coast region, demonstrates the importance of the U.S. to BP's long-term strategy."

BP is the largest leaseholder in the deepwater Gulf of Mexico, owning more than 650 leases. It has interests in more than 20 fields in the Gulf, including Thunder Horse, Atlantis, and Mad Dog, among the Gulf's largest and deepest fields. BP also is the Gulf's largest producer of oil and gas, both in the deep water (over 1,200ft) and in total.

Awilco Drilling says rigs in short supply for UK offshore wells

Awilco Drilling said rig availability is limited offshore the UK for the remainder of 2012. Tendering activity is, therefore, to focus on start-up of operations in 2013, with numerous significant requirements still outstanding. In some cases, operators are considering postponing programs into 2014. Day rates continue to increase, Awilco added, to around $360,000 for semi-submersibles, as evidenced by the company's most recent contract.

Hyundai to build ultra-deepwater semi for Fred. Olsen subsidiary

A wholly owned subsidiary of Fred. Olsen Energy ASA entered into a turnkey contract with Hyundai Heavy Industries Co., Ltd. for the building of a harsh environment ultra-deepwater semi-submersible drilling rig with scheduled delivery in March 2015.

Total project cost is estimated to $700 million, including spare parts, owner furnished equipment and yard project team. Another subsidiary for Fred. Olsen Energy has been granted an option from Hyundai for the purchase of a similar second drilling rig exercisable within October 2012. The new drilling rig will be a Moss Maritime CS 60 E design and is designed for water depth capacity up to 10,000ft. The unit will be fully compliant with Norwegian Continental Shelf requirements and is designed for year-round operations in the Norwegian Barents Sea.

Troms Offshore receives PSV from STX Søviknes Shipyard

Troms Offshore Supply has received its newbuild 773 at STX Søviknes shipyard in Norway. The ship was given the name MV Troms Sirius in a naming ceremony in Stavanger in May.

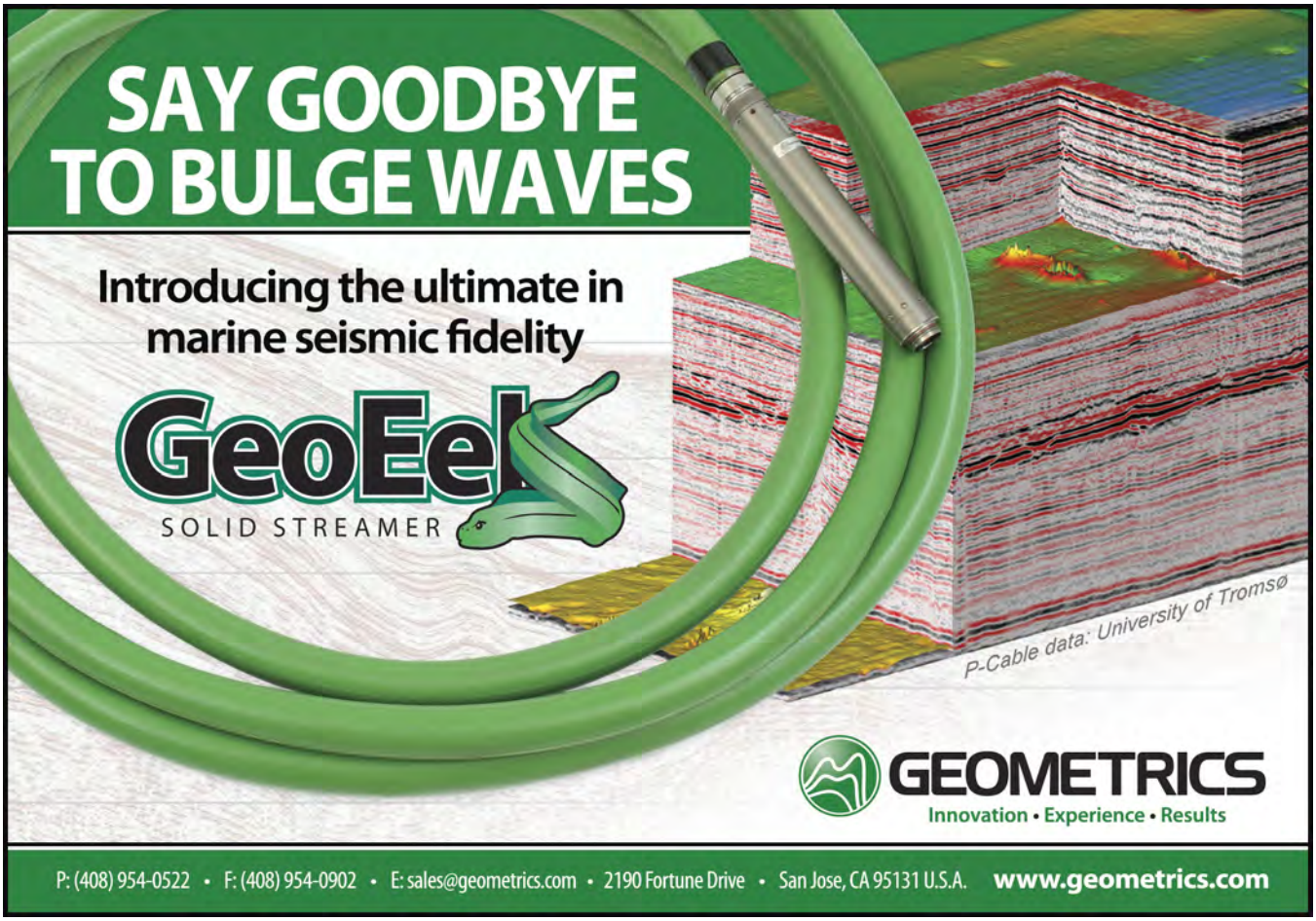
Troms Sirius is a clean design diesel electric PSV (platform supply vessel) with a deck area of 1.020 m2 and consequently one of the largest PSV ships operating in the North Sea.

Engines and propulsion in combination with advanced catalyst technologies ensure low fuel consumption, efficient operations, and reduced emissions to air. In addition, she carries the most advanced equipment for oil recovery services and fire fighting (FiFi II).

Troms adds newbuild to growing fleet

MV Troms Sirius is a STX PSV 09 design similar to one of the other ships in the company's fleet, MV Troms Capella, while the other ships owned by Troms Offshore have a VS 485 CD design. The ship will fly the Norwegian NOR flag with a crew of 28 split on two shifts. MV Troms Sirius will primarily be positioned for operations in the North and Barents Sea.

Troms Offshore operates a fleet comprising 11 ships. The company is in the process of expanding its fleet of large, environmentally friendly ships for operations in the North Sea and in Arctic waters.



Ulstein to build $131M subsea construction ship for 2014 delivery

GC Rieber Shipping awarded Ulstein a $131 million contract to build an SX121 design subsea construction vessel, with an option for a second unit. The newbuild is scheduled for delivery early in 2014.

The DP-3 vessel will be 426ft. long and 82ft. wide with a top speed of 14.5kts. It will be equipped with a large active heave-compensated offshore crane with a 250ton capacity at 46ft. outreach, and the winch placed below deck. The crane will be used mainly to lift and lower heavy equipment to and from the seafloor.

There will be two onboard ROVs, one to be launched from the starboard side and the other through one of two moonpools.

Other equipment will include a vertical lay system tower and a 2,500ton rotating carousel below deck for pipelay operations. The second moonpool will serve VLS deployments.

Statoil, Sinochem acquire FPSO vessel Peregrino from Maersk

Statoil and its partner Sinochem have agreed to purchase the Peregrino FPSO from Maersk. The floating production, storage and offloading unit has been in use at the Statoil-operated Peregrino field in Brazil since production start-up in 2011. The leading global FPSO contractor BW Offshore will take over operation of the FPSO after a transition period of about 6 months.

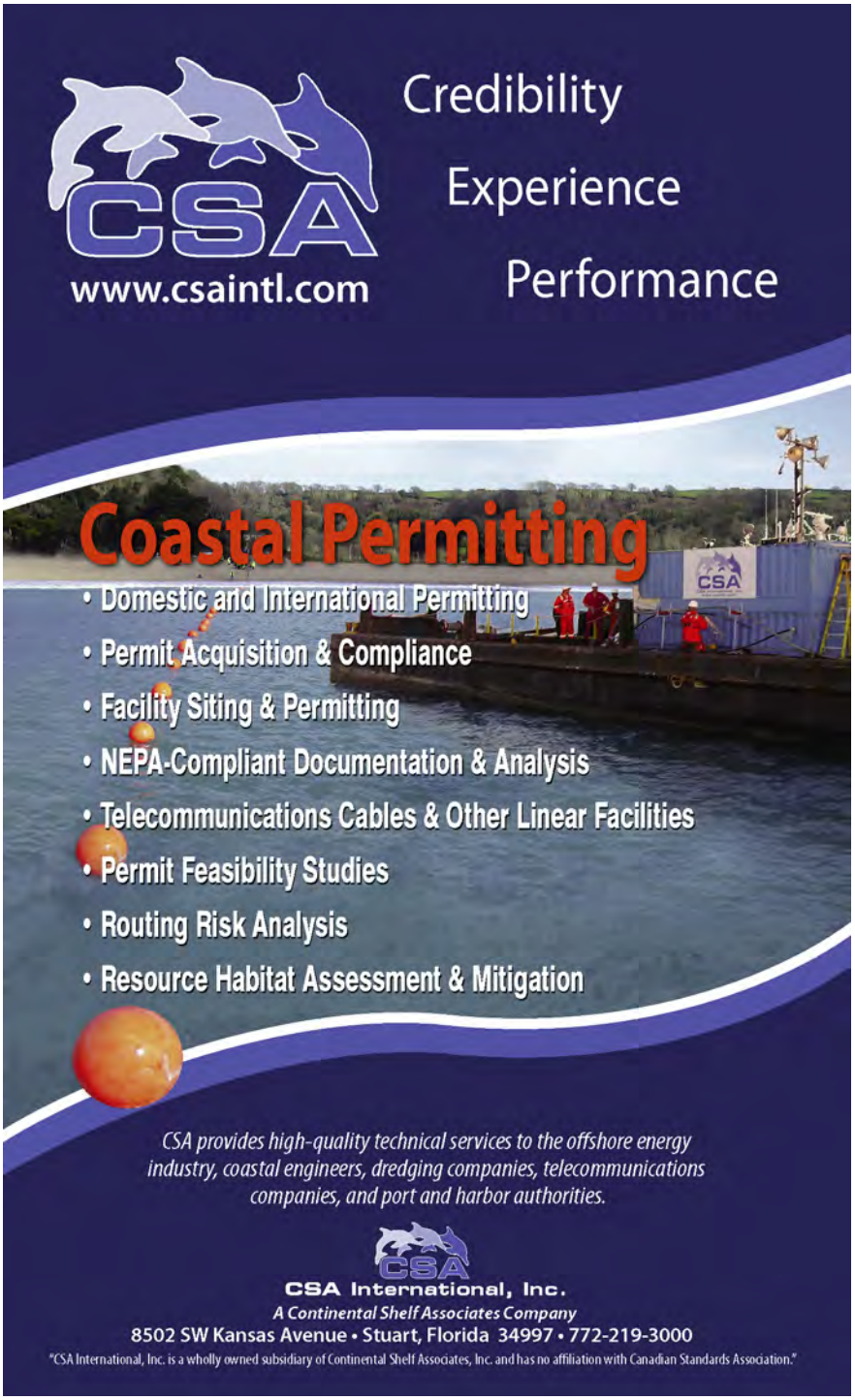
The Peregrino FPSO project was initiated in 2007 and the conversion from a very large crude carrier (VLCC) to a complex offshore oil production installation required more than 15 million labor hours and an investment in excess of $1 billion. At present, the vessel is operating in the Campos Basin, 85km off Rio de Janeiro, Brazil. The unit has a storage capacity of 1.6MMbbl, and produced well over 15MMbbl during its first year of operation.

"Brazil plays an important part in Statoil's international growth strategy specializing in deep water and heavy oil. We've been present in Brazil since 2001 and this was the right time for us to invest further. Our operatorship at Peregrino proves that the company's strategy in pursuing complex projects is paying dividends," said Thore E. Kristiansen, senior vice president for development and production international, South America and sub-Saharan Africa in Statoil.

Statoil has an attractive exploration portfolio in Brazil with seven licenses. Over the past year, Statoil has made two high-impact discoveries at Peregrino south and Pão de Açúcar.

The FPSO Peregrino offshore Brazil

BW Offshore will take over the operations on the Peregrino FPSO. BW Offshore has a strong HSE and production track record in the operation of FPSOs. Statoil, Maersk, and BW Offshore are working closely to secure a smooth transition process with focus on HSE, supporting personnel through the change process, and production regularity. The transition period is expected to last about 6 months, after which BW Offshore will take over the responsibility for operations on the FPSO from Maersk. Statoil will formally take title of the FPSO on 31 July.



Major gas, oil find in Pelagic fields off Israel's coast

An Israeli oil and gas exploration firm said it discovered a major oil and gas bed in the Mediterranean Sea off the Haifa coast. Israel Opportunity said in a statement that its Pelagic fields contain estimated 1.4Bbbl and 177Bcm of natural gas, according to the Globes business daily.

"The quantity of gas discovered in the licenses and the high probabilities make it the third largest offshore discovery to date," according to company chairman Ronny Halman, who said that the findings were better than initial estimates.

The five contiguous offshore fields -- Aditya, Ishai, Lela, Yahav, and Yoad -- are located 170km west of Haifa, and cover 500,000acres. They are adjacent to the larger Leviathan (450Bcm) and Tamar (240Bcm) fields, which were discovered several years ago.

"This quantity guarantees Israel's energy future for decades, and makes it possible to export Israeli gas, and boost the state's revenues without worrying about gas reserves for domestic consumption," Halman said.

Companies submit record bids for latest UK licensing round

Britain received a record number of applications in its latest offshore licensing round. The 27th round received 224 bids covering 418 UK offshore blocks. This is 37 more than the previous high received in the last licensing round. The submissions comprised applications for 192 traditional licenses, 25 in the promote category, and seven for frontier licenses.

"We have been working extremely hard with the oil and gas industry to ensure the UK remains an attractive place to invest. The recent budget was an important step to create a fiscal environment for North Sea development to florish," said Charles Hendry, Britain's energy minister.

Statoil to intensify Barents Sea search in the Skrugard area

Statoil and partners Eni and Petoro have agreed on further exploration drilling in the Skrugard area of the Norwegian Barents Sea. Their aim is to follow up on the commercial Skrugard and Havis discoveries and to test further upside potential in this area, including production licenses PL532 and PL608.

In less than a year, the partners have made two substantial oil discoveries in PL532, proving 400 to 600MMbbl of recoverable oil. They have also drilled a successful appraisal well on Skrugard confirming volume estimates and collecting data for field development planning.

The four prospects will be drilled back-to-back with the West Hercules drilling rig, which will undergo winterization to withstand the weather conditions in the Barents Sea.

The drilling campaign should start on PL532, with a well on the Nunatak prospect due to spud in December. The rig will then drill the Skavl structure in the same license, followed by Iskrystall in neighboring license PL608. Drilling prospect number four is yet to be determined, although Statoil aims to complete the program by late spring or early summer 2013.

"With the Skrugard and Havis discoveries, we are establishing a new strategic hub in the northernmost part of the Norwegian continental shelf. Proving additional volumes in the area would make the development even more robust," said Erik Strand Tellefsen, Statoil's vice president for Skrugard field development.

BP resumes exploration In Libya following war that ousted Qaddafi

BP Plc, Europe's second-biggest oil company, said it will begin exploring in Libya again after the civil war last year that ousted Muammar Qaddafi from power.

BP has lifted the declaration of force majeure, a legal clause that allows companies to miss deliveries because of circumstances beyond their control, it said in a statement. The state-run Libyan National Oil Corp. also said that BP will resume operations after suspending them in February last year.

BP signed a contract in 2007 committing it to drill five offshore and 12 onshore wells in the North African country. After collecting seismic data, the civil war prevented BP from starting drilling.

"The lifting of force majeure is a significant milestone in BP's plans to return to the exploration of onshore and offshore blocks," Mike Daly, head of exploration at BP, said in a statement.

New Zealand oil, gas exploration tenders include offshore blocks

More than 40,000sq.km of New Zealand's seabed and 3,000sq.km of land have been put up for tender for oil and gas exploration following 4months of consultation. Offshore blocks include 7,000sq.km to the South of Wellington as well as other large blocks in the Hawke's Bay, the Canterbury Basin, and the Great South Basin, south of Stewart Island.

New Zealand Petroleum & Minerals, part of the Ministry of Economic Development, officially launched the tender process for 23 exploration blocks, which oil and gas companies from around the world will be invited to bid for.

The world's oil and gas industry has until October to submit bids for particular blocks, including what work they would commit to doing to search for oil and gas.

Companies will be required to submit financial details, oil production, future commitments, and, for the first time, details on their track record for dealing with local populations, especially indigenous people.

Anadarko Petroleum reports light oil discovery offshore Cote d'Ivoire

Anadarko Petroleum has announced a light oil discovery at the Paon-1X exploration well offshore of Côte d'Ivoire in Africa. The company encountered more than 100 net ft of oil pay (41° API) in a Turonian-aged reservoir.

The Paon-1X well, located in the CI-103 block, was drilled to a total depth of about 16,700ft, in water depths of about 7,195ft.

Bob Daniels, Anadarko senior vice president of worldwide exploration, said the Paon well marks the first deepwater discovery in the CI-103 block offshore Côte d'Ivoire and opens up a new play for the country and its partnership.

Meanwhile, Andarko said the Atum exploration well offshore Mozambique encountered another significant natural gas accumulation within Area 1 of the Rovuma Basin. The Atum discovery well encountered more than 300 net ft of natural gas pay in two high-quality Oligocene fan systems.

Preliminary data indicates this latest discovery is connected to the partnership's recent Golfinho discovery located approximately 10mi to the northwest in offshore Area 1.

Subsea compression confirmed for Gullfaks South field in North Sea

Statoil and partner Petoro have agreed to implement subsea gas compression to boost recovery from the Gullfaks South field in the Norwegian North Sea. They hope to derive a further 22MMboe of production from the Gullfaks South Brent reservoir. Work on the $505-million project should be completed in the fall of 2015.

Around 2015, natural pressure in the Brent reservoir at Gullfaks South will be reduced. To maintain plateau production compression will be required.

The technical solution comprises two 5MW wet gas compressors installed in a subsea template at 43ft water depth. Both will be tied into existing templates and pipeline systems 9.3mi from Gullfaks C. This will be Statoil's second subsea gas compression project offshore Norway.

Otto Energy increases Galoc oil field recovery reserves in Palawan

Otto Energy has increased the proved (1P) economic ultimate recovery reserves from the Galoc oil field in the Palawan Basin, offshore the Philippines. The economic ultimate recovery reserve has been raised by 19.7% on a 1P, Otto Energy said in a statement. Proved and probable reserves were also increased by 3.5%, leaving the field with estimated remaining field life of about 5 years on a 2P basis from the existing two production wells.

The upgrade in reserves is in line with the company's plans for a Phase II development of the oil field, though the final investment decision is due in mid-2012. Galoc Production Co., as operator, and a 100% subsidiary of Otto Energy, commissions an annual review of remaining oil reserves by independent consulting company RISC.

Ithaca Energy starts production from Athena field in UK North Sea

Ithaca Energy has started oil production from the Athena field in the UK central North Sea. The initial operations phase involves bringing production from each well online to the FPSO BW Athena and establishing stable performance of the oil processing and water injection systems.

Meanwhile, Ithaca is said to have ceased discussions with all parties reportedly interested in acquiring the company and now intends to pursue further growth opportunities in the UK offshore sector. These could be financed by an increased credit-approved facility from BNP Paribas. Ithaca said it can draw on funds of up to $250 million for suitable targets.

Qatar Petroleum, Total form acid stimulation study partnership

Qatar Petroleum (QP) and Total have signed a research and technology agreement designed to increase production from Qatar's carbonates oil and gas fields through use of acid stimulation. The research program will focus, in particular, on high permeability contrasted formations and, at the same time, strive to mitigate unwanted water production. Carbonates dissolve in acid. Injecting acid in wells and dissolving part of the surrounding rocks improves reservoir permeability and, thus, output from producing wells.

Last November, QP and Total signed a Technology Cooperation Framework Agreement. Both companies will provide a team of specialists in well acid stimulation based at the Qatar Science and Technology Park (QSTP). Total operates Qatar's offshore Al Khalij field and, according to QP, has developed expertise in carbonates acid stimulation.

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Partners outline timeframe for Johan Sverdrup development

The licensees in the Johan Sverdrup discovery in the Norwegian North Sea plan to select a development concept in late 2013 and start production in 2018 fourth quarter, according to co-operator Statoil. Johan Sverdrup is one of Norway's Top 10 finds, with reserves estimated at 1.6Bboe, with further appraisal drilling scheduled for later this year. It could be in production through 2050.

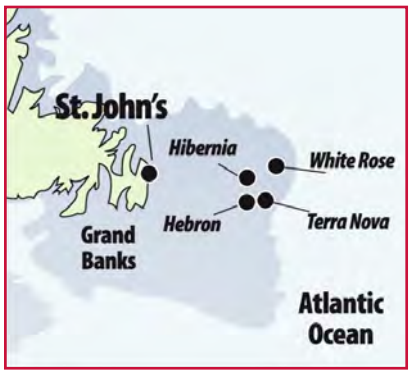
Following concept selection, the partners should submit a plan for development and operation to Norway's Ministry of Petroleum and Energy during the fourth quarter of 2014. Statoil will act as project operator until an investment decision is taken and the PDO submitted. The project team is based in Stavanger.

"Our main job now is to narrow down the volume range and uncertainty and to study solutions with the aim of achieving a flexible development based on standard technology," said Øivind Reinertsen, Statoil's project director for Johan Sverdrup.

However, much depends on the reservoir evaluation. The discovery extends more than 69sq.mi, with variations in the oil-bearing strata thickness. The field extends across license PL501, where Lundin Norway is operator, and PL265, where Statoil operates. The location is 87mi west of Stavanger in 361ft. of water depth, with a reservoir depth of 6,233ft.

Johan Sverdrup is on the Utsira High, a new geological area for field development, with pressures from the government for integrated solutions with other projects in the area for power supply and oil export. Separate studies are taking place for these two aspects, with Johan Sverdrup as part of their basis.

Exxon's Hebron development project approved by regulators



The Canada-Newfoundland and Labrador Offshore Petroleum Board approved plans by an ExxonMobil Corp.-led group to develop the Hebron oil field offshore Newfoundland. The decision means Exxon and its partners can proceed with development of the 707MMbbl field, which will be the province's fourth offshore oil project.

The cost of the project, which will use a heavy gravity-based structure sitting on the seabed because of the icebergs that sail through the area, was estimated in 2008 to range between C$5 billion and C$7 billion. The field is operated by ExxonMobil, which has a 36% interest in the project. ExxonMobil took control of the project from Chevron in October 2008.

The Hebron field lies under 300ft of water 217mi southeast of St. John's, Newfoundland and contains heavy oil. It was discovered in 1981, but development was delayed by low oil prices and squabbles over royalty rates with the provincial government. The facility will produce up to 150,000bbl/d and may be increased to handle as much as 180,000bbl/d, according to regulatory documents.

The other joint venture partners are Chevron Corp., with a 26.7% interest; Suncor Energy Inc., with 22.7%; Statoil ASA, with 9.7%; and the provincially owned Energy Corp. of Newfoundland and Labrador, which has a 4.9% stake.

Iran commissions sour gas pipeline in Persian Gulf

Iranian Offshore Engineering and Construction Co. (IOEC) expects first gas deliveries in September through a new pipeline in the Persian Gulf. The 180mi, 32in. pipeline will take 500MMcf/d of sour gas from the Salman offshore field to the onshore plant at Assaluyeh for sweetening.

According to acting managing director Amir-Saeid Najafi, final tests are in progress, including injection of nitrogen gas. IOEC is building and installing two gas pipelines, two jackets, and two decks for the South Pars field phases 19, 20, and 21 as well as drilling 22 wells for Phase 14.

On the Iranian southern coast of the Caspian Sea, Iranian Oil Terminals Co. (IOTC) is building new oil storage facilities at Neka port. The company has also invited bids to construct three 150,000bbl storage tanks.

Managing director Seyyed Pirouz Mousavi told Iranian news service Shana Iran has signed oil "swap" contracts with littoral states of the Caspian Sea, which involves taking oil from Caspian fields to Neka and delivering equivalent quantities from Kharg Island in the Persian Gulf.

IOTC is handling 20,000bbl/d of swapped oil, but the aim is to increase capacity at Neka to 1.5MMbbl/d, in part by expanding berthing facilities to accommodate larger vessels.

Downhole measures reduce sand output from Turkmen offshore wells

Dragon Oil has completed drilling and initial testing of the Dzheitune (Lam) 28/169 development well in the Cheleken Contract Area (CCA) of the Caspian Sea. The well was completed as a single producer to a depth of 6,600 ft. and tested at 1,775bbl/d of oil. The drilling rig has skidded to the platform's next slot to spud the Dzheitune (Lam) 28/172 well.

In early April, the company choked down various older wells to minimize sand ingress that was impacting oil flow. Gradually, these wells are being restored to normal flow levels through installation of sand screens as well as desanders on certain platforms in areas prone to sand production.

Over the last 2 years, Dragon has installed sand screens on newer wells to control sand production and ensure effective oil flow from well completions. The company will continue this action in 2012.

Kinabalu oil fields operatorship transferred to Talisman Energy

Talisman Energy and Petronas have received a new production sharing contract (PSC) for further development of the Kinabalu oil fields offshore Sabah, Malaysia. These comprise the Shell-operated Kinabalu Main, Kinabalu East, and Kinabalu Far East fields. The current PSC is due to expire in late December. The new permit is the first of "progressive volume-based" PSC issued in Malaysia, designed to incentivize contractors to improve oil recovery and increase production from mature oil fields. Talisman will operate with a 60% interest, the remainder held by Petronas. They plan to invest more than $1 billion to lift recovery and production over the life of the PSC.

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Keynote Announcement

Greg Kusinski
DeepStar Director

Greg Kusinski is Managing Director of DeepStar, a Global Deepwater Technology Development Consortium managed by Chevron, which represents 11 Operators and 60+ Contributor Member Companies. He is responsible for executing DeepStar program and for representing Chevron's deep water technology needs. DeepStar funds R&D and accelerates technologies in the areas of Geosciences, Reservoir Engineering, Flow Assurance, Drilling Completion and Intervention, Met-Ocean, SubSea Systems, Floating Systems and Systems Engineering.

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Subsea Survey IRM continues to explore current and new technologies and their role in an expanding global marketplace. The conference is seeking original case studies and presentations on projects, including subsea field development, pipeline installation and infield fiber optic networks.

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The Conference provides insight into the technology to meet the modern inspection requirements of the offshore energy industry, with emphasis on safe & effective repairs and maintenance accomplished by divers, ROVs, AUVs & remote monitoring. The event also focuses on the regulatory side, welcoming presentations from the agencies governing IRM regulations as well as new requirements imposed by the operators themselves.

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Hazardous area breathing air system developer Air2Work launches

A new business behind a new technology that delivers clean, dry, temperate, and continuously monitored safe breathing air to offshore workers operating in potentially explosive environments has launched in Aberdeen, Scotland.

Air2Work plans to invest $2.34 million over the next year, bringing its patented breathing air delivery systems, developed by Norwegian parent company E Innovation, to the UK market. They also expect to recruit up to six new staff.

The system is the first available to the industry, which combines an oil-free air compressor and seven-stage air filtration and conditioning unit with two stage temperature control safe for use in ATEX Zone 1 environments. The system also includes real-time air quality monitoring equipment and an emergency back-up air source in a portable, easily manoeuvring unit, designed for use on offshore platforms and vessels as well as at land-based worksites.

The business, which is led in the UK by chief executive Alan Brodie ,operates from offices in Great Western Road, Aberdeen and a workshop at the city's Wellheads Industrial Estate.

"Technicians working in hazardous environments have a vital requirement for high quality air, which our system delivers at a comfortable temperature – a first for workers in industrial operations," Brodie said. "It can be very uncomfortable when cold air is blown in a technician's face for a prolonged period of time, so delivering air at room temperature makes a big difference to their efficiency."

He said the Air2Work system also delivers dry air, meaning technicians' masks don't steam up, which significantly improves their ability to work safely. ATEX Zone 1 environments include any area on a platform, rig, or chemical plant where hydrocarbon gasses may be present or vented.

"It is incredible that, until now, a large proportion of modifications and maintenance technicians working in hazardous environments still have to use filtered, but infrequently sampled, instrument air as their most common source of oxygen," Brodie said. For further information, contact Alan Gorham at 01224 615004 or 07834 157667.

Markleen launches the new, unsinkable Uniboom Seamaster

Last month saw the worldwide presentation of the most advanced development of Markleen's Uniboom Seamaster.

The Seamaster series is the latest generation of highly resistant self-inflatable booms. On the new version of the Seamaster, conventional valves have been replaced by an automatic air intake and expulsion mechanism, which makes it the market's fastest and most reliable boom to deploy. This, when combined with the introduction of an improved integral spring system and its exclusive reinforced floatation, makes the Seamaster boom unsinkable.

The boom is manufactured from a PU-PVC blend, giving it excellent resistance and wave-following characteristics and making it suitable for use in the harshest environments. The Seamaster boom is the ideal boom for protecting installations that require speed of action with minimal manpower requirements. It can be stored on a horizontal or vertical

boom reel, making it suitable for a wide range of different applications.

The Uniboom Seamaster has been successfully deployed in a number of different scenarios and has been recently chosen by the ADPC (Abu Dhabi Ports Company) to protect its ports against possible oil spills.

SEACOR Marine chooses MTU engines for fast supply vessels

SEACOR Marine, a leading operator of marine support vessels for the offshore oil and gas exploration and production industry, has selected marine diesel engines from the Tognum brand MTU for its latest pair of fast supply vessels. The two vessels, SEACOR Lynx and SEACOR Leopard, will have an overall length of 190ft and the capacity to carry up to 150 passengers. The vessels will also

have the capacity to carry 150tons of deck cargo and the ability to achieve speeds of 46kts. Each vessel will be powered by four MTU 16V 4000 M73L engines rated at 3,860bhp at 2,050RPM.

"The high-speed capability is important because of the long distances involved and the need for fast transportation of crews and time-sensitive cargo to the rigs," said Joe McCall of SEACOR Marine.

The new vessels will join two other MTU-powered high-speed catamarans operated by SEACOR Marine: SEACOR Cougar and SEACOR Cheetah. Like the existing craft, the two new vessels will feature Hamilton jet drives and Twin Disc marine gears.

SEACOR Marine will also install the MTU Callosum System in the SEACOR Lynx and SEACOR Leopard. The Callosum System is MTU's latest generation of an integrated shipboard monitoring and control system, which not only monitors the propulsion engines, but also the marine gears, onboard generator sets, and a majority of other vessel systems.

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

GX unveils broadband results from conventional seismic streamers

The ION Geophysical Corp. data processing group, GX Technology, has introduced a seismic data processing technology to deliver broadband results for conventional "flat" streamer data.

Named "WiBand," the technology produces high-resolution images that help make more accurate and reliable technical decisions. WiBand tackles both the source and receiver ghosts to recover full-spectrum data acquired using conventional towed streamers.

Source and receiver notches in the frequency spectrum resulting from free surface reflections, or "ghosts," traditionally limit resolution in the marine environment. WiBand delivers increased structural and stratigraphic detail and has the potential for advanced processing with enhanced low frequencies.

"The unique combination of algorithms and workflows offered by WiBand processing allow our clients to get broad bandwidth results from conventional streamer data," said Nick Bernitsas, senior vice president of GX Technology.

CorDEX Instruments launches Intelligent Infrared Windows

CorDEX Instruments has designed and manufactured a brand new range of Intelligent Infrared Windows that will increase the speed and effectiveness of electrical infrared inspection and thermal imaging and also significantly reduce costs.

The company's IW3000 and IW4000 Infrared (IR) Windows will help companies comply with NFPA70E electrical safety standards and are fully certified and tested to UL50, UL50V, and UL1558 and take inspection and predictive maintenance to a new level of safety, efficiency, and accuracy.

IR Windows allow engineers to inspect hundreds of electrical connections and components through a data collection point, while never opening the energized electrical equipment. Modern IR Windows are designed to protect against the risk of arc flash hazards that can pose significant safety challenges wherever industrial electrical equipment is used. An arc flash is a type of electrical explosion that can be triggered by a variety of electro-mechanical and accidental causes.

To coincide with the launch, CorDEX has also developed a smartphone app that,

for the first time, allows engineers to use the company's specialist software during IR Window inspections in the field.

For more information, contact account executive Ross Anderson on Tel: (01224) 615011 or e-mail ross.anderson@bigpartnership.co.uk.

Dyneema Max Technology takes HMPE mooring ropes to new level

DSM, producer of Dyneema, has introduced DM20, a new fiber designed for the production of incredibly strong ropes that provide unrivalled strength, stiffness, and durability. DM20 is an innovative fiber that completely redefines the capability of high molecular weight polyethylene (HMPE) ropes and forms the basis of Dyneema Max Technology.

This breakthrough technology is developed for the production of deepwater mooring ropes for oil and gas production facilities. Rigorously tested, these ropes are ideal for all rope applications requiring resistance to permanent loads.

Deepwater mooring rope specialist Lankhorst Ropes Offshore Division is the first company to use Dyneema Max Technology. The company has developed Gama 98, a new generation of HMPE mooring ropes suitable for use in permanent deepwater moorings beyond 2,000m water depth.

With a significantly smaller diameter than polyester, low creep, high fatigue resistance, and weightlessness in water, mooring ropes made with the new DM20 grade from DSM Dyneema offer benefits across planning, system design, logistics, hook-up, and installation stages. They guarantee maximum strength over a maximum lifetime as well as faster handling and improved safety–leading to greater effectiveness and efficiency.

For additional information on DSM Dyneema products, visit the company website at www.dyneema.com.

Australian Defense Science and Technology Organisation acquires new MicroROV navigation

VideoRay and its partners announced that they have shipped the first implementation of VideoRay CoPilot by SeeByte software on a platform consisting of the VideoRay Pro 4 underwater Remotely Operated Vehicle (ROV), BlueView P900 series imaging sonar, and Teledyne RDI Explorer Doppler Velocity Log (DVL). The first release of the SeeByte solution on a VideoRay ROV follows several months of software and hardware development by VideoRay and SeeByte. SeeByte adapted its unique navigation software to VideoRay's ROV control system and hydrodynamics. VideoRay worked closely with Teledyne RDI to adapt the Explorer DVL to a smaller, more hydrodynamic housing well suited to the powerful, yet ultra-portable, VideoRay Pro 4. BlueView contributed their industry-leading multibeam sonar, with ProViewer Plus advanced target tracking software by SeeByte.

The Defence Science and Technology Organisation (DSTO) is the Australian government's lead agency charged with applying science and technology to protect and defend Australia and its national interests. DSTO delivers expert, impartial advice and innovative solutions for Defence and other elements of national security to agencies like the Royal Australian Navy. DSTO is a world leader in defence science and technology – indispensable in transforming the Australian Defence Force and Australia's national security.

The system, purchased by DSTO, is the first observation class ROV system capable of autonomously following a pre-defined mission or maintaining station, regardless of changing currents and rough sea conditions. Using VideoRay Sonar CoPilot by SeeByte, the system can automatically identify underwater objects with the BlueView sonar, then fly to them on command. It can also track moving objects. In an Explosive Ordnance Disposal (EOD) context, this provides effortless automatic navigation to underwater locations; therefore it can remove divers from minefields and hazardous situations.

For more information, visit www.seebyte.com.

StarFish 990F side–scan sonar enhances port survey operations

Marine and engineering company Tyne and Wear Marine (TWM) Ltd. used Tritech's StarFish 990F for a survey of the dock wall on the Tyne River, Newcastle during a port survey and inspection project.

StarFish Seabed Imaging Systems use the latest in advanced CHIRP (Compressed High Intensity Radar Pulse) acoustic technology and digital-signal-processing (DSP) techniques to offer greater image clarity and range resolution compared to conventional fixed-frequency side–scan sonars. This technology enabled the operators at TWM to image the dock wall and capture the targets as clearly and as representatively as possible. In post–processing, the operators were then able to overlay the data onto a photographic image of the dock walls.

Mike Broadbent, business development manager, comments: "For both survey and security markets, the StarFish 990F is a very useful tool. StarFish Seabed Imaging Systems are known as the side–scan for shallow-water survey, and this application on the Tyne River, Newcastle proves the capabilities of the unit as a universal survey tool."

John Cramman, Tyne and Wear Marine, comments, "We are extremely pleased with the results that we have achieved with the StarFish 990F. Its compact size facilitates easy mounting to our vessels, allowing us to carry out vertical scanning of quay walls and other port and marine structures. As a survey tool, it enables us to collect a vast amount of information in a relatively short timeframe. It has proven invaluable for pre-dive and ROV exercises, literally giving both the client and our team a picture of underwater structures and assets."

StarFish Seabed Imaging Systems are a range of shallow water, portable, high-specification systems from underwater technology company Tritech International Ltd. StarFish Seabed Imaging Systems have been specifically designed for the professional underwater survey industry.

For more information, visit www.starfishsonar.com.

Phoenix purchases Bluefin-21 AUV to expand service offering

Bluefin Robotics, the leading provider of free-flooded, modular Autonomous Underwater Vehicles (AUVs) and related technologies announced that the company has sold a Bluefin-21 system to US-based Phoenix International Holdings (Phoenix), an experienced marine services contractor that provides underwater engineering and operational solutions, including deep ocean search and recovery operations, to customers around the globe. Among many other successes, Phoenix is accredited with recovering both flight recorders from Air France 447.

Bluefin will deliver an off-the-shelf 1,500m depth-rated Bluefin-21 AUV system to meet several immediate requirements, and upgrade the system to a depth rating of 4,500m during its next availability – a testament to the system's design flexibility and modularity. The system boasts Bluefin's field-swappable batteries; a top-tier integrated inertial navigation solution with Doppler and acoustic baseline aiding; and a state-of-the-art survey payload suite, including–side scan sonar, subbottom profiler, multibeam echosounder, and a digital camera. Bluefin's intuitive user software interface, the Operator Tool Suite, will also be provided for mission planning, mission monitoring, and post-mission analysis.

For more information, visit www.bluefinrobotics.com.

Japanese Ministry of Defense purchases Hydroid REMUS 600

Hydroid, Inc., a subsidiary of Kongsberg Maritime and the leading manufacturer of AUVs, announces that the Japanese Ministry of Defense - (MOD) has purchased one REMUS 600 system for mine countermeasure operations. The new purchase brings the Japanese MOD AUV fleet to five vehicles.

"We are excited by the Japanese Ministry of Defense's growing use of Hydroid AUVs for detecting underwater mines," said Christopher von Alt, president and co-founder of Hydroid. "The REMUS 600 is ideally suited for this application, as, when fully configured, its exceptional endurance allows it to operate underwater for long periods of time in varying depths of water."

The REMUS 600 AUV was specifically designed for operations requiring extended endurance, increased payload capacity, and greater operating depth.

Earlier this year, the Japanese MOD purchased four REMUS 100 systems for investigating and mapping seafloor dispersion of contaminants as well as mine countermeasure operations. Mine detection work includes locating explosive devices and other undetonated ordnances as well as finding and classifying submerged objects.

Hydroid's REMUS AUVs are modular; they can be fitted with a variety of sensors and used to aid in hydrographic surveys, harbor security operations, debris field mapping, scientific sampling, and mapping as well as many basic and applied research programs. With more than 300 vehicles in the field, Kongsberg Maritime is currently the AUV market leader.

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

EIVA ScanFish III delivery to EdgeTech

EIVA announces order of 12 ScanFish III and EIVAs NaviPac marine survey software to be delivered to the U.S. company EdgeTech.

The purchase comes in support of the Littoral Mine Countermeasure SONAR (LMCS) System from EdgeTech; LMCS is an advanced mine and underwater IED hunting system, which combines EdgeTech's proprietary Dynamically Focused and Multi-Pulse side–scan sonar technologies to provide exceptional swath coverage and ultra high–resolution imagery.

The EIVA ScanFish III is a Remotely Operated Towed Vehicle (ROTV) that adds a stable platform and a "follow seabed" capability to underwater solutions. Using the EIVA ScanFish in the LMCS solution gives the perfect platform for best possible sonar images by ensuring that the EdgeTech sonar is kept at a fixed height above the seabed and by keeping the sonar in a constant level position.

For more information, visit www.eiva.com.

Echoscope® assists Deep BV in cable laying

CodaOctopus and their agent in The Netherlands, Nautikaris BV, have recently been involved in a project for Deep BV Hydrography and Geophysics, providing positioning and survey services for the installation of a power cable at the Thornton Bank Wind Farm off the Belgian coast.

This is a significant development for the Echoscope® as this is the first time the sonar has been used to monitor the touchdown of a cable into a trench on the seabed. Using Echoscope® the operator was able to visualize in real time the cable's catenary and touchdown point in three dimensions as it was being laid. This proves the valuable application of the Echoscope® in deep-sea cable laying. Additionally, it was also used to visualize and monitor the pull-in of the cable into the J-tube. This gave the operator an immediate 3D view of the subsea scene during the operation, resulting in confident decision making.

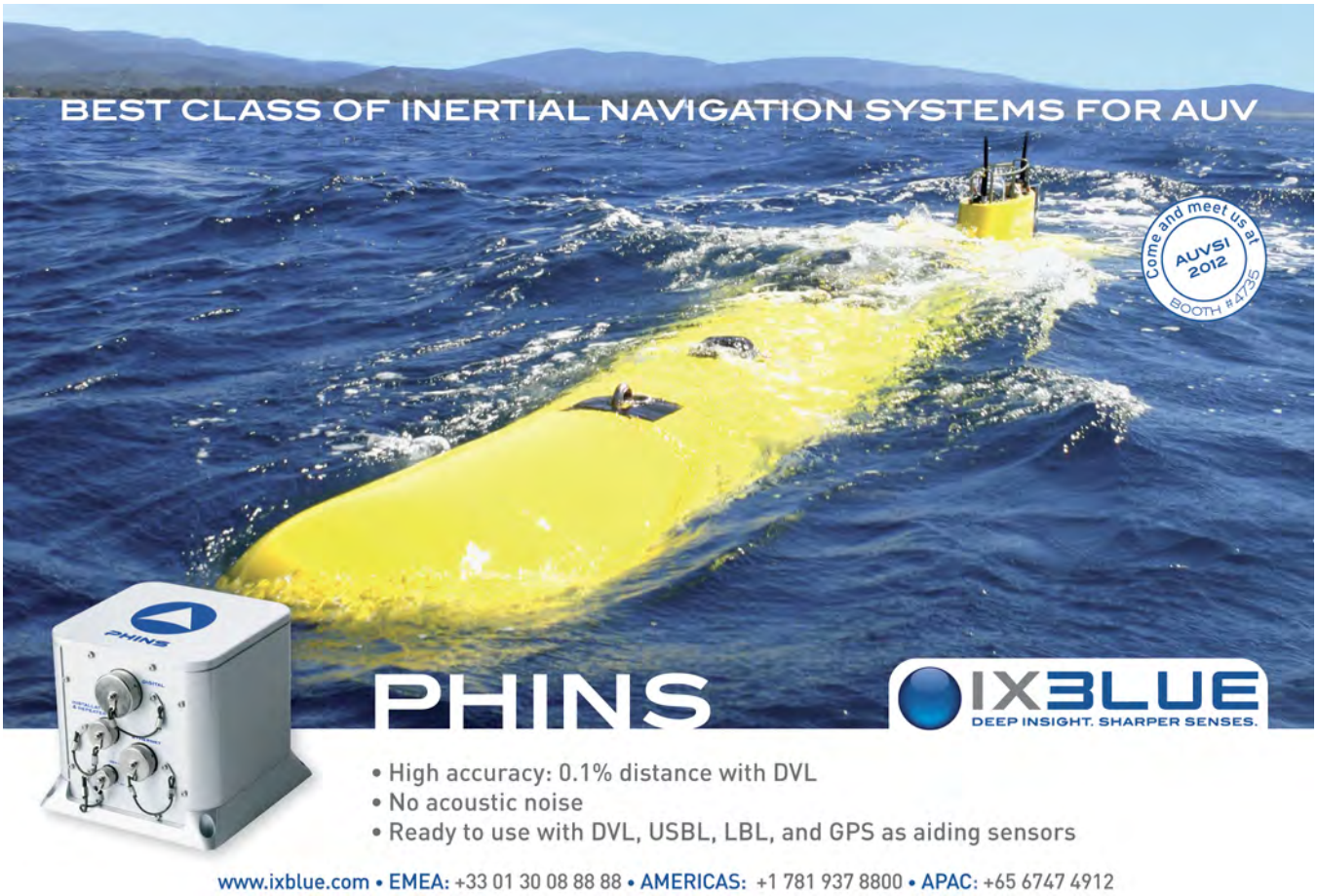
For more information, visit www.codaoctopus.com.

Aquabotix announces availability of the Hydroview

Aquabotix has announced the availability of the Aquabotix HydroView, an affordable and easy-to-use remotely operated underwater vehicle that instantly beams high-definition video back to the surface. Controlled wirelessly with an iOS tablet, smartphone, or any laptop, the HydroView shoots full 1080p HD video and still images while users intuitively navigate the depths simply by tilting the wireless device and using the touch screen.

For some, the HydroView will be an addictively fun way to enjoy the ocean and see what lies beneath. For others, it will offer a valuable tool for underwater inspection of vessels and structures, expand the classroom to view undersea life, or explore the depths during fishing or diving trips. Complete with on-board LED lights to provide added visibility in low-light conditions, the HydroView travels at up to 5kts forward and 1kt in reverse while shooting video or capturing still images and simultaneously collecting data on water conditions from up to 150ft deep.

For more information, visit http://www.aquabotix.com.



TRELLEBORG

Fender Load Monitoring Systems

Trelleborg Marine Systems granted patent pending status for fender load monitoring systems

Trelleborg Marine Systems, a leading manufacturer of docking, mooring and berthing equipment, has received patent pending status on a system for monitoring the load on marine fenders. The new system is designed to help avoid disputes and the costly downtime associated with insurance claims.

The marine fender load monitoring system can be used to measure both the impact on fenders when a vessel berths, and the ongoing force applied as the vessel continues to bear against them while docked.

Trelleborg Marine System's Technical Director, Scott Smith, says: "We're always looking to develop new products, and indeed, find new innovations that will enhance our existing product line. We're extremely pleased to receive the patent pending status for our marine fender load monitoring system.

"The data collected by this system could prove to be invaluable to ports and harbors all over the world in avoiding disputes and the costly downtime associated with insurance claims. One key advantage of the system is that it can be adapted to suit the needs of the environment it is located in – we understand the market need for tailored solutions in improving efficiencies and minimizing downtime and we developed this system in response to that requirement."

Data can be processed, communicated and transmitted through either wire (for example, copper wire or optical fiber) or wireless means: whichever is more suitable for the environment that the device is to be located in.

Additionally, the data collection device itself may be located either directly within the fender, on the structure (jetty), or at a remote location, depending on the needs of the customer. If more than one fender is providing load sensing data, the information can be transmitted to a central data collection and processing system. The system is also apt to be retrofitted into existing fenders.

The data collected by this system could prove to be invaluable to ports and harbors all over the world in avoiding disputes and the costly downtime associated with insurance claims.

The system can be used to measure the impact on fenders when a vessel berths, and the ongoing force applied as the vessel is docked.

Once the central system receives and processes the data, it is configured to automatically transmit real time data. Alternatively, data can be stored on a dedicated memory, and periodic transmissions made to the central system.

This central system can also be configured to receive other relevant data which may affect the load sensor data, for example, environmental or visibility information. There are a number of existing products that can be used to compliment the marine fender load monitoring system and to gather this additional data, such as the SmartDock Laser system and the SmartDock GPS system.

When analyzed, the data obtained has the potential to be used in a number of ways: such as developing a deeper understanding of berthing dynamics, which in turn could assist with future fender and wharf design, and further, feed into the revision of safe and acceptable berthing operations and procedures. Additionally, load data may be used to determine when maintenance is needed, or indeed, a replacement fender is required. In the event of an accident, or a fender failing, the data can be used to provide information as to why – providing valuable data for insurance claims, and helping ports and shipping lines to avoid the costly downtime associated with disputes.

Testing of the system was conducted using a sample SCN800 cone fender element. A hydraulic ram press was used to subject the cone fender element and mounting assembly to forces of up to 80 tonne. The test demonstrated that the data derived from the load cell measurements very closely matched the data from the actual ram pressure.

For more information, visit www.trelleborg.com.

SES supplies world's first hybrid ferries
Ships Electronic Services (SES) has been awarded a £375,000 contract to supply all the navigation and communications equipment for two new hybrid ferries building at Ferguson Shipbuilders, Port Glasgow for Caledonian Marine Assets. These will be the world's first hybrid diesel electric Ro Ro vehicle and passenger ferries to enter service and will be operating the Clyde and Hebrides Ferry Service from spring 2013. The green technology will be incorporated throughout the ships, supplying a minimum of 20% of the energy consumed onboard. SES will be fitting a full specification of electronics on the hybrid ferries, including Furuno Radars and Transas ECDIS. A complex double-ended heading system from Raytheon Anschuetz will be installed, enabling all the headings to the AIS, ECDIS, and Autopilot to be changed 180°, along with all the navigation lights, at the touch of a single switch.

Beam announces piracy solution for secure maritime communication
Beam Communications Pty Ltd, a wholly owned subsidiary of World Reach Limited, announces a new satellite piracy solution for secure communication onboard a vessel. The new system operates with the Inmarsat satellite network. Beam's new Oceana 800 Covert Piracy Solution provides a dedicated system for a safe room or citadel onboard a vessel. The system ensures that, in the event of a piracy attack, essential communications onboard the vessel can be maintained and used for alerting authorities. The Beam-designed antenna is intended for covert placement and to be less likely to be spotted and targeted prior to an attack. The Oceana 800 Piracy Solution operates with the Inmarsat FleetPhone service and ensures the captain and crew have access to communications, tracking, and alert functionality from the system. In the event of an attack, an alert can be raised and the vessel tracked immediately.

New report finds KVH is the VSAT market share leader
For the second time in as many months, the mini-VSAT Broadband(SM) service from KVH Industries, Inc., has been recognized as the most widely used maritime VSAT (Very Small Aperture Terminal) service in the world. This conclusion was made in the 8th edition of the "Mobile Satellite Services" report just published by leading international research and analysis firm, Northern Sky Research (NSR).
According to the new NSR report, KVH's mini-VSAT Broadband service accounted for nearly 30% of all Ku-band maritime VSAT units and more than 20% of all activated maritime VSAT units of all frequencies. In late March, the internationally recognized research firm Euroconsult also concluded that KVH had more users than any other maritime VSAT provider. In a crowded market with more than 70 competitors, KVH's meteoric rise to the top of the market only 4 years after launching its new mini-VSAT Broadband service is a textbook case of leveraging new technology to compete with entrenched competitors.

Cambium, BATS Wireless, Oceus deliver powerful communications For U.S. Navy
Cambium Networks™ and Broadband Antenna Tracking Systems (BATS Wireless) announced their enhanced wireless point-to-point (PTP) radio and antenna tracking solution is being incorporated as part of a mobile communications networking project being led by Oceus Networks. The systems will be piloted by the U.S. Navy, providing onboard and ship-to-ship broadband data and communications. The project is the first U.S. Department of Defense operational deployment of Fourth Generation Long-Term Evolution (4G LTE) and is based on Oceus Networks' Xiphos™ family of mobile 4G LTE network solutions.

Iridium Pilot™ selected by IMOCA 60'

Iridium Communications Inc. is providing vital satellite broadband communications connectivity for sailors competing in the prestigious international Sailboat Races of the IMOCA Championship. The Europa Warm'Up Race kicked off 19 May and ran through 9 June 9 2012.

Twenty sailboats were equipped with Iridium Pilot™ terminals, the new Iridium maritime broadband platform, as part of the telecommunications package provided by Geolink, a long-time Iridium partner and innovative race communications supplier. Relying on the world's only truly global satellite network, skippers and crews can access real-time weather reports and sailing conditions; benefit from an emergency communications safety link; and stay connected to family and friends via phone, e-mail, Facebook, and Twitter throughout the race.

The Europa Warm'Up is a 3,200nmi (more than 5,000km) race for IMOCA 60ft monohull yachts. It serves as an opportunity for seven competitors to sail in race conditions similar to those they will face in the round-the-world Vendée Globe Race in November 2012. This two-stage race began in Barcelona and tasks sailors to navigate a grueling Mediterranean course, where they will cross the finish in La Rochelle.

The skipper of each boat will then go on to participate in the Vendée Globe Race, which will begin in France on 10 November 2012. The Vendée Globe is a non-stop round-the-world yacht race, known to be one of the most difficult competitions in ocean racing. Participants must sail single-handed around the Antarctic and will likely face extreme conditions during their journey. Iridium will be the primary communications provider for all vessels taking part in the race.

Iridium Pilot is the company's second-generation broadband platform that utilizes the Iridium OpenPort service – the world's first fully global satellite broadband communications service. Iridium Pilot is engineered for enhanced durability to withstand harsh maritime conditions, packaged in a small, lightweight antenna. It has a fixed, electronically-steerable, phased-array antenna and designed to maintain connectivity even in rough seas. Iridium Pilot offers broadband connectivity in addition to three independent phone lines, all of which work simultaneously. Iridium Pilot maintains one of the best service programs in the industry, the Iridium Global Service Program, and the industry's only standard 5-year limited warranty.

For more information, visit www.iridium.com.

Comtech awarded $3.5 million in orders from Harris CapRock

Comtech Telecommunications Corp. announced that its Tempe, Arizona-based subsidiary, Comtech EF Data Corp., was awarded $3.5 million in Advanced VSAT Solution orders from Harris CapRock Communications, a premier global provider of managed solutions for remote and harsh environments and a business division of Harris Corporation. Harris CapRock will deploy the Advanced VSAT Solutions throughout five of their operational hubs and onboard its maritime customers' vessels, including Royal Caribbean Cruise Ltd.'s cruise ship fleets.

A suite of the award-winning Advanced VSAT products was ordered, including the CDM-800 Gateway Router, the CDD-880 Multi-Receiver Router, the CDM-840 Remote Router, the CTOG-250 Traffic Optimization Gateway, and the Vipersat Management System (VMS). The Advanced VSAT Solutions provide high-performance satellite-based communication solutions for a diverse range of applications. Incorporating advanced technologies developed by Comtech EF Data, AHA Products Group, Memotec, and Stampede, the solutions provide unmatched performance, bandwidth efficiencies, and network optimization, while minimizing total cost of ownership.

The Advanced VSAT incorporates industry-leading optimization. DVB-S2 and VersaFEC with ACM/VCM enable efficient physical layer without compromising latency, while the ultra low overhead Streamline Encapsulation and Enhanced GSE enable efficient link layer. Header compression and lossless payload compression enable efficient transport for IP datagrams, and RAN optimization minimizes the bandwidth required for mobile backhaul. WAN optimization provides TCP connection management, TCP optimization, image reduction and smoothing, caching, bandwidth pooling, and other capabilities for significant bandwidth savings. And, the Advanced QoS and Group QoS ensure the highest quality of service with minimal jitter and latency for real-time traffic, priority treatment of mission critical applications, and maximum bandwidth efficiency.

The Advanced VSAT Solution hardware components will be centrally managed via the Vipersat Management System. The VMS is a feature-rich, automated bandwidth and capacity management system. It will simplify configuration and enable rapid response to network demands. The Advanced VSAT's optimization features combined with the automated bandwidth and dynamic SCPC capacity management of the VMS will facilitate bandwidth sharing and reduce space segment OPEX. Complementing the Advanced VSAT Solutions, LPOD Block Up Converters were also ordered based on their field-proven performance characteristics and unmatched remote monitor and control capabilities.

For more information, visit www.comtechefdata.com.

Marlink enhances efficiency with C-band on iDirect

Marlink is expanding its portfolio with the introduction of new C-band services on the iDirect platform, which will enhance network efficiency and open up new options for customers using SealinkTM global C-band coverage for business critical applications. The services will be among the first in the industry to utilize DVB-S2 with Adaptive Coding and Modulation (ACM) technology on regional, multi-regional, and global maritime C-band.

The implementation of a new state-of-the-art platform for Sealink global C-band coverage has been made possible following the recent upgrade of Marlink's global VSAT network with the integration of iDirect's Evolution® X5 Satellite Router and latest operating software release. The improved efficiency of C-band services through the use of DVB-S2 with ACM and Automatic Beam Switching on iDirect is supported with Sealink's proven reliability, user friendly operation, and high flexibility, which enables customized scalable options.

With "always-on true broadband access" offered by Sealink, Marlink C-band services are designed for vessels requiring constant, high-speed IP access for converged voice, data, and Internet applications, all delivered through a single platform. Current generation customized Sealink services already offer high levels of network efficiency based on the SCPC platform, and Marlink's decision to offer C-band on the new iDirect platform offers greater choice for customers while securing performance for the future.

The introduction of iDirect features such as Automatic Beam Switching on Sealink C-band enables seamless, virtually global coverage and enhanced quality of service with data rates based on customer requirements, ranging up to 8Mbps and, in some cases, beyond. Due to the flexibility inherent in Sealink services, Marlink is able to tailor a communication solution for specific requirements and business critical applications across the maritime transport, oil and gas, cruise and ferry, and luxury vessel segments.

Sealink services are uplinked from Marlink-owned teleports, ensuring the company has full control of the entire network chain, so customers can benefit from high levels of flexibility in terms of service offering and customization, in addition to a single point for worldwide support services.

For more information, visit www.marlink.com.

Canadian Coast Guard to improve marine communications services

The Canadian Coast Guard is modernizing 12 Marine Communications and Traffic Services Centers across the country with state-of-the-art technology in order to ensure consistent and uninterrupted communication and traffic services to mariners.

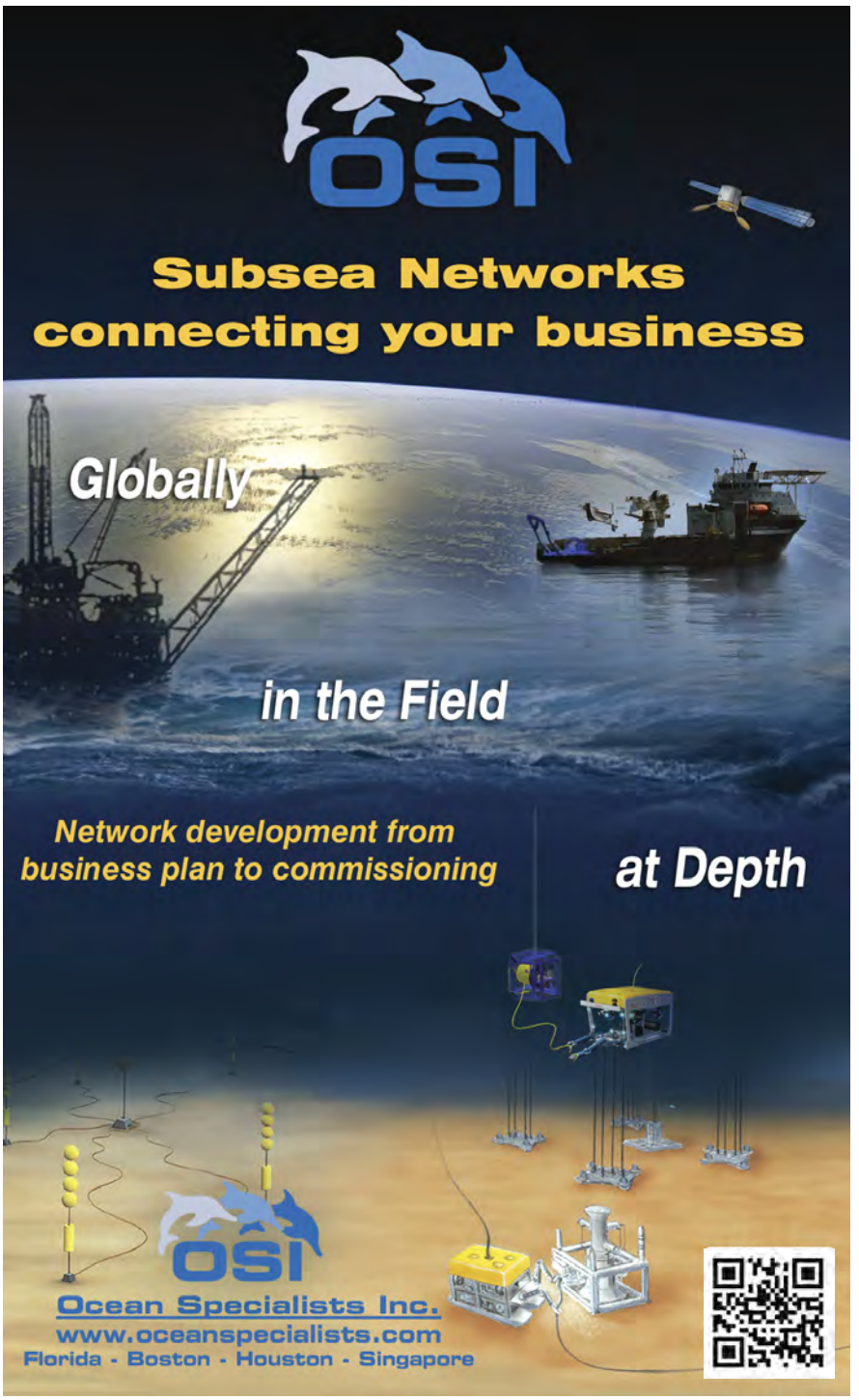
Marine Communications and Traffic Services Centers broadcast maritime safety information such as weather and navigational warnings, regulate traffic movement, and monitor distress and safety calls. Information is transmitted from a network of 214 radio towers and 24 radar installments across the country. The telecommunications network provides standard coverage in all regions of the country, but the communication and

traffic services centers currently use outdated technology and are limited in their ability to cover or share workload in emergencies or unforeseen events like power failures.

The modernized centers will be able to seamlessly pick up any calls from other connected facilities. Some facilities will also increase their areas of responsibility and will receive additional staff and resources accordingly. As a result, the Coast Guard will be able to consolidate services into these better centers and close those with outdated technology. All of the radio towers and radar facilities will remain where they are to maintain the current level of coverage.

As new and more effective radio and navigation technology has become available over the years, the Coast Guard has integrated services into fewer communication and traffic services centers. Over the last 30 years, the Coast Guard has twice expanded the capacity of these centers using new technology, allowing for a consolidation and modernization of services into fewer centers. For example, in the 1990s, the Coast Guard used new technology to go from 44 centers to 22 centers.

For more information, visit www.dfo-mpo.gc.ca.



Inmarsat launches Fleetbroadband Multi-voice

Inmarsat announced the launch of FleetBroadband Multi-voice, a new capability that will allow up to nine simultaneous telephone calls to be made through a single FleetBroadband terminal.

The enhancement to FleetBroadband (FB) will enable vessel owners and managers to separate crew communications from operational use. It will also provide crew with more privacy, making it easier to make personal, low-cost calls away from the bridge. The new capability is targeted at any vessel with the need to manage separate voice calls – particularly the merchant maritime market, but also other vessels that have similar crew or passenger communications requirements, such as superyachts or deep-sea fishing vessels.

Uniquely, FleetBroadband Multi-voice is integrated into Inmarsat's core network and terminated into public telephone networks, ensuring a high-quality voice service. There are two levels of FleetBroadband Multi-voice available:

- Standard, which supports up to four simultaneous calls from a FleetBroadband 150, 250, or 500.
- Enhanced, which supports up to nine simultaneous calls on an FB250 or FB500.

FleetBroadband users have two ways to access the multiple voice calling capability. Users of Thrane & Thrane SAILOR FleetBroadband terminals can create a fully-integrated solution with just a firmware upgrade and additional handsets. For other FleetBroadband terminals, Vocality has developed new PBX hardware that can be used alongside the terminal to access the additional telephone lines.

FleetBroadband Multi-voice can be accessed on existing FleetBroadband equipment, and with the same per-minute tariff for both pre-paid and post-paid calls. It also supports the "505" emergency calling capability that con-

nects a vessel immediately to a Maritime Rescue Center.

For more information, visit www.inmarsat.com.

Tesacom offers KVH mini-VSAT broadband in South America

KVH Industries, Inc. will offer its mini-VSAT Broadband(SM) service and TracPhone® satellite communications terminals to maritime customers throughout South America through Tesacom, South America's leading mobile satellite service provider. The new relationship will be managed by Andesat S.A., a leading communications provider in the Andean region. Tesacom will offer KVH's mini-VSAT Broadband solution from its offices in Argentina, Chile, Paraguay, Uruguay, Panamá, and Peru to offshore commercial fishermen and oil and gas operators as well as inland waterway vessels working on the Paraná River.

Tesacom will offer KVH's TracPhone V-series onboard terminals and mini-VSAT Broadband service to their customers. Tesacom is South America's leading provider of remote telecommunications solutions, offering the MSS services of Inmarsat, Globalstar, and Iridium for more than 10 years with an extensive network of offices that reaches mariners throughout South America.

The mini-VSAT Broadband service is unique in that it uses ArcLight(R) spread spectrum technology developed by KVH's satellite technology partner, ViaSat. The spread spectrum technology enables use of antennas as small as 37cm for the Ku-band service and as small as 1m for the combined C/Ku-band coverage. Although significantly smaller, these antennas match the coverage and speed of much larger maritime VSAT antennas using older services based on time division multiple access (TDMA) technology. With onboard equipment as small and affordable as L-band systems, the power of fast, affordable VSAT service is rapidly becoming the preferred option for large segments of the maritime market that were formerly limited to expensive legacy satellite communications services.

Since launching the mini-VSAT Broadband service in late 2007, KVH has fielded one of the world's broadest Ku-band VSAT networks, using 14 Ku-band satellite transponders to provide a seamless web of multimegabit coverage. The service will soon cover 95% of the Earth, including all of the oceans bordering southern South America, with the addition of coverage from three overlayed, global C-band transponders and a unique dual-mode TracPhone system that seamlessly switches between C- and Ku-band frequencies. In most regions, vessels enjoy redundant coverage to assure robust connectivity.

For more information, visit www.kvh.com.

Parker Hannifin wins Valemon project
The Energy Products Division (EPD) of Parker Hannifin Corporation has been awarded a contract by Statoil. The scope of the agreement is for 11,500m of subsea cable and cable accessories for the Valemon Field Development Project. The order encompasses design, production, and delivery of a 24kV subsea power cable with built-in fiber optic communication lines. The main cable under this agreement will be installed between the existing Kvitebjørn platform and the new Valemon platform. The cable is to be installed in water depths between 130m and 200m and will supply all power and communication to the normally unmanned Valemon platform. Award of the Valemon project follows the successful manufacturing and delivery of the umbilical for the Smørbukk field to Statoil in June 2011.

Iceland's Landsvirkjun continues to promote cable
Landsvirkjun, Iceland's power authority, continued its efforts to promote a proposed submarine power cable that would link Iceland to Continental Europe. Mr. Magnus Bjarnason, EVP marketing and business development at Landsvirkjun, discussed recently at the Submarine Power Cable & Interconnection Forum in Amsterdam the potential for laying a submarine power cable between Iceland and the UK or the European continent could be likely, stating that it has the potential for being a win-win project for both Iceland and the receiving country. At the Forum, Mr. Bjarnason presented opportunities associated with the continued development of hydro, onshore wind, and geothermal renewable energy in Iceland. The potential interconnector complements the successful industrial strategy in Iceland, where global power consumers such as Rio Tinto Alcan, Alcoa, BlueStar Elkem, and Verne Global Data Center, owned by the UK-based Welcome Trust, have located their operations in the country and all plan to continue developments due to the competitive environment in Iceland.

SEAIOCMA extended until end 2017
Global Marine Systems Ltd, ASEAN Cableship Pte Ltd (ACPL) and Indian Ocean Cableship Pte Ltd (IOCPL) have renewed their submarine cable maintenance contracts in South East Asia and the Indian Ocean. Cable owners have given their approval to extend the existing service until 31 December 2017. The South East Asia and Indian Ocean Cable Maintenance Agreement (SEAIOCMA) provides submarine cable maintenance spanning an area between Djibouti in the west, Perth in the south, Guam in the east, and the northern tip of Taiwan. The agreement provides for repair and reinstatement of submarine cables that carry international telecommunications traffic in the event of cable damage by ship anchors, fishing, tsunami, and earthquake. Ships based in Singapore, the Philippines, and India are on standby ready to respond within 24hrs in the event of a disruption to telecommunications traffic.

Tata to become anchor tenant customer on Seabras-1
Tata Communications and Seaborn Networks, the developer of a direct submarine cable between the U.S. and Brazil, have announced Tata's intent to become an anchor tenant customer on Seaborn Networks' cable system. Seaborn cable, known as Seabras-1, will enable Tata Communications to provide fully integrated network services from Brazil to its networks in the U.S., Europe, Africa, Asia, and India. As Brazil prepares to host the 2014 World Cup and the 2016 Summer Olympics, the country is experiencing landmark development requirements in its telecommunications industry. According to a recent report from Telebrasil, 2011 telecommunications investments in Brazil exceeded US$11.8 billion.

Nexans awarded umbilical contract by Statoil

Photo courtesey Øyvind Hagen / Statoil

Nexans has secured a €16 million Euro contract with Statoil to engineer and supply a 16.5km subsea power umbilical that will be used to connect the Gullfaks C platform in the North Sea to its subsea compression and processing equipment.

The Gullfaks project, located 160km west of Sognefjorden, Norway, is the second largest subsea gas compression project planned by Statoil, after the Asgard subsea gas compression project, which it is also responsible for.

The field comprises several subsea templates at a depth of 135m. Statoil plans to install a subsea compressor that will facilitate the compression and transportation of gas.

Subsea gas compression forms part of Statoil's ambition to develop the necessary elements required to create the "subsea factory" to pave the way towards oil and gas exploration in the Arctic and other deepwater regions.

Nexans pioneered umbilical technology, and its power umbilicals integrate the functions of power cables and umbilicals in a single cable, enabling a high-voltage (HV) supply to be provided for deepwater projects. The power umbilical includes a number of steel tubes as well as fiber-optic elements and signal cables for control and monitoring, as well as insulated power cores–all being supplied from Nexans' factories.

By eliminating the need to transport and install separate power and control umbilicals, the power umbilical significantly reduces transportation and installation costs.

For more information, visit www.nexans.com.

GBI announces capacity deal

Gulf Bridge International (GBI) and Gulfnet Communications Co., affiliated to United Networks Company based in Kuwait and Kuwait's premier Internet and online data services provider, announced the signing of a capacity sale agreement.

The GBI network will provide Gulfnet with industry-leading connectivity across the region, enabling Gulfnet to offer secure, reliable, high-speed, and any-to-any communications solutions in addition to a host of diversified, value-added services. The GBI cable system is the region's highest capacity and most geographically comprehensive network as well as the Middle East's only carrier-neutral operator, offering operators and ISP's increased bandwidth, choice, resilience, and value.

With a leadership position in emerging markets, Gulfnet Communications leverages its advanced solutions capabilities and domain expertise across its local and regional network to deliver managed solutions to multi-national enterprises, service providers, and consumers.

The GBI cable system connects to all the Gulf countries and provides onward connectivity to Europe and Asia. The cable system is designed around a core ring, which can re-route traffic thereby increasing resilience. With a design capacity of up to 10Tbps on certain cable sections, the GBI cable system will have the capability to meet the rapid growth in demand that has been forecast for traffic originating and terminating in Gulf.

For more information, visit www.gbiinc.com.

Cable operators investigate low-latency route to Iceland

TELE Greenland, Eastlink and Hibernia Atlantic announced a potential new low-latency, high-bandwidth connection between New York, New York and Landeyajasandur, Iceland. The route would utilize the Greenland Connect cable, owned and operated by TELE Greenland; network facilities owned and operated in Newfoundland and Nova Scotia by Eastlink; and the facilities of Hibernia Atlantic from Halifax to New York. The route would provide the lowest latency possible and could remove up to 1,100km from the existing route.

As the main communications and postal provider for Greenland, TELE Greenland operates an existing cable system, Greenland Connect, which connects Europe and Halifax, Nova Scotia, via Iceland, Greenland, and Newfoundland. The new build in conjunction with Hibernia Atlantic and Eastlink, a key telecommunications provider in Canada, will modify the design of Greenland Connect from Landeyajasandur, Iceland to Milton, Newfoundland via Nuuk, Greenland through the deployment of branching units and a new more direct connection between those branching units.

For more information, visit www.hiberniaatlantic.com.

Russian carriers to build cable in the Far East

Mobile TeleSystems OJSC (MTS) has signed a memorandum of understanding with VimpelCom OJSC, MegaFon OJSC, and Rostelecom OJSC to jointly lay and operate a submarine fiber optic cable joining the Russian Far East with Sakhalin Island.

The project, dubbed Sakhalin-Magadan-Kamchatka, will kick-off in late 2012. According to preliminary estimates, the total cost of the project will amount to RUB 2.4 billion and be split evenly between four operators on a parity basis. The volume of investments will be specified at the end of 2012 after completion of the feasibility study.

The new line will connect the town of Okha on Sakhalin Island with the mainland towns of Magadan and Petropavlovsk-Kamchatsky. Capacity of the underwater cable will amount to 8 Tbps (80 x 100 Gbps) with the total length of around 2,000km. The group expects to complete construction within 2 years.

For more information, visit www.mtsgsm.com.

U.S. approves offshore wind transmission project

Continuing its significant momentum supporting offshore wind energy and transmission, the Department of Interior declared there to be no competitive interest for the use of certain areas of the U.S. Outer Continental Shelf (OCS) to construct an offshore transmission system being proposed by the Atlantic Wind Connection (AWC). After a year of intensive internal and public review, the decision allows the project to move forward in its permitting process.

A Determination of No Competitive Interest (DNCI) has been made by Interior's Bureau of Ocean Energy Management (BOEM), after soliciting input from other potential competitors and the public. The DNCI issuance allows BOEM to grant the project a right-of-way (ROW) on the OCS once the environmental impact of the project is reviewed under NEPA and with further public input. The lack of competitive interest means that the delays associated with an auction are avoided.

The AWC project will be built in several phases designed to link Offshore

Wind Energy Areas identified by the Department of Interior and complement the progression of the Mid-Atlantic offshore wind industry while maximizing grid reliability and the most efficient use of existing electric generation plants. Currently, AWC continues to advance in other areas of the project as well. These include preparing the project's General Activities Plan (GAP) filing, significant project engineering, and continued transmission planning with regional grid operator PJM and the Mid-Atlantic States.

AWC is the first offshore backbone electric transmission system proposed in the U.S. The project configuration will enable up to 7,000MW of offshore wind turbine capacity to be cost-effectively integrated into the regional power grid operated by PJM. This will increase system reliability and reduce congestion costs for rate payers in the heavily-congested corridor between Washington, DC and the metropolitan New Jersey/New York City area. This cutting edge, high-voltage, direct-current subsea backbone transmission system will be constructed 12 to 15mi off the coasts of New York, New Jersey, Delaware, Maryland, and Virginia, spanning approximately 300mi and constructed over approximately 10 years.

For more information, visit www.atlanticwindconnection.com.

Prysmian inaugurates new cable plant

Prysmian Group has inaugurated its new submarine power cable plant in Finland, having invested approximately €40 million to increase its production capacity at the Pikkala facility, already

one of the Group's centers of excellence for high-voltage cable production. In particular, the Pikkala plant has started production of transmission cables that use HVDC (High Voltage Direct Current) technology allowing large amounts of energy to be transmitted over long distances.

In addition to the investment of some €40 million in Finland, the Group is also involved in expanding production capacity at its Arco Felice plant in Italy, the Group's center of excellence for submarine cables, following acquisition of the Western Link order worth around €800 million to build a new submarine link between Scotland and England.

In addition, the integration between Prysmian and Draka has further broadened the range of products and services offered in the field of renewable energy. The Group can now utilize three production facilities dedicated to submarine cables: Arco Felice (near Naples) in Italy, Pikkala in Finland, and Drammen in Norway. With this extended production footprint, Prysmian Group is able to present itself to the market as a reference partner for linking mainland grids to individual offshore wind turbine towers, with an offer ranging from medium-voltage inter-array cables to HVAC and HVDC export cables up to 320 kV.

Within its portfolio, Prysmian Group has an ever increasing track record of important offshore wind power connections, with projects either completed or on-going in Denmark, Holland, and the UK as well as the HVDC connections to shore for the BorWin2, HelWin1, HelWin2, and SylWin1 mega wind farm hubs in Germany, forming part of the most important program for the development of renewable energy in Europe.

For more information, visit www.prysmian.com.

OMM completes preparation work for BorWin2

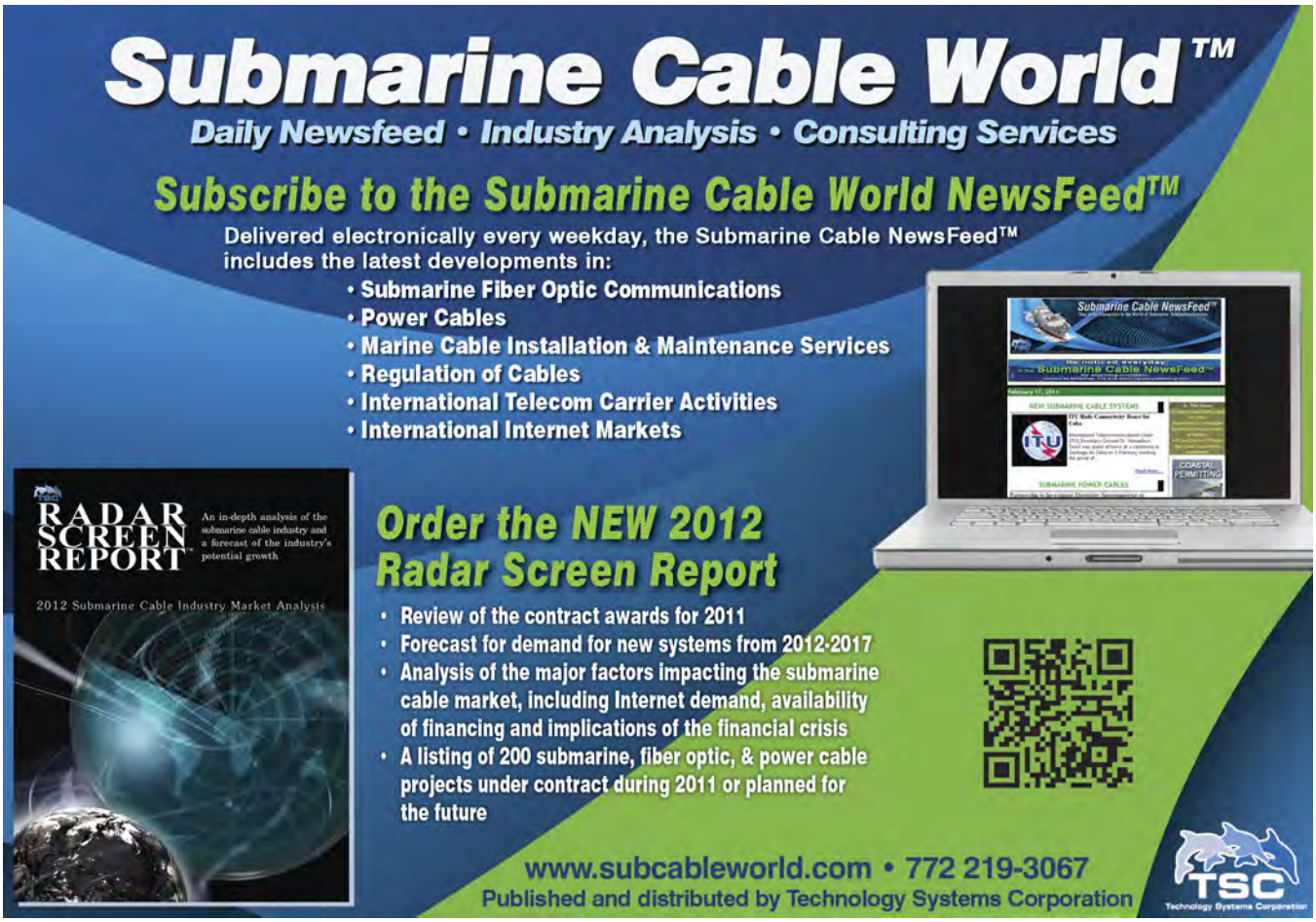
Offshore Marine Management (OMM) has successfully completed a contract for Prysmian Powerlink as preparations continue for the installation of BorWin2, which will connect new wind parks off the coast of Germany.

Using the 2,000ton multipurpose vessel, Bourbon Enterprise, OMM cleared the route proposed for the 124km HVDC export cable that will connect the new wind parks to the onshore grid. This involved identifying out-of-service cables along the route and then using a grapnel and chains set up to bring these cables onto the vessel for later safe disposal on shore.

OMM then conducted mattressing of the existing in-service underwater assets, including telecommunication and electricity cables as well as gas pipelines. Using a remotely operated underwater vehicle launched from the vessel, OMM's team conducted a detailed survey of the seabed, before identifying the correct position for each mattress and then releasing each into its location. A post-installation survey confirmed that no interference with third-party assets had taken place.

Finally, OMM used the Bourbon Enterprise to conduct a Pre-Lay Grapnel Run (PLGR) to clear the seabed of debris and other unwanted materials such as fishing lines – to ensure the route for the new Prysmian cable was clear and in good condition for cable installation.

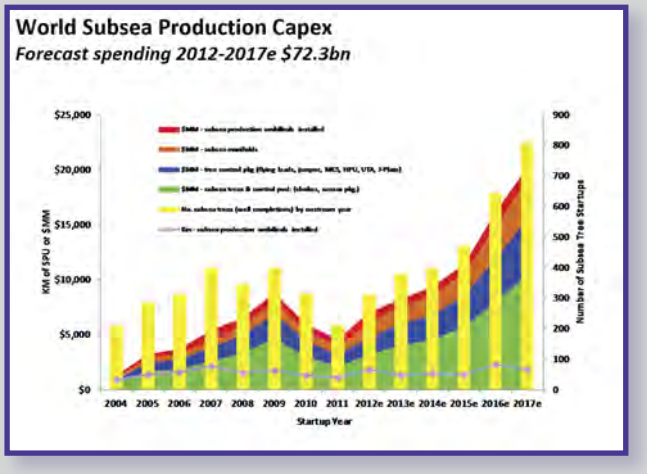
For more information, visit www.offshoremm.com.



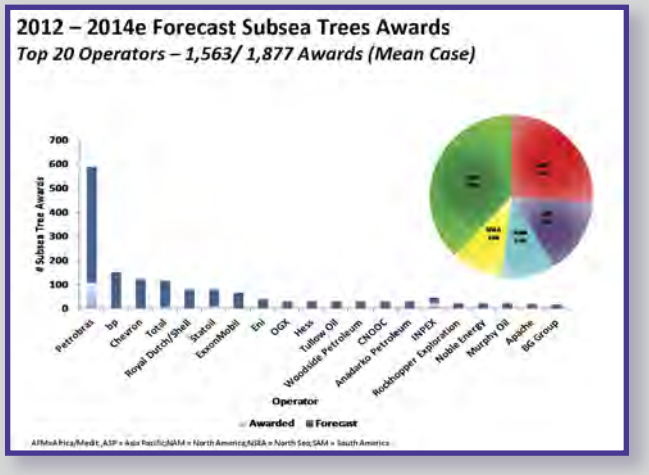
Offshore At-A-Glance

Quest Offshore Activity Report

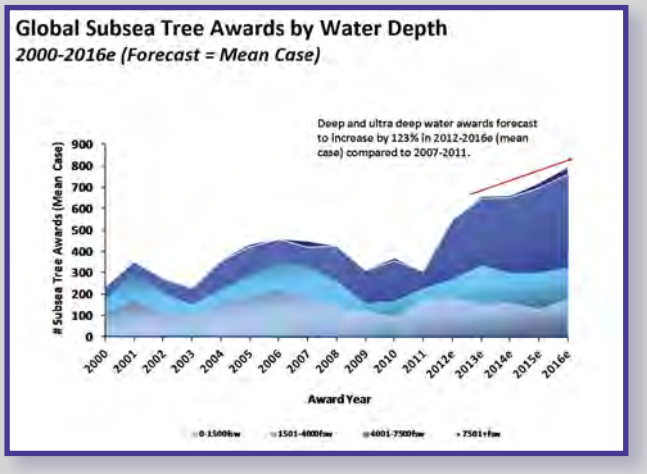
World Subsea Production Capex



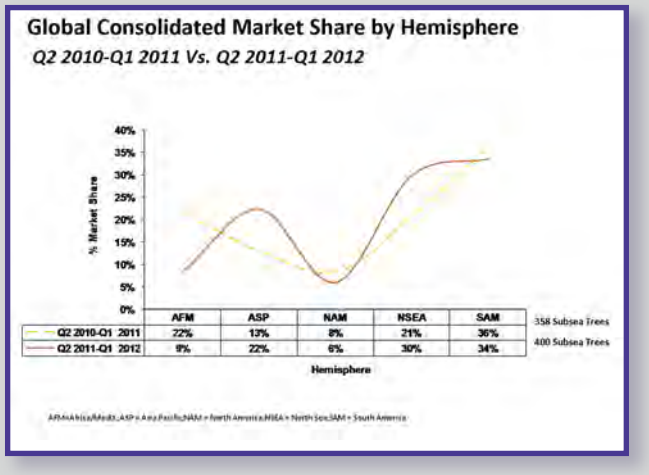
Forecast Subsea Awards



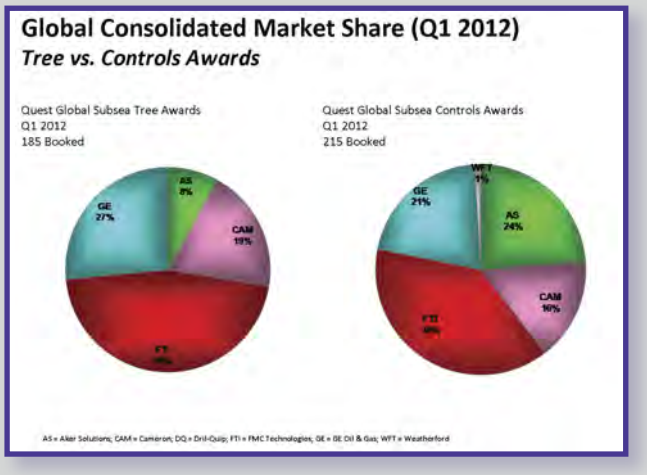
Global Subsea Awards by Depth



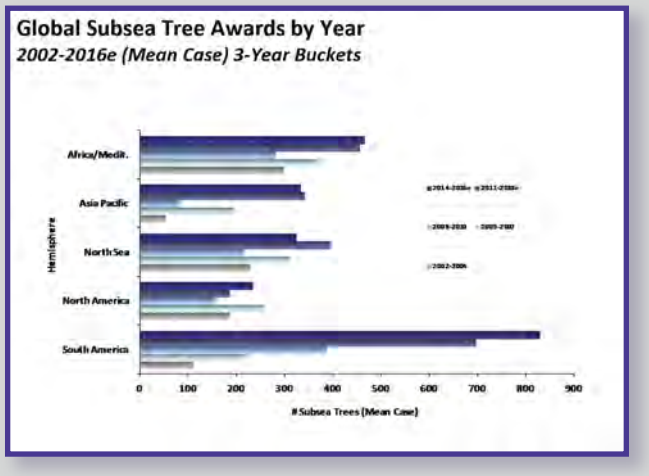
Global Market Share by Hemisphere



Global Consolidated Market Share



Global Subsea Awards by Year



FOR MORE DETAILED INFORMATION PLEASE CALL
(281) 491-5900 - USA • 44 (0) 1737 371704 - London • email: corp@questoffshore.com
GO TO: www.QuestOffshore.com • www.SubseaZone.com • www.FloatingProductionZone.com

Gulf of Mexico Data
Current Deepwater Activity

Operator	Area	Block	OCS Lease	Rig Name	Prospect Name	Water Depth (ft)
Petrobras America Inc.	WR	206	G16965	PRIDE DEEP OCEAN MENDOCINO	Cascade	8,143
Shell Offshore Inc.	AC	857	G17565	H&P 205	Great White	7,815
Shell Gulf of Mexico Inc.	MC	391	G26252	T.O. DEEPWATER NAUTILUS	Appomattox #3	7,157
ExxonMobil Corp.	KC	919	G21447	MAERSK DEVELOPER	Hadrian	7,123
Union Oil Co. of California	WR	677	G18753	T.O. DISCOVERER INSPIRATION	Saint Malo	7,040
Chevron USA Inc.	WR	758	G17015	T.O. DISCOVERER CLEAR LEADER	Jack	6,960
BP Exploration & Production Inc.	GC	744	G15605	T.O. DEVELOPMENT DRILLER II	Atlantis	6,523
Statoil Gulf of Mexico LLC	KC	698	G33343	T.O. DISCOVERER AMERICAS		6,313
Union Oil Co. of California	WR	98	G21841	PACIFIC SANTA ANA		6,127
Noble Energy, Inc.	MC	948	G28030	ENSCO 8501	Bob	6,060
BP Exploration & Production Inc.	MC	778	G14658	THUNDER HORSE PDQ	Thunder Horse South	6,040
BP Exploration & Production Inc.	KC	292	G25792	SEADRILL WEST SIRIUS	Kaskida	6,031
Cobalt International Energy, LP	GC	814	G32534	ENSCO 8503	Ligurian	5,837
Anadarko Petroleum Corp.	WR	52	G25232	ENSCO 8505	Shenandoah	5,815
Murphy E&P Co.	MC	734	G21778	T.O. DEEPWATER PATHFINDER	Thunderhawk	5,712
Eni US Operating Co. Inc.	MC	252	G21164	DIAMOND OCEAN VICTORY	Macondo	5,229
Chevron USA Inc.	WR	29	G16942	T.O. DISCOVERER INDIA	Big Foot	5,187
Hess Corp.	MC	726	G24101	STENA FORTH	Tubular Bellsicies	4,603
BHP Billiton Petroleum (GOM)	GC	654	G20085	GSF C.R. LUIGS	Shenzi	4,337
Chevron USA Inc.	GC	640	G20082	T.O. DISCOVERER DEEP SEAS	Tahiti 2	4,292
Apache Deepwater LLC	GC	867	G33858	ENSCO 8502		4,260
BHP Billiton Petroleum (GOM) Inc.	GC	507	G22970	T.O. DEVELOPMENT DRILLER I	Ness	4,028
ATP Oil & Gas Corp.	MC	941	G16661	NABORS 202	Mirage	4,000
BP Exploration & Production Inc.	VK	914	G08785	T.O. DISCOVERER ENTERPRISE	Nile	3,535
Shell Offshore Inc.	GC	248	G15565	NOBLE DRILLER	Glider	3,440
Eni US Operating Co. Inc.	GC	298	G08876	ENSCO 8500	Allegheney (south)	3,308
Shell Offshore Inc.	MC	807	G07958	NOBLE BULLY 1	Mars B	3,030
Shell Offshore Inc.	GC	158	G07995	H&P 202	Brutus	2,985
W&T Energy VI, LLCC	MC	243	G19931	NABORS SUPER S.D. XIX	Matterhorn	2,816
Deep Gulf Energy LP	GB	506	G26664	NOBLE JIM DAY	Kathleen	2,815
Shell Offshore Inc.	GB	427	G07493	NOBLE JIM THOMPSON	Cardamom	2,720
Devon Energy Production Co., LP	GC	114	G20034	CAL DIVE Q-4000	Gretchen	2,685
LLOG Exploration Offshore, LLC	MC	503	G32334	NOBLE AMOS RUNNER	WhoDat	2,642
Hess Corp.	GB	260	G07462	NABORS S.D. XVI	Baldpate	1,648
Nexen Petroleum USA Inc.	GB	205	G23278	DIAMOND OCEAN SARATOGA	GB 205	1,330
Stone Energy Corp.	VK	989	G09771	HYDRAULIC WORKOVER UNIT	Pompanoi	1,295
Union Oil Co. of California	EB	160	G02647	COIL TUBING UNIT (L.J. DIST)	Cerveza	940
McMoRan Oil & Gas LLC	VK	738	G15431	WIRELINE UNIT (N.O. #2)	VK 738	809

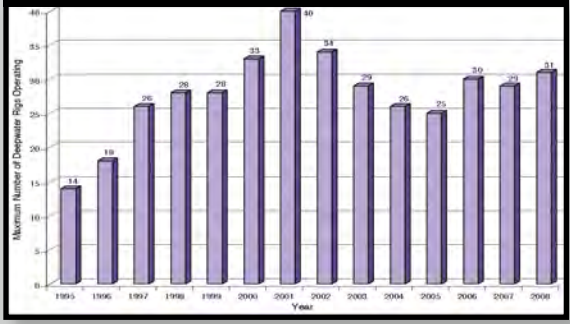
Deepwater prospects with drilling and workover activity: 38

Current Deepwater Activity as of Monday, 18 June 2012

Activity by Water Depth

Water Depth (m)	Active Leases	Approved Applications	Active
0 to 200	1,728	34,307	2,946
201 to 400	118	1,113	20
401 to 800	270	843	10
801 to 1,000	397	546	9
1,000 & above	3,326	1,751	26

Rig activity by year



Activity by water depth Information current as of Monday, June 18, 2012

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

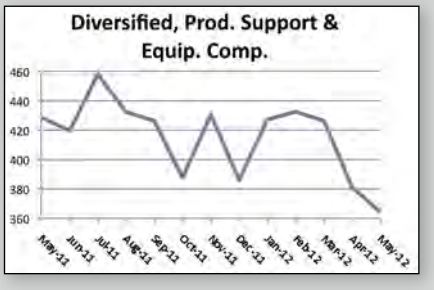
Information provided courtesy of the U.S. Bureau of Ocean Energy Management

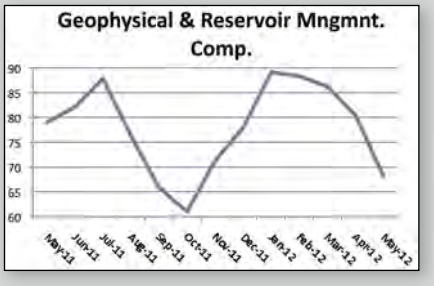
Monthly Stock Figures & Composite Index

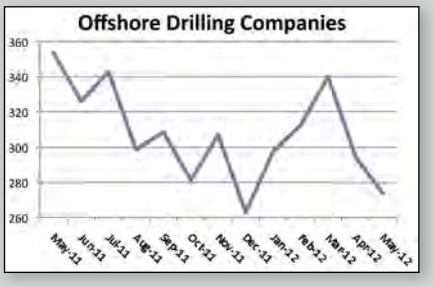
Industry Company Name	Symbol	Close *Mid-June*	Close *Mid-May*	Change	Change %	High 52 week	Low
Diversified, Production Support and Equipment Companies							
Baker Hughes, Inc.	BHI	40.15	40.96	-0.81	-2.0%	81.00	38.31
Cameron Intl. Corp.	CAM	44.90	46.08	-1.18	-2.6%	58.50	38.77
Drill-Quip, Inc.	DRQ	61.21	62.51	-1.30	-2.1%	77.12	47.40
Halliburton Company	HAL	29.08	30.58	-1.50	-4.9%	57.77	27.21
Tenaris SA	TS	33.10	34.02	-0.92	-2.7%	47.82	23.29
Newpark Resources, Inc.	NR	5.44	5.96	-0.52	-8.7%	10.62	5.19
Schlumberger Ltd.	SLB	66.28	65.52	0.76	1.2%	95.53	54.79
Superior Energy Services, Inc.	SPN	19.49	23.09	-3.60	-15.6%	42.87	18.86
Weatherford International, Inc.	WFT	12.67	12.45	0.22	1.8%	22.76	10.85
Deep Down, Inc.	DPDW	0.05	0.07	(0.02)	-28.6%	0.29	0.05
FMC Technologies	FTI	43.07	43.07	0.00	0.0%	55.19	34.46
Total Diversified, Production, Support and Equipment.....		**355.44**	**364.31**	**-8.87**	**-2.4%**	**549.47**	**299.18**
Geophysical / Reservoir Management							
Dawson Geophysical Company	DWSN	22.67	25.69	-3.02	-11.8%	42.23	21.57
Mitcham Industries, Inc.	MIND	17.12	19.36	-2.24	-11.6%	26.76	9.52
Compagnie Gnrale de Gophysique-Veritas	CGV	24.62	23.18	1.44	6.2%	37.17	15.08
Total Geophysical / Reservoir Management.....		**64.41**	**68.23**	**-3.82**	**-5.6%**	**106.16**	**46.17**
Offshore Drilling Companies							
Atwood Oceanics, Inc.	ATW	33.42	39.62	-6.20	-15.6%	43.39	25.71
Diamond Offshore Drilling, Inc.	DO	59.92	60.53	-0.61	-1.0%	73.15	51.16
ENSCO International, Inc.	ESV	43.33	47.90	-4.57	-9.5%	59.90	37.39
Nabors Industries, Inc.	NBR	12.80	13.84	-1.04	-7.5%	27.63	11.05
Noble Drilling Corp.	NE	31.25	32.87	-1.62	-4.9%	41.71	27.33
Parker Drilling Company	PKD	4.58	5.16	-0.58	-11.2%	7.62	3.60
Rowan Companies, Inc.	RDC	31.29	30.40	0.89	2.9%	40.76	28.13
Transocean Offshore, Inc.	RIG	42.30	43.30	-1.00	-2.3%	65.41	38.21
Total Offshore Drilling.....		**258.89**	**273.62**	**-14.73**	**-5.4%**	**359.57**	**222.58**
Offshore Contractors, Services, and Support Companies							
Helix Energy Solutions Group, Inc.	HLX	15.68	18.76	-3.08	-16.4%	21.65	11.57
Gulf Island Frabrication	GIFI	26.64	25.78	0.86	3.3%	36.00	19.55
McDermott International, Inc.	MDR	10.54	10.79	-0.25	-2.3%	21.69	9.04
Oceaneering International	OII	48.42	48.42	0.00	0.0%	57.16	31.77
Subsea 7 SA	SUBCY.PK	20.37	21.64	-1.27	-5.9%	27.52	16.82
Technip ADS	TKPPY.PK	24.76	23.82	0.94	3.9%	29.90	17.52
Tetra Technologies, Inc.	TTI	6.59	6.68	-0.09	-1.3%	13.45	6.09
Cal Dive International, Inc.	DVR	2.39	2.89	(0.50)	-17.3%	6.21	1.50
Total Offshore Contractors, Service, and Support.....		**155.39**	**158.78**	**-3.39**	**-2.1%**	**213.58**	**113.86**
Offshore Transportation and Boat Companies							
Seacor Holdings, Inc.	CKH	84.33	86.94	-2.61	-3.0%	109.50	75.04
Gulfmark Offshore, Inc.	GLF	33.45	37.91	-4.46	-11.8%	56.41	32.24
Bristow Group	BRS	38.60	46.44	-7.84	-16.9%	52.89	37.92
PHI, Inc.	PHII	23.81	23.37	0.44	1.9%	26.36	16.95
Tidewater, Inc.	TDW	45.23	47.80	-2.57	-5.4%	63.27	38.80
Trico Marine Services, Inc.	TRMAQ.PK	0.04	0.04	0.00	0.0%	0.15	0.01
Hornbeck Offshore	HOS	33.48	34.74	-1.26	-3.6%	43.83	19.80
Total Offshore Transportation and Boat		**258.94**	**277.24**	**-18.30**	**-6.6%**	**352.41**	**220.76**

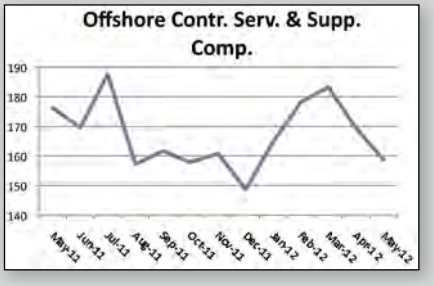
Monthly Stock Figures & Composite Index

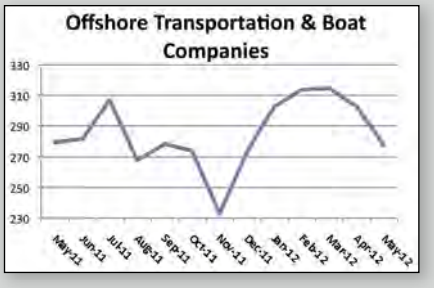
Industry	Close Mid-June	Close Mid-May	Change	Change %	High 52 week	Low 52 week
Total Diversified, Production, Support and Equipment	355.44	364.31	-8.87	-2.4%	549.47	299.18
Total Geophysical / Reservoir Management	64.41	68.23	-3.82	-5.6%	106.16	46.17
Total Offshore Drilling	258.89	273.62	-14.73	-5.4%	359.57	222.58
Total Offshore Contractors, Service and Support	155.39	158.78	-3.39	-2.1%	213.58	113.86
Total Offshore Transportation and Boat	258.94	277.24	-18.30	-6.6%	352.41	220.76
Total Offshore Source Index…	1,093.07	1,142.18	-49.11	-4.3%	1,581.19	902.55

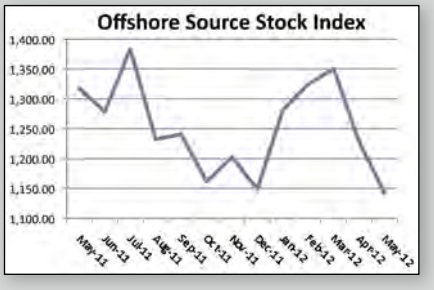










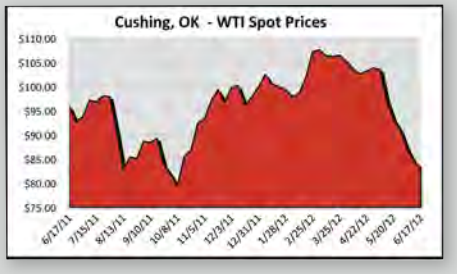


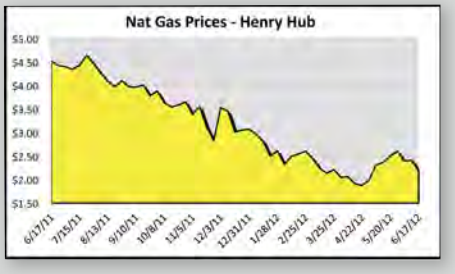
DISCLAIMER

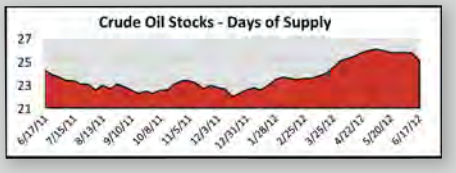
The information on this page is provided for information and comparison purposes only and should not be used to make financial and business decisions and is accurate to the best of our knowledge for the period indicated.

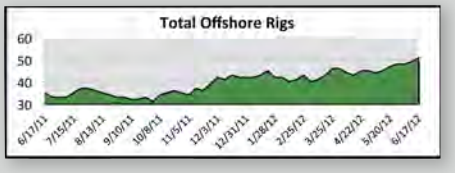
Oil & Gas Industry Trends

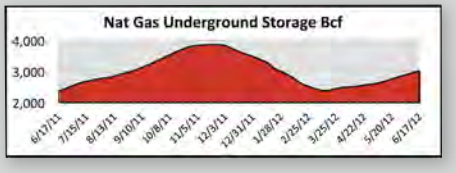
Monitoring the pulse of the U.S. Offshore Oil & Gas Industry

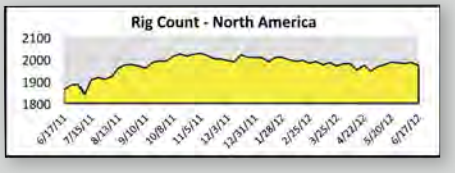








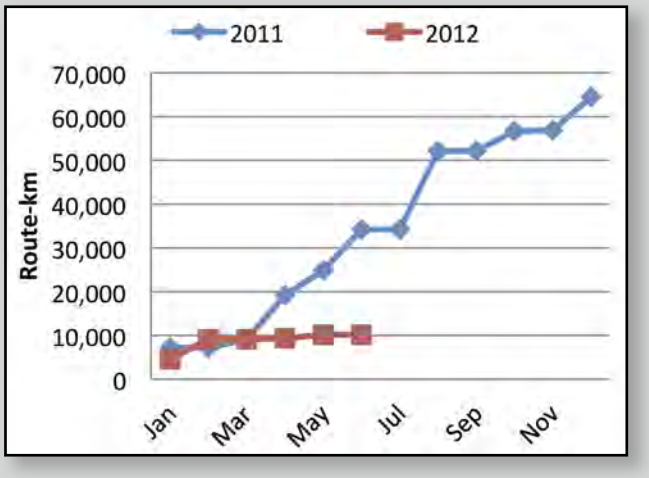




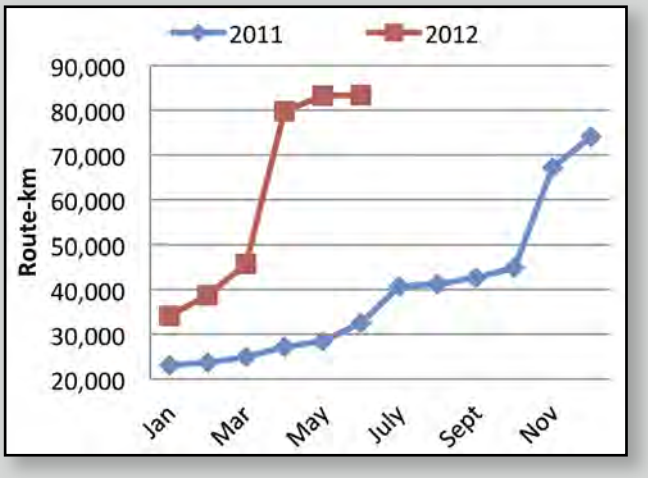
Positive trend, at least 3 weeks
Changing trend, less than 3 weeks
Negative trend, at least 3 weeks

Subsea Telcom & Power Cable Data

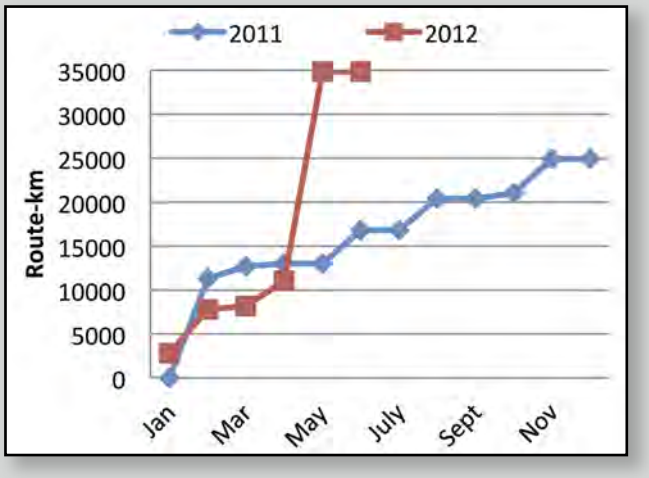
FO Cable Awards by Month



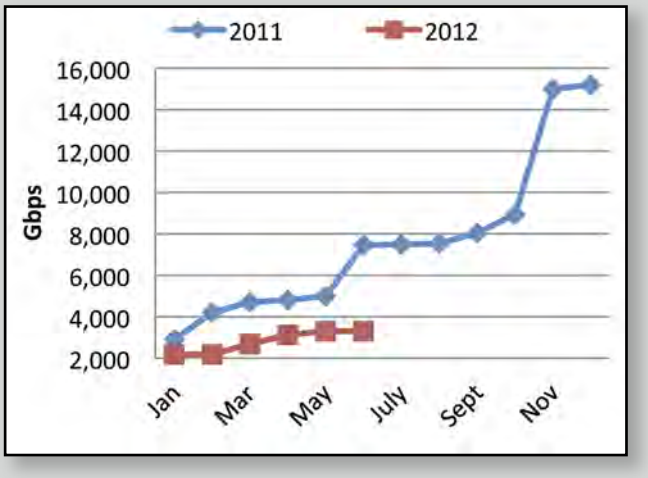
FO Cable Announcements 2011



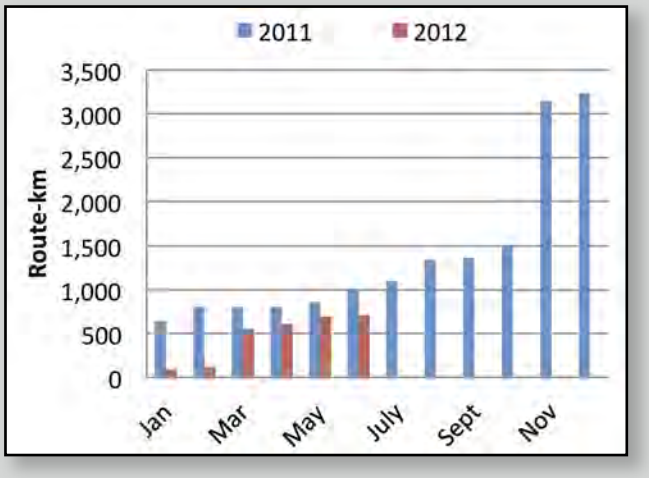
Submarine FO Cables Entering Service 2011 in route-km



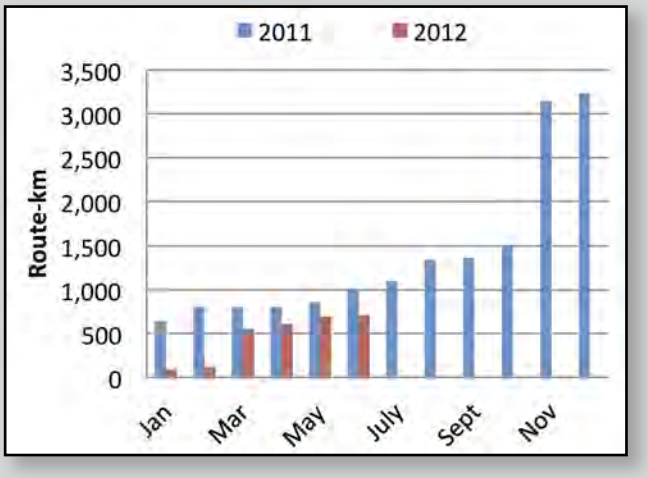
Upgrades of Existing Cable Systems in Gbps



Submarine Power Cable Awards 2011 in route-km



Submarine Power Cable Announcements 2011 in route-km



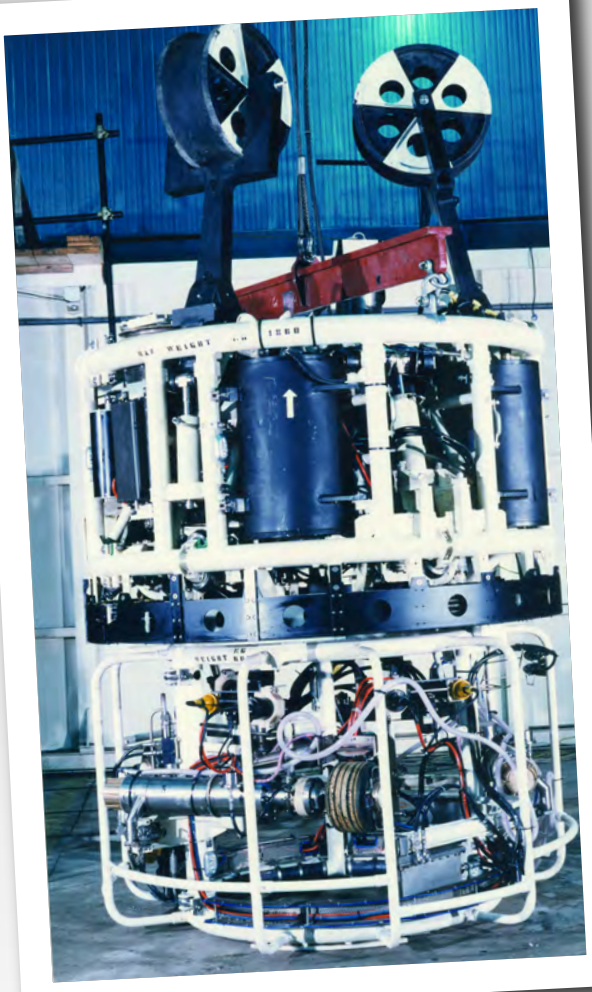
www.ocean-news.com
Ocean News & Technology

FLASHBACK

A look back at the pioneering days of the ocean and offshore industries

Many companies have contributed to the evolution of the industry. Some continue to forge the path of new technology, others have faded into the annuls of history. But all have played a role in setting the milestones that have led to today's achievements.

Can you name the product, the company, or the year?



Print Readers, *send your answers by emailing us at Lborne@tscpublishing.com or fax us at 772-221-7715.*

Digital readers*, click on the Ocean News Interactive logo here.*

The first respondant to answer all 3 questions correctly will receive an ONT Press Photographer T-Shirt. Answers will be featured in the August Flashback.

Industry briefs torn from the Ocean News Archives

A SCORPIO ROV owned & operated by Stolt Nielson Seaway Submersibles did an inspection/survey run to 2,000 ft. during work on the TransMediterranean pipeline between Tunisia & Sicily.

February 1984

Tritech International Ltd has announced it will go into full scale production of the Tritech Suction Excavation System (affectionately known as "Mudder Sucker").

March/April 1992

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500 acoustic modems selected for offshore oilfield projects

LinkQuest Inc. has been busy recently, producing around 500 underwater acoustic modems for offshore oilfield applications. LinkQuest's industry-leading underwater acoustic modems have been extensively used in the offshore oilfields worldwide.

Over the years, rich experience has been garnered with regard to the application details, noise and multipath conditions, and acoustic instrument interference avoidance. LinkQuest produces a large number of acoustic modem models designed for optimal performance under various application scenarios.

Based on LinkQuest's extensive experience in offshore oilfield applications and competence in theoretical analysis, LinkQuest has closely worked with its customers to select specific acoustic modem models most suitable for the application, aiming to optimize system performance and increase overall system reliability.

Recently, a large number of long-range deepwater acoustic modems were selected for seabed seismic monitoring applications. These modems will be used to interface with seismic sensors to monitor and explore offshore oil and gas field reservoirs in large-scale deployments. Dozens of UWM2000 and UWM4000 modems were selected for communication between surface ship/platform and downhole oilfield tools in offshore oilfield projects. Several dozens of UWM2000H omni-directional and directional acoustic modems were also selected for monitoring critical sensor information from FPSOs. With overwhelmingly superior field performance, large quantity production consistency, and cost effectiveness, LinkQuest continues its dominance in the underwater acoustic modem market.

For more information, visit www.link-quest.com.

Tritech's Gemini SeaTec sonar offers enhanced mammal detection

Gemini SeaTec provides an early warning of the presence of marine mammals in the vicinity of marine current turbine structures. The Gemini SeaTec system has been successfully field tested on the Marine Current Turbine (MCT) SeaGen installation in Strangford Lough, Northern Ireland, overseen and tested by Sea Mammal Research Unit (SMRU) Ltd.

The latest version of the Gemini SeaTec system includes improved software algorithms for analyzing moving marine life targets according to their size, shape, and swimming behavior. Targets are categorized using a traffic light system, indicating the probability that a moving target is a marine mammal.

"Possible" (green) targets are the correct size and shape; "Potential" (amber) denotes upgraded "Possible" targets that also have a path that suggests the object is not moving with tidal drift. "Probable" (red) targets are upgraded from "Potential" when they have a high probability of being a marine mammal. Using this scheme also allows the software to eliminate a large number of false targets such as marine debris moving passively with the tide and fish that are both too small and identified as part of a group.

A visual proximity alarm can be set to alert a human observer to the presence of a target that has a high probability of being a marine mammal. This can aid in precautionary shutdown decisions, where necessary.

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

SEA CON®'s new ULTRA series

Developed in response to the needs of both the offshore oil and renewable energy industries, SEA CON®'s new ULTRA series is larger than other SEA CON® connectors and is suitable for high power. This connector range has a depth rating to 30,000ft (15,000psi pressure rating mated/10,000psi open face) and is available in three sizes; 30, 45 and 50 with the number of the connector indicating its overall diameter (in tenths of inches) of the base connector pair.

Other key features include the following

- 30,000ft depth (15,000psi pressure rating mated/ 10,000psi open face);
- Front and rear pressure rated;
- Inserts reversible between shells, meaning the sockets can be on the bulkhead, suitable for power packs, batteries etc.;
- Field installable and serviceable; and
- Simple design.

C-Lite cable first thin-wall awarded Germanischer Lloyd approval

TE Connectivity's C-Lite cable family of lightweight marine cables has been awarded the Germanischer Lloyd (GL) Approval Certification. The C-Lite cable is the first and only thin-wall lightweight cable to be awarded this prestigious approval.

C-Lite cables use TE's advanced materials technology to deliver a thin-wall insulation that dramatically reduces the size and weight of cables–without reducing the electrical or mechanical properties. From general power and lighting to communication, control, and instrumentation applications, the C-Lite cable family is designed for use in a variety of commercial marine, offshore, and military marine applications.

Germanischer Lloyd is a technical supervisory organization that conducts safety surveys and is ranked as one of the top classification societies. The group offers certification, inspection, and consulting services. GL's reputation is highly regarded among the maritime industry.

The C-Lite cables install up to 30% more quickly into a vessel or module, permit tighter bend radii, and enable smaller cable trays and ancillaries, allowing more equipment to be connected within the same space. The thin-wall technology uses low-smoke and zero halogen wire and cable – which emits lower levels of toxic gases and generates considerably lower levels of smoke so that visibility is preserved in an emergency. The highly flame retardant cables are resistant to oils, solvents, fuels, and petroleum mud.

For more information, visit www.te.com.

New line of modular buck-boost chargers

A new line of modular buck-boost chargers for OEM applications that support a wide range of Li-Ion battery packs and provide full status monitoring via RS232 is being introduced by OceanServer Technology, Inc. of Fall River, Massachusetts.

Intelligent Battery and Power System™ battery controller modules can be clustered to regulate 1 to 32 Li-Ion battery packs from 10.8 to 28.8VDC and provide step-up or down voltage, buck-boost charging, and accept inputs from 12 to 34VDC. Featuring a Windows®–based software suite for easy OEM integration, these fully engineered battery controller modules provide full status monitoring and substantially reduce time to market.

Totally scalable and SMB compliant, these Intelligent Battery and Power System™ battery controller modules let users see all attached batteries; monitor charge status and power consumption; log data over time; and provide discharge rates, time to empty, and other data that can be viewed remotely. Applications include hand-held wireless devices, direct drive motors, robotics, kiosks and other electro-mechanical equipment.

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

Fugro launches SEAWATCH wind LiDAR buoy

Fugro launched the Group's new SEAWATCH Wind LiDAR buoy representing the next generation of multi-purpose buoys tailored for the renewable energy industry.

The new buoy is the result of a successful joint industry R&D project utilizing offshore and wind technology expertise from Norwegian universities, research institutes, the energy company Statoil, and Fugro OCEANOR. It accurately measures the speed and direction of wind across the diameter of wind turbine rotors in profile up to 300m heights, while additional oceanographic sensors measure ocean waves and current profiles.

Validation of the Wind LiDAR Buoy took place at an exposed location off the coast of Norway. The tests were designed to compare wind data collected by the buoy to data from a similar LiDAR located on land and from a fixed met tower. Wind velocities up to 20m/s and wave heights up to 5m were recorded. The average deviation in wind speed measurements between the Wind LiDAR buoy and the reference stations was less than 2%.

For more information, visit www.oceanor.com.

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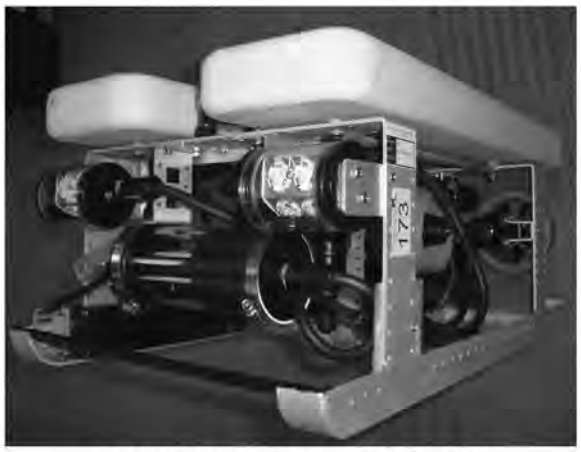
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RBR makes waves with the RBRvirtuoso and RBRduo

RBR Ltd. is pleased to announce the release of their next generation tide and wave data loggers: the RBRvirtuoso and the RBRduo. Tested in the harshest environments to ensure their extreme accuracy, these loggers provide flawless measurements even in the most unpredictable ocean conditions.

RBR's submersible, autonomous tide or wave loggers deploy in the water or on the seabed, offering flexible measurement schedules, long wave burst samples, expanded memory and additional power for extended deployments, and fast download of large data files. The next generation loggers can measure more, deploy longer, and download faster.

Improved features include:

- 6Hz sampling;
- Tide averaging;
- 30M measurements;
- Fast USB download speeds;
- Low frequency wave detection; and
- Intermittent and continuous burst.

For more information, visit www.rbr-global.com.

Batoil Services Nigeria selects Applied Acoustics' Easytrak

Batoil Services Nigeria Limited ,based in Port Harcourt, Nigeria, has recently purchased an Applied Acoustics' USBL tracking system to add to its equipment pool. Amongst its other company functions, such as corrosion control and inspection services, Batoil is a leading supplier of equipment and services used during pipeline route, engineering, and hydrographic surveys for the Nigerian oil industry.

Bamidele Olagunju, managing director at Batoil Services Nigeria Limited, selected the Applied Acoustics' Easytrak Lite USBL positioning system for a particular contract the company secured with Kaztec Engineering Ltd. This was to provide accurate underwater positions of a variety of pipeline crossings in the Addax OML 123 field so that large concrete mattresses could be placed over for protection.

The Easytrak USBL underwater positioning and tracking system is centred on a multi-element, single transducer that transmits and receives acoustic signals to dynamic subsea targets from which range, bearing, and depth information can be determined.

For the Kaztec Engineering project,

the underwater target to be tracked was the company's subbottom profiler used to locate pipelines on, or often under, the seabed. By attaching an Applied Acoustics 1019 Mini Beacon to the towed unit and interfacing the system with GPS and gyro compass, the precise position of the pipelines could be established with a high degree of accuracy, sub 1m. Armed with this information, the large concrete mattresses could be placed in the correct positions, as confirmed by divers during installation, adding to overall operational efficiency.

For more information, visit www.appliedacoustics.com.

Nautronix secures order to supply NASeBOP to Rowan's new ultra-deepwater drill ships

Nautronix has secured an order from a major BOP supplier to supply their NASeBOP (Emergency BOP Acoustic Control System) to be installed on Rowan's two new ultra-deepwater drillships.

Nautronix' NASeBOP Control System provides a method of backup control of critical BOP functions in the event of failure of primary communication and control. At the heart of the system is Nautronix' ADS² (Acoustic Digital Spread Spectrum) signalling technology. The system achieves a highly reliable communications link from a surface vessel to a subsea isolation device, such as a full BOP, or a simple isolation device that would be used during surface BOP drilling.

The NASeBOP subsea system consists of two Subsea Control Units (SCUs) connected to remote transducers. Each SCU is capable of controlling and monitoring up to eight functions. This includes control of an Emergency Disconnect Sequence (EDS). A 10m cable allows remote transducers to be positioned away from the SCUs, thus reducing the risk of shading or multi-path effects caused by adjacent structures or subsea objects. Two SCUs provide system redundancy as each can be used independently for control and monitoring.

For more information, visit www.nautronix.com.

TE Connectivity launches new C-Wrap side entry repair sleeve

The repair sleeve delivers an environment-resistant repair to damaged primary wire with nicks, chaffed, and radial cracks, while providing superior long-term performance.

The easy-to-install solution consists of two pieces: the outer tubing and adhesive. The C-Wrap device is small in diameter and short in length, providing easy installation. With its wrap-around design, the repair sleeve eliminates the need to de-pin the connector for repair–saving time, cost, and manpower. Its environment-resistant qualities prevent galvanic corrosion and allow use in a temperature range of -65°C to +150°C, all while meeting the performance requirements of D-6201.

Made of a meltable adhesive and radiation cross-linked modified fluoroelastomer insulation sleeve, the C-Wrap device meets the performance requirements of TE Connectivity D-6201 specification. Designed for long-term performance, the repair kit offers a permanent repair to the chaffed or cracked wire insulation. The C-Wrap device is color-coded, which provides proper sizing for each application, as well as ease of use.

For more information, visit www.te.com/adm.

EvoLogic launches special edition acoustic modems

EvoLogics GmbH, a leading manufacturer of underwater information and communication systems from Berlin, Germany, is proud to present the White Line Science Edition–a new line of S2CR underwater acoustic modems with an embedded network protocol development platform. Intended for universities and other research facilities, the S2CR White Line Science Edition modems are a great tool to effectively design, test, and implement underwater acoustic network protocols.

Making a step forward in underwater networking, EvoLogics designed an open environment for network protocol developers, offering the scientific community a flexible framework to test new network protocols on real hardware. The new S2CR White Line Science Edition (S2C R WiSE) acoustic modems facilitate an embedded developer sandbox of up to 32GB. The EvoLogics WiSE toolchain allows users to build custom firmware modules for S2C modems and opens endless opportunities for new implementations.

For more information, visit www.evologics.de.

Ocean News & Technology

2012 EDITORIAL CALENDAR

January/February 2012
Editorial: Inspection & Light Work Class ROVs, Oceanography & Meteorology
Distribution: NACE • Oceanology International
Deadline: January 15th
Product Focus: Diving Equipment & Buoyancy Materials

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

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

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

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

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

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

September
Editorial: Coastal Engineering, Environmental Assessment & Monitoring, Offshore Wind
Distribution: MTS Dynamic Positioning • Oceans 2012 MTS/IEEE Hampton Roads • Ocean Innovation • AWEA/Offshore Windpower • AWEA/Offshore Windpower
Deadline: August 15th
Product Focus: Buoys & Monitoring Instrumentation

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

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

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

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CORPORATE Showcase

Industry leaders...company profiles...corporate forecasts.

From subsea technology and equipment to oceanographic instrumentation, learn what these industry leaders are saying about their companies today, and their expectations for 2013....

see ad on page 3

iRobot Seaglider – Contributing to Scientific Studies of the Southern Oceans

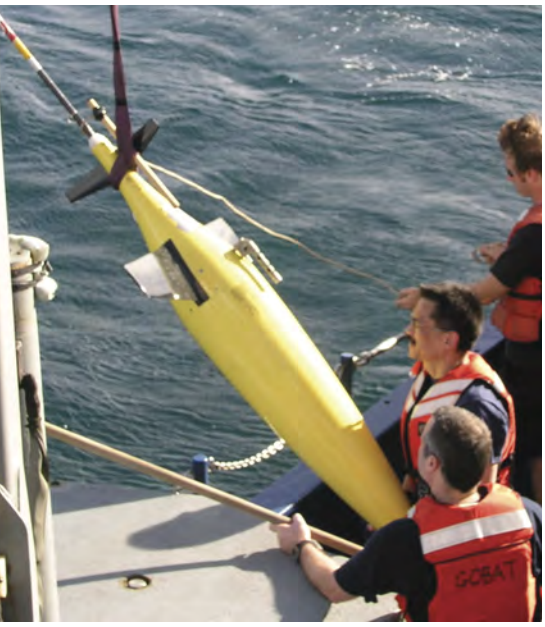
Increased payload capacity, new sensor capabilities, and autonomous operations of the iRobot Seaglider enables new scientific operations and discoveries in the world's southern oceans

The iRobot 1KA Seaglider, a long-range, high-endurance autonomous underwater vehicle (AUV) continues to expand upon its impressive array of mission capabilities and use. Developed by the University of Washington with funding from the U.S. Office of Naval Research and the National Science Foundation, Seaglider is able to perform a wide range of data collection missions from the littoral to the open ocean. Operating for months and covering thousands of nautical miles, Seaglider contributes copious amounts of data that aid in scientific discovery and the understanding of the physical properties of the world's oceans.

Southern Ocean Seasonal Cycle Experiment , May 2012

In early May 2012, South Africa took delivery of the SA Auglhas II, a new polar research ship intended to strengthen South Africa's presence in the Polar Regions in support of the Southern Ocean and Antarctic treaties. This R1.6 billion investment follows the recent investments to DST-CSIR in the Centre for High Performance Computing which is being used to run global ocean-climate models, an ocean robotics laboratory, and five other new research facilities. These investments are affording South Africa the technological capacity to leverage its geographical advantage to study the Southern polar climate and ecosystems. The first scientific program to capitalize on these investments is the South Ocean Seasonal Cycles Experiment (SOSCEx).

The experiment is planned to take place around the three annual logistical trips of the ship, starting with the spring voyage to Gough Island. This will be followed by a mid-summer voyage to the South African National Antarctic Expedition (SANAE) base and an autumn voyage to Marion Island with little (5–10 days). In-situ sampling will begin in September 2012 during the austral spring relief voyage from Cape Town to Gough Island (located at 40.2°S, 10°E).



Four iRobot® SeagliderTM units will be deployed from the ship south of the Subtropical Front, in the Subantarctic Zone, at the confluence of the Subantarctic Front and in the northern Polar Frontal Zone. The Seagliders will be programmed to profile the water column from the surface to a depth of 1000 meters and at a nominal horizontal resolution of every 4 kilometers (4 dives/day). At each location, Carbon-explorer floats will be deployed along two Liquid Robotics wave gliders which will be deployed in the Subantartic and Polar Frontal Zones to sample CO2 and Oxygen. Each unit will be intercepted during the summer South African National Antarctic Expedition (SANAE)and finally retrieved in autumn during the Marion Island trip.

At each interception, a full depth water column profile and clean casts for iron chemistry will be taken. This sampling will provide scientist with biogeochemical and physical boundary condition of the system, such as CO2 levels, nutrient and iron concentrations, phytoplankton composition and bio-optics. It will also enable quality checks of temperature, salinity, oxygen, backscatter, fluorescence, and photysynthetically active radiation data collected by the Seagliders. Concurrent on-board bio-assay incubation experiments will examine the limiting factor of phytoplankton growth (light or iron) and contribute to improving model parameterisation in the Southern Ocean. The water column process stations will be supplemented by six profiles to 1000 meters along the meridional axis of the sampling. Continuous remotely sensed data will be collected and used as an independent, large-scale data set before, during and after the period of the experiment.

SOSCEx provides a new and unprecedented opportunity to gain a better understanding of the links between climate drivers and ecosystem productivity in the Southern Ocean. This combined high-resolution approach to both observations and modeling experiments will permit scientist, for the first time, to address some key questions relating to the physical nature of the Southern Ocean and its carbon cycle.

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

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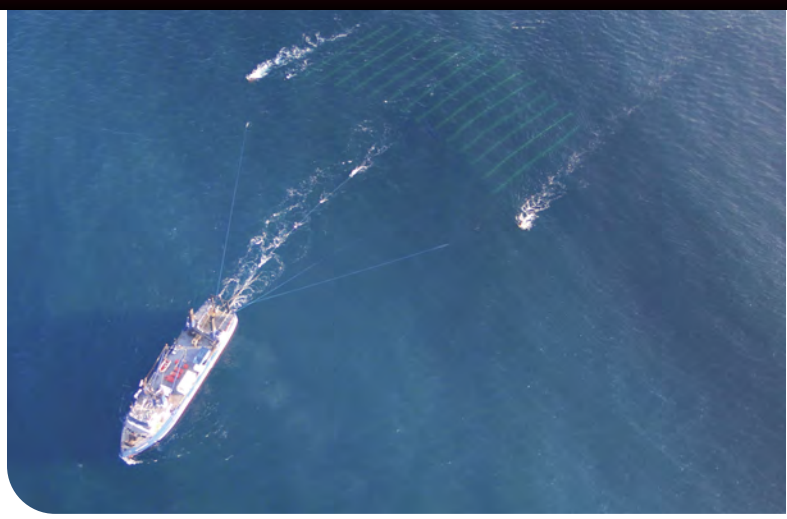


Founded in 1969, Geometrics is a world leader in the design, manufacture, sales and rental of rugged, portable, and easy-to-use geophysical instruments. These technologically-innovative systems are used for land, sea and air subsurface investigations. The company's main product line includes proton precession and cesium magnetometers, high-resolution seismographs, digital marine streamers, and electrical conductivity imaging and resistivity systems. Applications for our instruments include natural resource exploration, geotechnical and environmental assessments, ordnance detection, surveillance, and marine tectonic research. They are also used in locating archeological and treasure sites and for teaching and research. For over 40 years colleges, universities, research institutions, government agencies, and exploration firms have been depending on our experience and expertise to perform state of the art geophysical and environmental surveys.

Geophysical instruments are often subjected to extreme stress heat and cold, rain and dust, shock and vibration that would daunt the designers of conventional products. Geophysical instrumentation must also have the highest level of technology, incorporating user interfaces that are simultaneously easy to use and sufficiently powerful to give in field answers.

Geometrics products are highly computerized, with daylight visible graphical interfaces. Our land and marine seismographs offer 24-bit dynamic range; our cesium magnetometers operate on "atomic clock" technology for the highest resolution portable magnetometers; and our unique measurement systems for determining soil and rock conductivity provide deep soundings in a cost effective manner. Our rugged and durable designs are field proven to deliver consistent, reliable and accurate performance, enabling our customers to work faster and smarter.

In the area of marine applications, Geometrics has made significant innovations. Our model G-882 cesium vapor marine magnetometer is now routinely deployed in Transverse Gradiometer (TVG) mode which provides better target characterization allowing it to "see" in between survey lines. Using proprietary dual simultaneous inversion software (free with the system) it's able to detect and characterize targets by Lat/Long position, depth of burial and mass. This is especially important in offshore wind farm UXO surveys. This system along with our MagLogLite™ program provides excellent GPS positioned measurements for contour mapping.

To meet the growing demand for subsea investigations using Autonomous Underwater Vehicles (AUVs), Geometrics has been working on several projects to measure UXOs using a magnetometer deployed on an AUV. With partners Weston Solutions and University of Delaware, Geometrics installed a G-880AUV magnetometer (based on the G-882 technology) in a Teledyne Gavia AUV. Final results have been good and we successfully compensated the magnetic effects of the vehicle to easily detect the UXO targets using Geometrics' MagCompII software.

Geometrics has also been leading the way in marine streamer innovation. Geometrics' streamers include the GeoEel™ Digital Liquid, the GeoEel™ Digital Solid and the MicroEel™ Analog Solid. The GeoEel Liquid is suitable for shallow oil and gas, high-resolution engineering surveys and sub-bottom profiling for fast and efficient surveys. At only 41mm, it is the smallest-diameter digital streamer available. Environmentally-friendly silicone oil is used for flotation. Some hand-deployed systems may be as long as 300m. Smaller surveys requiring 24 channels or less are best addressed by the MicroEel™ coupled with our Geode seismograph. This is the smallest diameter marine streamer available, at only 31mm.

The ultimate in marine seismic fidelity is Geometrics' GeoEel™ Solid digital streamer. The GeoEel™ Solid has superior electronics with a solid active section design that is largely immune to cable-borne noise. With the smallest-diameter solid design available (only 44.5 mm), it is easy to deploy, easy to transport and can be shipped by air.

Multiple GeoEel™ Solid seismic streamers may be combined with our new P-Cable seismic streamer system for the finest in high-resolution 3D surveying. The P-Cable System provides ultra-high resolution 3D data that can be used in the search and production of energy resources as well as in minimizing associated risks. In December 2011, Fugro West, Inc. successfully used Geometrics' P-Cable system for a high resolution 3D survey off the Diablo Canyon Nuclear Power Plant near Avila Beach, California to map the Shoreline Fault.

Geometrics is headquartered in San Jose, CA in a 67,000 square foot facility. Representative offices and service centers are located in over 30 countries worldwide.

EvoLogics®

see ad on page 99

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 subsea 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 commons 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 EvoLogics introduced the White Line Science Edition - a new line of S2CR underwater acoustic modems with an embedded network protocol development platform. Intended for universities and other research facilities, the S2CR White Line Science Edition modems are a great tool to effectively design, test and implement underwater acoustic network protocols.

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

Channel Technologies Group

see ad on page 35

Channel Technologies Group (CTG) is a vertically integrated manufacturer that specializes in mission critical piezoceramic technologies for military and commercial applications. CTG integrates superior piezo products into engineered systems as it brings together three long-standing industry leaders: Piezoelectric Ceramics (Channel Industries (CI) - founded in 1959), Transducers (ITC - founded in 1966) and Systems (Sonatech - founded in 1973). CTG provides a broad range of highly engineered value added products, components, and systems for use in the most demanding environments. CTG's products and services are used in a variety of applications and by diverse end users, including medical device manufacturers, oil service and exploration companies, and customers in the defense industry, including several departments of the U.S. Navy and many leading defense contractors.

CTG's acquisition by Blue Wolf Capital Partners has allowed CTG to augment its organic growth and to keep up with the rapid expansion of its end–markets. To sustain the company's commitment to long-standing customers, CTG has maintained its leadership, engineering group, manufacturing and support structure, led by President and CEO Kevin Ruelas, into this new phase of growth for the company.

CTG's Channel Industries Division is a custom manufacturer of piezoelectric ceramics in lead-zirconate and barium titanate compositions.

Piezoelectric Ceramics– Channel Industries

CTG – CI designs and manufactures the piezoelectric ceramics that are at the heart of thousands of underwater acoustic applications and systems. Producing standard piezoelectric ceramic shapes, as well as customized dimensions, CI's extensive knowledge of piezoelectric physics and years of experience have earned them the reputation for producing some of the highest quality ceramics in the world. Many engineers involved with the development of new and novel applications depend on the consistent performance of CI ceramics and their high level of technical support.

For decades, CI products have been used in numerous military, medical, and commercial applications, including hydrophones, towed arrays, modems, and side-scan sonars. Servicing the best known companies in America and abroad, CI's engineering and manufacturing capabilities have pioneered the technology necessary to meet new applications.

CTG's ITC Division provides a myriad of underwater and ultrasonic transducers

Transducers - ITC

CTG – ITC designs and manufacturers world class acoustic transducers for ship and submarine sonar, oceanographic survey, seismic exploration, marine life research, medical devices, and industrial proximity sensing.

The ITC Division has produced over 5,000 different acoustic transducer designs, including defense, communication, navigation control, and information gathering applications. They are integral to many advanced sonar systems, positioning systems, and data telemetry devices. They also produce commercial acoustic transducers for medical, industrial, navigation, seismic exploration, seabed mining, and other custom applications requiring advanced acoustic technology.

Systems - Sonatech

CTG - Sonatech designs and develops underwater navigation and sonar equipment for the U. S. Navy and various other U.S. and foreign government research and military customers. Within two years of its founding in 1973, Sonatech rapidly attained the reputation of the industry leader for reliable, high performance underwater navigation systems. Starting with Long Baseline (LBL) transponder-based products and evolving into Super-Short Baseline (SSBL) product, Sonatech continues to meet and deliver challenging specific customer requirements to develop innovative and high-reliability equipment and systems.

CTG's Sonatech Division provides sonar systems, navigation and range systems, and custom acoustic solutions

With excursions into acoustic wellhead re-entry navigation, digital depth sounders, surface impact location and data telemetry systems, Sonatech has expanded its expertise into sonar systems, developing a variety of forward-looking, side-looking, obstacle-avoidance, and homing/docking sonars of medium and high resolution, some utilizing synthetic aperture technology.

For more information:
Channel Technologies Group:
www.channeltechgroup.com
Email: ctg-info@channetech.com
Piezoelectric Ceramics - Channel Industries:
www.channelindustries.com
email: ciisales@channeltech.com
Transducers - ITC:
www.itc-transducers.com
email: sales@itc-transducers.com
Systems - Sonatech:
www.sonatech.com
email: marketing@sonatech.com

FORUM™

see ad on page 9

Forum Energy Technologies, Inc. Provides Smart Solutions and Powerful Products to Resolve Customer Problems

Headquartered in Houston, Texas, Forum Energy Technologies, Inc. (NYSE: FET) is a leading worldwide manufacturer of mission-critical products and services designed to solve complex oilfield challenges from the refinery to the sea floor. Our 3,200 employees are dedicated to helping customers improve safety and performance while lowering operating costs with smart solutions and powerful products. We have combined some of the best-known brands in the business and continually work with our customers to develop custom products that meet the oilfield's changing demands and unpredictable challenges.

C. Christopher Gaut has led Forum Energy Technologies as Chief Executive Officer and Chairman of the Board of Directors since August 2010. Prior to FET, he was President of Halliburton's Drilling and Evaluation Division, as well as Chief Financial Officer, after serving as Ensco International's Co-Chief Operating Officer and Chief Financial Officer for 15 years.

FET products are organized into six divisions covering the energy industry's subsea, drilling and production sectors:

Subsea Technologies. This product line includes the world's most comprehensive range of ROVs used for inspection, survey and deep water construction, as well as two of the industry's most well-known names, Perry™ and Sub-Atlantic™; tethering systems; simulation software; data acquisition software; and geosciences product management. We also offer customized ROV tooling, pipe joint coating, subsea equipment rental and technical staffing for the offshore industry. In short, Everything Remotely Possible™.

Drilling Equipment. Forum provides robust equipment for all drilling and well intervention needs, from tubular handling equipment to manifolds and pipes.

Well Construction & Completion Products. Our specialized downhole, cementing and protection tools help customers increase oilfield efficiency and productivity, lower producing costs and maximize reserve recovery.

Stimulation & Intervention. In addition to coiled tubing BOPs, frac iron, and other stimulation and intervention products that help get wells flowing and keep them producing, Forum offers inspection, rebuild and recertification services for flow iron.

Production Equipment. We provide engineered process systems and field services for oil and gas production in the industry's upstream, midstream and downstream segments.

Valve Solutions. Forum's top quality, highly reliable valves are an integral part of equipment throughout the drilling and subsea sectors.

Recent new additions to FET's ever expanding product portfolio include three from our Subsea Technologies group:

Tomahawk. This next-generation Sub-Atlantic Observation ROV and platform offers high reliability and adaptability within a small footprint, reducing deck space, capital and operating costs. Tomahawk is fast and agile, sharing the same 35 kilowatt power system and thrusters as Sub-Atlantic's largest Comanche ROV. Rated to a depth of 3,000 meters and supporting a payload of 160 kilograms, Tomahawk can be deployed and operated in demanding environments, which makes it ideal for deep-water operations and a variety of tasks, including surveys, well intervention and drilling support.

Perry XT 1200 Trencher. Our Perry XT 1200 Trencher is a heavy trenching system that can produce a trench to a depth of three meters in all seabed conditions, from sand to stiff clays. Capable of deploying non-contacting water jetting tools with back wash and educator debris clearance systems, this cable and pipe burial ROV can carry an optional back-fill and pipe following tool.

Blowout Preventer Actuation Tool (BOP-AT). Designed to be operated by a workclass ROV with speed and accuracy, our BOP-AT closes the blow out preventer remotely, delivering over 300 liters of fluid per minute at pressures up to 7500 psi. It fully actuates most BOPs in under 45 seconds, which safely and effectively seals the wellbore.

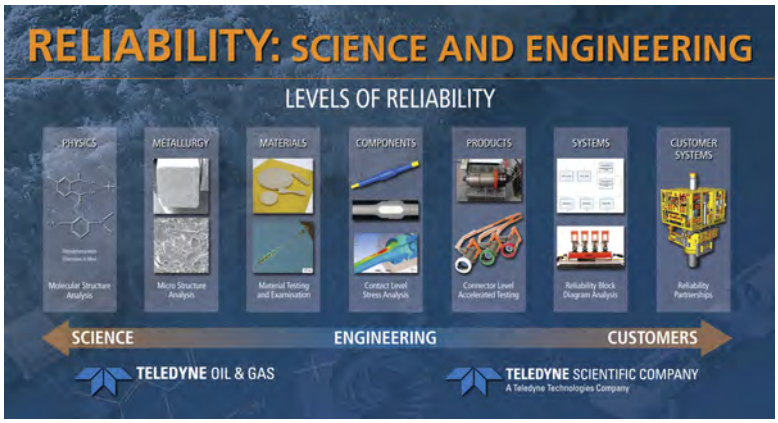
TELEDYNE OIL & GAS

see ad on page 4

Teledyne Oil and Gas (TOG) is a world leader in the subsea interconnect and asset integrity industry. The product lines that make up TOG (Teledyne ODI, Teledyne Cormon, Teledyne DGO, and Teledyne Impulse) deliver high reliability products to the oil and gas, defense, communications, and oceanographic industries. The products offered by TOG include wet-mateable and dry-mateable electrical and fiber optic interconnect systems, penetrators, cable terminations, and corrosion, erosion, pressure and temperature sensors. With production facilities across the United States and Europe, and service centers around the world, TOG is able to meet the demands of a global customer quickly and efficiently.

Our Reliability model is central to the Teledyne Oil and Gas culture. This is best expressed in the three core reliability areas at TOG: Reliability in Product Development, Reliability in Product Support, and Reliability Advancement through close partnering with our customers. These three interrelated areas continually support each other, bringing reliability full circle from first development discussions for a new product, through deployment and the life cycle of the product line.

Reliability is initially implemented into new product technology through Reliability in Product Development. From initial concept development, tools are implemented and the results are used to drive the frontend engineering effort focused on reliability. The first step is to establish reliability requirements, which flow down from customer requirements and TOG's own high standards for reliable products. Tools are planned and integrated into the product development schedule. Failure Modes, Effects, and Criticality Analysis (FMECAs) are performed on every product design and build process. These identify the potential risks in the design and manufacturing of a product, and steps are taken to mitigate all potentially high risk items. This analysis is performed with all stakeholders, including customers and third party companies involved in the development. The analysis results drive design changes and feed into testing, which is the next stage of reliability development. Through comprehensive Design Verification Testing (DVT), product qualification and



Accelerated Life Testing, it verifies a product will be able to perform its required task, initially and throughout its intended life. The results of these and other tools such as Finite Element analysis, Block Diagram Analysis, and Beta Testing is used to summarize and demonstrate reliability and its growth throughout product development, providing the customer with confidence that they are purchasing a highly reliable product.

Reliability work on a product does not end when the first product ships. With Reliability in Product Support, the product is constantly re-examined throughout its life, with an emphasis on finding areas for improvement. Performance data is tracked on all parts, failed and operational. This data is examined to understand potential failure modes under various conditions, and to look for areas of improvement. Improvements focus on potential failure modes and customer usability to reduce operation related failures. TOG works with our customers and the end users of our products to validate our data and recommend design enhancements. Additionally, critical suppliers to TOG are identified and audited to ensure that the highest quality components are used to provide for the highest reliability products to TOG's customers.

Reliability is an important concept for everyone at TOG, as a result, Reliability Advancement is implemented at every possible opportunity. This includes advancing the knowledge of TOG employees through regular training, internally and at Reliability Engineering conferences. This supports TOG's goal of constantly being at the forefront of reliability. By actively working on the research and development of new reliability models and techniques, TOG's commitment to stay on the forefront of reliability and continue advancing reliability knowledge is evident.

One question remains: Does your supply chain have a robust Reliability model?

C & C Technologies, Inc. is a privately owned international surveying and mapping company specializing in deep-water services. C & C proudly announces 20 years of service in 2012. Headquartered in Lafayette, Louisiana, "the Heart of Cajun Country" and has four offices in US with additional offices located internationally: Singapore, Brazil, Mexico, South Africa, Angola and the United Kingdom.

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Thomas and Jim Chance were raised in the survey business helping their father, John E. Chance, build the largest privately-owned survey company in the world. In 1992, when John E. Chance sold his company, the Chance brothers resigned their management positions and began organizing C & C Technologies, Inc.

C & C provides a wide range of survey and mapping services for the land and offshore oil and gas industry, the telecommunications industry and the U.S. government. The company has divisions including the Land and Transition Zone Survey Division, The Marine Construction Survey Division, the Geosciences Division, the Geotechnical Division, the Worldwide DGNSS Services Division and an Unmanned Systems Division.

C & C's operational divisions are sustained by several in-house support functions including a database department, a systems development department, an information technology department, an electronics department, a mechanical fabrication department and an HSE and QA department.

C & C is known throughout the world as a technological leader in the survey field. Innovations such as C-Nav, Globally-corrected GPS and the C-Surveyor AUVs have made groundbreaking advancements to the survey industry and subsequently have saved clients time and money. C & C's fleet of AUVs have surveyed over 250,000 km to-date.

C & C continues to strive towards our five key ideas: to be a growing company, earning clients for life, utilizing technology to our client's benefit, doing it right and being a great place to work.

RBR

see ad on page 29

At RBR, we are not simply a data logger manufacturer; we are passionate about oceanography and water quality. With over 35 years of experience in the field, our innovative spirit drives us to understand the world around us. In this aim, RBR has released a new generation of loggers: RBR*duo*, RBR*virtuoso*, and RBR*concerto*. Tested in the harshest environments, our products provide improved reliability, flawless measurements, and high-precision accuracy even in the most unpredictable conditions.

RBR's single and dual channel loggers (RBR*virtuoso*, RBR*duo*) measure various parameters, including, temperature, pressure, and dissolved oxygen. Available in several standard configurations, they can operate in up to 740m of water, provide up to 30 million readings, and deploy for over 5 years on one set of batteries. Some configurations are available in a deep water version that can operate in up to 10,000m of water (sensor dependent). The new series are also customizable, with the ability to be fitted with various sensors. Contact RBR for sensor options.

The RBR*virtuoso* and RBR*duo* can also be configured to be tide or wave recorders that have flexible measurement schedules, fast downloading of large data files, expanded memory and power for extended deployments.

The RBR*duo* C.T and RBR*concerto* C.T.D loggers are the essential tools for any oceanographer charged with measuring salinity. As fluctuations in the ocean's global water cycle can impact ecological factors and climate change, monitoring the density and stability of salinity are of significant environmental concern.

Located in Ottawa, Canada, RBR delivers superior submersible data loggers, recorders, sondes, controllers and sensors that provide precise measurement of temperature, depth, and conductivity. Our products can also accommodate specialized sensors for oceanographic, freshwater, cryospheric, estuarine, and coastal monitoring.

(www.rbr-global.com)

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Mariscope Meerestechnik was founded in 1994 by Christian Haag, MSc. in Physical Oceanography and former researcher at the Oceanographic Institute in Kiel, Germany. When the company started he already had been developing for several years their initial ROV systems. By that time, ROVs were normally very expensive instruments and their owners normally were related to the offshore business or research. Mariscope started with a series of modular, customizable and affordable ROVs. From now on, ROVs should be a tool for everybody related to the aquatic world, easy to use and to maintain and cost effective. Small diving companies, research and rescue teams, police, customs, coast guards, consulting companies have been the custom ers, just to name a few. With the slogan 'we build your ideas', the company additionally showed the willingness to carry out special designs, prototypes and special developments.

Now, nearly 20 years later, the slogan is still valid and Mariscope is a well-known company in many countries. Apart from the head office, Mariscope created a daughter company in Chile in 2001 and in Argentina in 2011, being the only manufacturer with branches in South America. The company gives the complete after sales services, technical services and training for their systems. Additionally several ROV teams are available for special tasks, if clients don't want to carry out the operations by themselves. Nowadays the production of Mariscope Meerestechnik includes ROVs, Towed Vehicles, Camera Systems, Diver's Communication Systems, Underwater Lighting, Wet and dry Bell components and an enormous amount of special systems. According to the best German tradition, all the systems are completely manufactured in Germany and the 'Made in Germany' label stands for highest quality standards and durability of the products.

Marine Sonic Technology

see ad on page 55

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
www.marinesonic.com

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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 iintuitive 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.

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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. SubConn® connectors are used in the Oil and Gas, Ocean Science, Renewable Energy, Fisheries, Security and Defense industries and underwater environments around the World.

Featuring 1 pin to 26 pin configurations, SubConn® connectors are used for signal and power in a wide range of applications. A full large range connectors and specialty cables with shielded cables and special multi size conductors is kept in stock in both Europe and North America for customer use and quick delivery.

To satisfy new requirements for sensor connectivity, the SubConn® series has recently been expanded with:

- 25 pin Combined Power and Signal connector
- A smaller 21 pin connector
- Ethernet connector
- Combined Power and Ethernet connector
- Water blocked penetrator

Sale and support of SubConn® and integrated solutions is handled exclusively by the MacArtney Underwater Technology Group with offices, workshops and test facilities in Denmark, United Kingdom, Norway, France, The Netherlands, Germany, United States and Brazil, as well as a range of representatives around the Globe.

NEW: SubConn® 25 pin Power and Signal conector

NEW: SubConn® Power Ethernet conector

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AUVSI
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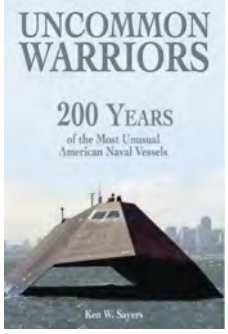
Media Reviews

Uncommon Warriors
200 Years of the Most Unusual American Naval Vessels

Ken W. Sayers

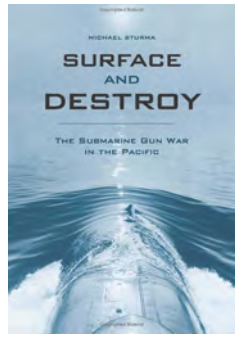


Beyond the usual carriers, submarines, cruisers, and destroyers, the U.S. Navy has deployed over the years a vast flotilla of vessels to serve in specialized roles and unusual missions. These uncommon warriors, called miscellaneous auxiliary (AG) and unclassified miscellaneous (IX) vessels, are the subject of this study. It provides individual histories, specifications, and illustrations of more than 40 vessels and concise directory listings for another 400 vessels. Some began their careers as powerful warships with impressive pedigrees and achievements. Others started out as prosaic commercial vessels but, after joining the fleet, helped the Navy to win a war. From battleships to tugs, the group includes such historic warships as "Old Ironsides," Farragut's Hartford, and Dewey's Olympia, as well as such novel vessels as coalburning side-wheeler aircraft carriers, Q-ships, and spy ships. No other book rivals the comprehensiveness of this Naval reference work.

ISBN: 978-1-59114-760-2, Naval Institute Press, $34.95.

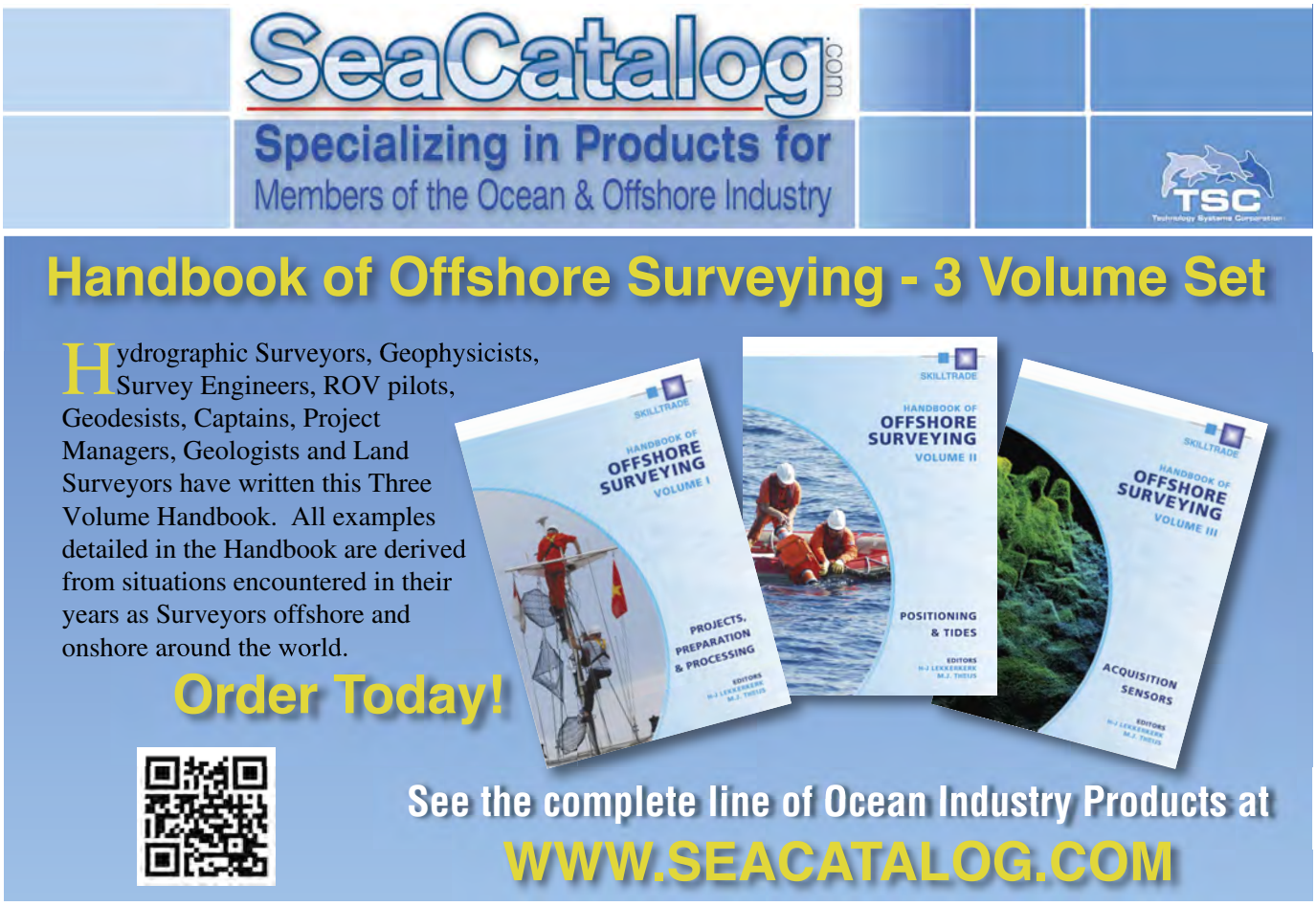
Surface and Destroy
The submarine gun war in the Pacific

Michael Sturma



World War II submariners rarely experienced anything as exhilarating or horrifying as the surface gun attack. Between the ocean floor and the rolling whitecaps above, submarines patrolled a dark abyss in a fusion of silence, shadows, and steel, firing around 11,000 torpedoes and sinking Japanese men-of-war and more than 1,000 merchant ships. But the anonymity and simplicity of the stealthy torpedo attack hid the savagery of warfare—a stark difference from the brutality of the surface gun maneuver. As the submarine shot through the surface of the water, confined sailors scrambled through the hatches armed with large-caliber guns and met the enemy face-to-face. Surface and Destroy: The Submarine Gun War in the Pacific reveals the nature of submarine warfare in the Pacific Ocean during World War II and investigates the challenges of facing the enemy on the surface.

ISBN: 978-0-8131-2996-9, University Press of Kentucky, $29.95.



People & Company News

Occidental Petroleum Corp. appointed **Willie Chiang** as executive vice president, operations. Chiang, 51, will have oversight for Occidental's midstream businesses and will also be part of the company's strategy, reserves, and corporate-wide capital allocation processes. Since 1996, Chiang has held increasingly responsible positions at ConocoPhillips, most recently as senior vice president, refining, marketing, transportation and commercial. Previous ConocoPhillips roles include senior vice president, commercial and president, supply and trading, Americas. Prior to joining ConocoPhillips, he spent 6 years with Powerine Oil Co. in Los Angeles and 9 years at Chevron. He has also served on the boards of DCP Midstream and Chevron Phillips Chemical and been involved with the American Petroleum Institute.

Wireless Seismic, Inc. appointed **John Flavell Smith** to the newly created position of director, international business development. Based in Edinburgh, Scotland, Smith will focus on developing the company's relationships with key clients in EAME and Asia and on identifying new business opportunities to support the company's rapid growth in those regions. Smith was a co-founder of Vibtech, the company that delivered the first "next-generation," cable-free seismic recording systems in 2003. Vibtech was subsequently acquired in 2006 by Sercel, a division of CGGVeritas.

Smith

ATP Oil & Gas Corp. said that **Matt McCarroll** joined ATP as chief executive officer. McCarroll was founder and chief executive officer of Dynamic Offshore Resources, LLC, a private company focused on acquiring and developing properties in the Gulf of Mexico. He guided the recent sale of Dynamic Offshore Resources to SandRidge Energy for $1.3 billion. Prior to establishing Dynamic Offshore Resources, McCarroll served as president of Maritech Resources Inc. He was a member of the senior management team of Plains Resources Inc. and remained with the corporation until 1998.

Variable Bore Rams, Inc. (VBR) has named **Jared Primeaux** operations and logistical coordinator and **Mathew Brocato** assembly technician. Primeaux's responsibilities will include quality control for all active jobs and customer inquiry response. Brocato will manage warehouse inventory and maintain quality control of all BOP rams in VBR's vast inventory. Brocato holds certifications in overhead crane and forklift equipment operation and advanced safety tracking management. He has held positions with Whitco Oilfield Supply and Southern Steel Supply. Brocato joins VBR with 4 years of experience in the oil and gas industry.

Oceaneering International, Inc. said that **Mark E. Peterson** joined Oceaneering as vice president, corporate development. Peterson's career spans 35 years in the energy industry. Since 2005, he was with McDermott International, Inc. where he was most recently responsible for McDermott's corporate development efforts. He has significant financial business experience, including mergers and acquisitions, joint venture development, transaction and capital structuring, and strategic planning. Stephen E. Bradshaw will continue to serve the company until his retirement at the end of 2012.

People & Company News

EdgeTech welcomes **Garry Kozak**. Garry joins EdgeTech with over 35 years of experience in the underwater technology field. Respected worldwide for his knowledge in side scan sonars, Garry has extensive hands-on experience with numerous sonar platforms and has traveled the globe performing underwater surveys and educating clients. Please join us in welcoming Garry to the EdgeTech team.

Kozak

Teledyne Oil & Gas (TOG) is pleased to announce the appointment of **Mr. Colin Taylor** as the vice president of Europe effective May 28, 2012, reporting to Mike Read, president Teledyne Oil & Gas. Mr. Taylor brings exceptional experience in business and operational management and will lead all Teledyne Oil & Gas business activities in Europe including the Worthing and Ellon operations, business development, technology development, finance and field service. He was most recently with JDR Cable Systems in the UK where he held various executive positions, including executive operations director and most recently served as director of product management for Umbilical Systems.

Global marine equipment rental and sales specialist, **Seatronics**, an Acteon company, has continued its three-year expansion plan by opening a new office in Macaé, Rio de Janeiro, Brazil. With established bases in Aberdeen, UK; Abu Dhabi, UAE; Houston and Louisiana, U.S.; Perth, Australia; and Singapore, this new office in South America reflects the company's ongoing expansion and increased business from new and existing clients. The new office will mean a faster response time and better accessibility to other survey companies in the region.

Underwater technology specialist **Tritech** is expanding its global reach with a new office in Houston, Texas. Tritech North America will focus on developing new opportunities in the North American region and establishing closer working relationships with its OEM partners and customers. Opening in the company's 21st year in business, Tritech North America now offers full Sales & Customer Support Services in the region, complementing Tritech's UK office in Westhill, Aberdeenshire, Scotland.

Calendar

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

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

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

October 8-10, 2012:
MTS Dynamic Positioning 2012
Houston, TX
www.mtsociety.org/conferences

October 14-19, 2012:
MTS/IEEE Oceans 2012
Virginia Beach, VA
www.oceans12mtsieeehamptonroads.org

October 21-24, 2012:
Ocean Innovation 2012
Canada
www.oceaninnovation.ca

October 30-31, 2012
4th Annual Marine Renewable Energy Technical Conference
Providence, RI
www.mrec.umassd.edu/event

November 5-8, 2012:
Subsea Survey IRM 2012
Galveston, TX
www.subseasurvey.com

November 6-8, 2012
Oilcomm
Houston, TX
www.oilcomm.com

November 13-15, 2012
Clean Gulf
New Orleans, LA
www.cleangulf.org

December 5-7, 2012
International Workboat
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January 15-17, 2013
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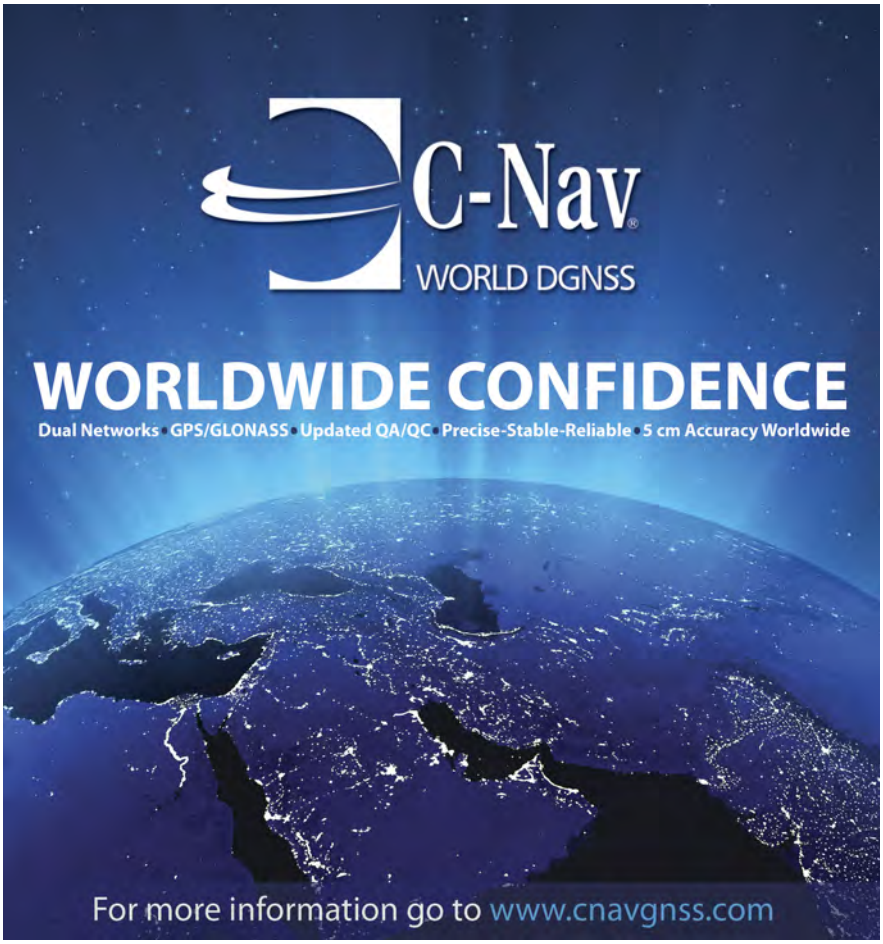

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Contact: Jim Byous

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.

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Contact: Beto Campos - Director, Global Commercial Sales

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

Imagenex Technology Corp.
209-1875 Broadway St., Port Coquitlam
BC, Canada, V3C 4Z1
Tel: (604) 944-8248, Fax: (604) 944-8249
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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Toll Free: (800) 447-4804
E-mail: jdemille@marinesonic.com
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Tel: (805) 683-1431; Fax (805) 683-4862
E-mail: marketing@sonatech.com
Website: www.channeltechgroup.com
Contact: K.Ruelas, pres.; R. Franklin, v.p., nav & range sys; M. Shaw, v.p., sonar & transducer sys; B. Febo, Director of Business Development

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

Sound Metrics Corp.
15029 Bothell Way NE, Suite 100
Lake Forest Park, WA 98155
Tel: (206) 364-1441, Fax: (206) 374-2929
E-mail: sales@soundmetrics.com
Website: www.soundmetrics.com
Contact: Jeanne Dorsey

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

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Website: www.saivas.no
Contact: Gunnar Sagstad

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Tel: 985-385-6789
E-mail: bill.new@newindustries.com
Website: www.newindustries.com
Contact: Bill New

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Contact: Karen North

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Website: www.channeltechgroup.com
Contact: K.Ruelas, pres.; B.Dolan, Director of Business Development; E.Kunstal, eng. mgr.

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E-mail: sales@cygnusinstruments.com
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Contact: Rod Sanders

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UNDERWATER VEHICLES

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Website: www.f-e-t.com/Subsea

Forum Energy Technologies' Perry Slingsby brand supplies deepwater work class ROVs, tooling solutions, burial systems, and control-system-based products to the oil, gas, and telecommunications industries. Providing the most advanced, robust and dependable ROVs and subsea products in the world, Forum's Subsea group has facilities in the US and UK and sales offices and agents around the world.

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

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

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

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

VideoRay
580 Wall Street, Phoenixville, PA 19460
Tel: (610) 458 3000, Fax: (610) 458 3010
E-mail: info@videoray.com
Website: www.videoray.com
Contact: Brian Luzzi

With more than 1,900 Remotely Operated Vehicles (ROVs) in service around the world, VideoRay has clearly become the global leader in Observation ROV technology. VideoRay is an extremely versatile, portable, affordable, and reliable solution for underwater operations including surveys, offshore inspections, search & recovery, homeland & port security, science & research, fish farming, and other unique applications in underwater environments. VideoRay is available on the General Services Administration.

UNDERWATER VEHICLES

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UUVS

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4625 Industry Lane, Durham, NC 27713
Tel: 919-405-3993, Fax: 919-495-3994
E-mail: frochleder@irobot.com
Website: www.irobot.com
Contact: Friedrich Rochleder, Sales Account Manager

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UNDERWATER VIDEO EQUIPMENT

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Campus 1, Science & Technology Park, Balgownie Road, Bridge of Don, Aberdeen, AB22 8GT, UK
Tel: +44 (0)1224 226500
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E-mail: km.camsales.uk@kongsberg.com
Website: www.kongsbergmaritime.com
Contact: Bill Stuart

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E-mail: sales@sharkmarine.com
Website: www.sharkmarine.com
Contact: Jim Honey

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

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E-mail: paul.phillips@hawboldt.ca
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3 Which category best describes your business?

(Indicate the primary activity of your organization by placing a 1 next to the catagory. Place 2, 3 and 4 next to other markets served.)

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C. ___ NAVIGATION / POSITIONING
D. ___ RESEARCH & DEVELOPMENT
E. ___ OCEAN INSTRUMENTATION
F. ___ OFFSHORE OIL & GAS
G. ___ COMMUNICATIONS / UTILITIES
H. ___ SCIENCE, ENVIRONMENTAL
I. ___ EDUCATIONAL INSTITUTION / LIBRARY
J. ___ GOVERNMENT MILITARY
K. ___ GOVERNMENT CIVILIAN
L. ___ MARINE HARDWARE / DECK EQUIP.
M.___ FISHING INDUSTRY, AQUACULTURE
N. ___ SURVEY, MAPPING, EXPLORATION
O. ___ DIVING EQUIPMENT / SERVICES
P. ___ CONSULTING, DATA SERVICES
Q. ___ MARINE ELECTRICAL / ELECTRONICS
R. ___ COMPUTER SERVICES / SOFTWARE
S. ___ OCEAN RENEWABLES
T. ___ SUBSEA IRM
U. ___ OCEAN OBSERVING
V. ___ SHIPPING/ TRANSPORTATION
W.___ SUBMARINE TELECOM
X. ___ EQUIPMENT RENTAL
Y. ___ MANUFACTURERS' REPRESENTATIVE
Z. ___ OTHER (Please specify below)

_____

_____

4 Which category best describes your job function? (check only one)

1. ___ OWNER / EXECUTIVE
2. ___ MANAGEMENT / PROFESSOR
3. ___ ENGINEER / SCIENTIST
4. ___ TECHNICIAN / OPERATOR
5. ___ BUYER
6. ___ SALES
7. ___ OTHER (Please specify below)

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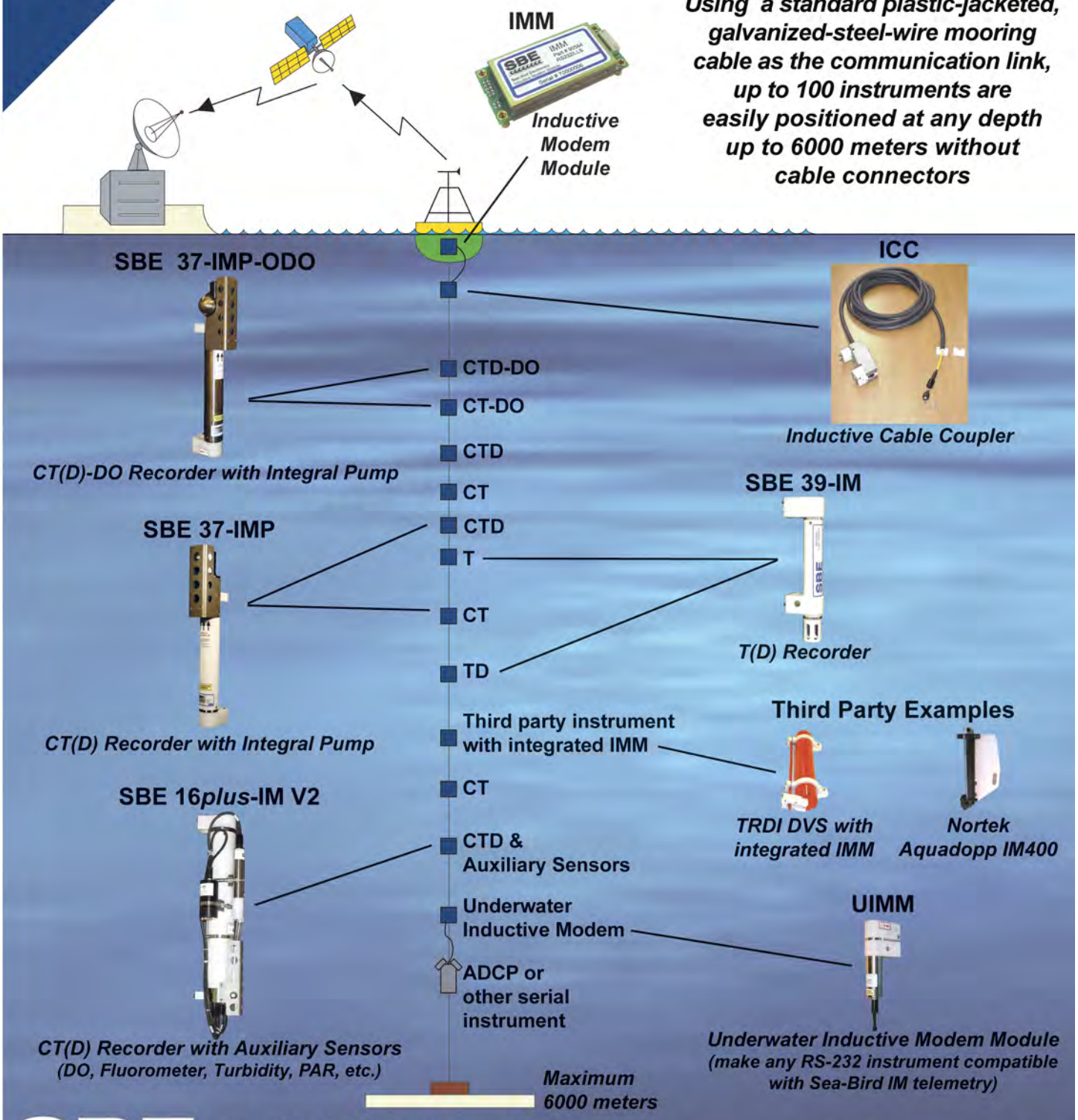

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